County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

DATE: February 14, 2020

TO: Department of Public Works and Planning, Attn: Steven E. White, Director
Department of Public Works and Planning, Attn: Bernard Jimenez, Assistant Director
Department of Public Works and Planning, Attn: John R. Thompson, Assistant Director
Development Services and Capital Projects, Attn: William M. Kettler, Division Manager
Development Services and Capital Projects, Attn: Chris Motta, Principal Planner
Development Services and Capital Projects, Current Planning, Attn: Marianne Mollring, Senior Planner
Development Services and Capital Projects, Policy Planning, ALCC, Attn: Mohammad Khorsand, Senior Planner
Development Services and Capital Projects, Zoning & Permit Review, Attn: Daniel Gutierrez/ James Anders
Development Services and Capital Projects, Building & Safety/Plan Check, Attn: Dan Mather
Resources Division, Solid Waste, Attn: Amina Flores-Becker/Sally Lopez
Development Engineering, Attn: Laurie Kennedy, Grading/Mapping
Road Maintenance and Operations, Attn: Wendy Nakagawa
Design Division, Special Projects/Road Projects, Attn: Mohammad Alimi/Dale Siemer
Design Division, Transportation Planning, Attn: Mohammad Alimi/Dale Siemer
Water and Natural Resources Division, Attn: Glenn Allen/'Roy Jimenez
Department of Public Health, Environmental Health Division, Attn: Deep Sidhu/ Steven Rhodes
Sheriff's Office, Attn: Captain John Zanoni, Lt. John Reynolds, Lt. Louie Hernandez, Lt. Kathy Curtice, Lt. Ryan Hushaw
U.S. Fish and Wildlife Service, San Joaquin Valley Division, Attn: Matthew Nelson
U.S. Environmental Protection Agency, Air Division, Air Planning Office, Region 9, Attn: Dawn Richmond
CA Regional Water Quality Control Board, Attn: Dale Harvey
CALTRANS, Attn: Dave Padilla
CA Department of Fish and Wildlife, Attn: Craig Bailey, Environmental Scientist
CA Environmental Protection Agency, Department of Toxic Substance Control, Attn: Supervising Hazardous Substance Scientist
CA Department of Toxic Substance Control (CEQA unit), Attn: Dave Kereazis
PIC-CEQA Division, Attn: PIC Supervisor
Sierra Resource Conservation District, Attn: Steve Haze, District Manager

FROM: Chrissy Monfette, Planner
Development Services and Capital Projects Division

SUBJECT: Initial Study Application No. 7594

The Department of Public Works and Planning, Development Services and Capital Projects Division has reviewed the subject application for potential environmental impacts and determined that some impacts from the project have the potential to be significant prior to the application of mitigation measures. With the adoption of Mitigation Measures, all impacts can be reduced to less than significant. The proposed Mitigated Negative Declaration has been published for public review.

Your comments should focus on the adequacy of the mitigation measures and existing regulations

Based upon this review, a determination will be made regarding conditions to be imposed on the project, including necessary on-site and off-site improvements.

We must have your comments by **March 11, 2019.** Any comments received after this date may not be used.

If you do not have comments, please provide a "NO COMMENT" response to our office by the above deadline (e-mail is also acceptable; see email address below).

Please address any correspondence or questions related to environmental and/or policy/design issues to me, Chrissy Monfette, Planner Development Services and Capital Projects Division, Fresno County Department of Public Works and Planning, 2220 Tulare Street, Sixth Floor, Fresno, CA 93721, or call (559) 600-4245 or email CMonfette@co.fresno.ca.us.

CMM:
G:\4360Devs&Pln\PROJSEC\PROJDOCS\Environmental\Initial Studies - Environmental Assessments\7000-7999\IS 7594 Alta Main Canal\IS-CEQA\IS 7594 IS Routing Ltr.docx

Activity Code (Internal Review):2335

Enclosures

State of California - Department of Fish and Wildlife
2020 ENVIRONMENTAL FILING FEE CASH RECEIPT
DFW 753.5a (REV. 12/01/19) Previously DFG 753.5a

RECEIPT NUMBER:
E202010000058
STATE CLEARINGHOUSE NUMBER *(if applicable)*

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY	LEAD AGENCY EMAIL	DATE
COUNTY OF FRESNO		**02/11/2020**
COUNTY/STATE AGENCY OF FILING		DOCUMENT NUMBER
FRESNO COUNTY		**E202010000058**
PROJECT TITLE		
INITIAL STUDY APP NO. 7594		

PROJECT APPLICANT NAME	PROJECT APPLICANT EMAIL		PHONE NUMBER
COUNTY OF FRESNO			**(559) 600-4245**
PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
2220 TULARE ST, SUITE A	**FRESNO**	**CA**	**93721**

PROJECT APPLICANT *(Check appropriate box)*
[X] Local Public Agency [ ] School District [ ] Other Special District [ ] State Agency [ ] Private Entity

CHECK APPLICABLE FEES:

[ ] Environmental Impact Report (EIR)	$3,343.25	$	0.00
[ ] Mitigated/Negative Declaration (MND)(ND)	$2,406.75	$	0.00
[X] Certified Regulatory Program (CRP) document - payment due directly to CDFW	$1,043.75	$	0.00

[ ] Exempt from fee
  [ ] Notice of Exemption (attach)
  [ ] CDFW No Effect Determination (attach)
[ ] Fee previously paid (attach previously issued cash receipt copy)

[ ] Water Right Application or Petition Fee (State Water Resources Control Board only)	$1,136.50	$	0.00
[ ] County documentary handling fee	$50.00	$	0.00
[X] Other **NOI**		$	0.00

PAYMENT METHOD:
[ ] Cash [ ] Credit [ ] Check [ ] Other

TOTAL RECEIVED $ 0.00

SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X Jessica Munoz Jessica Munoz	**Jessica Munoz Deputy Clerk**

State of California - Department of Fish and Wildlife
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SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X Jessica Munoz Jessica Munoz	**Jessica Munoz Deputy Clerk**

E202010000058 **County of Fresno**

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

FILED
FEB 11 2020 TIME 10:01am
FRESNO COUNTY CLERK
Jessica Munoz, DEPUTY
For County Clerk's Stamp

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

Notice is hereby given that the County of Fresno has prepared Initial Study Application (IS) No. 7594 pursuant to the requirements of the California Environmental Quality Act for the following proposed project:

> **INITIAL STUDY APPLICATION NO. 7594** filed by **FRESNO COUNTY DEPARTMENT OF PUBLIC WORKS AND PLANNING DESIGN DIVISION**, proposing to replace the existing bridge on Frankwood Avenue where it crosses the Alta Main Canal. The proposed two-lane bridge would be an approximately 145-foot-long, three-span, cast-in-place, concrete slab bridge located downstream of the existing bridge. The proposed bridge will have curb-to-curb width of approximately 32 feet, while the existing bridge only has a clear width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot wide shoulder in each direction, where the existing bridge has none. No new lanes will be added as part of this project. The total width of the proposed bridge deck would be 34.96 feet. The existing bridge (Bridge No. 42C0289) is located on North Frankwood Avenue at its intersection with the Alta Canal; approximately 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180. The replacement bridge will be constructed just south of the existing structure. Adopt the Mitigated Negative Declaration prepared for Initial Study Application No. 7594.
>
> (hereafter, the "Proposed Project")

The County of Fresno has determined that it is appropriate to adopt a Mitigated Negative Declaration for the Proposed Project. The purpose of this Notice is to (1) provide notice of the availability of IS Application No. 7594 and the draft Mitigated Negative Declaration, and request written comments thereon; and (2) provide notice of the public hearing regarding the Proposed Project.

Public Comment Period

The County of Fresno will receive written comments on the Proposed Project and Mitigated Negative Declaration from February 14, 2020 through March 16, 2020.

Email written comments to cmonfette@fresnocountyca.gov, or mail comments to:

Fresno County Department of Public Works and Planning
Development Services and Capital Projects Division
Attn: Chrissy Monfette
2220 Tulare Street, Suite A
Fresno, CA 93721

E202010000058

IS Application No. 7594 and the draft Mitigated Negative Declaration may be viewed at the above address Monday through Thursday, 9:00 a.m. to 5:00 p.m., and Friday, 8:30 a.m. to 12:30 p.m. (except holidays), or at www.co.fresno.ca.us/initialstudies. An electronic copy of the draft Mitigated Negative Declaration for the Proposed Project may be obtained from Chrissy Monfette at the addresses above.

Public Hearing

The Board of Supervisors will hold a public hearing to consider approving the Proposed Project and the Mitigated Negative Declaration on Tuesday, April 14, 2020, at 8:45 a.m., or as soon thereafter as possible, in Room 301, Hall of Records, 2281 Tulare Street, Fresno, California 93721. Interested persons are invited to appear at the hearing and comment on the Proposed Project and draft Mitigated Negative Declaration.

For questions please call Chrissy Monfette (559) 600-4245.

Published: February 14, 2020

INITIAL STUDY
ENVIRONMENTAL CHECKLIST FORM

1. **Project title:**
   Alta Main Canal Bridge Replacement – Initial Study No. 7594

2. **Lead agency name and address:**
   Fresno County Department of Public Works and Planning
   2220 Tulare Street 6th Floor
   Fresno, CA 93721

3. **Contact person and phone number:**
   Chrissy Monfette
   (559) 600-4245

4. **Project location:**
   The existing bridge is located on North Frankwood Avenue at its intersection with the Alta Canal; approximately 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180. The replacement bridge will be constructed just south of the existing structure.

5. **Project sponsor's name and address:**
   Diana Nuttman
   Fresno County Department of Public Works and Planning Design Division
   2220 Tulare Street, 6th Floor
   Fresno, CA 93721

6. **General Plan designation:**
   Designated Agricultural by the Kings River Regional Plan

7. **Zoning:**
   Zoning on the surrounding parcels is Limited Agricultural (AL-20) to the east and north with Trailer Park Residential (TP) to the southwest where the proposed replacement bridge will connect to South Frankwood Avenue

8. **Description of project: (Describe the whole action involved, including, but not limited to, later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)**

   Replace the existing bridge on Frankwood Avenue where it crosses the Alta Main Canal. The proposed two-lane bridge would be an approximately 145-foot-long, three-span, cast-in-place, concrete slab bridge located downstream of the existing bridge. The proposed bridge will have curb-to-curb width of approximately 32 feet, while the existing bridge only has a clear width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot wide shoulder in each direction, where the existing bridge has none. No new lanes will be added as part of this project. The total width of the proposed bridge deck would be 34.96 feet.

   The bridge foundation is proposed to be driven H-piles with concrete pile caps for both the abutments and piers. Concrete abutment pile caps would be placed outside the invert of the canal and would be excavated to a depth of about 5.5 feet. Two piers with concrete pile caps will be constructed in the canal invert and would be excavated to a depth of about 5.5 feet.

The proposed project would widen the bridge approaches from 19 feet to 32 feet to accommodate the new structure and realign North Frankwood Road to the new bridge location. The alignment change would improve sight distance to the bridge compared to existing conditions. The west bridge approach extends about 460 feet from the bridge and the east extends about 345 feet from the bridge. The new roadway alignment will require the driveways that serve the properties north of Frankwood Avenue and the canal access roads to be modified to conform to the new roadway alignment and profile. The access road to the Alta Irrigation District field office (northwest of bridge) will also need to be realigned to conform to the new roadway alignment. The Alta Irrigation District owns and operates the Alta Main Canal and associated right of way. The County will work with the Alta Irrigation District to schedule construction of the proposed project and obtain right-of-way for the new alignment. The roadway and bridge alignment may require additional right of way acquisition from two adjacent private properties, and project construction would require temporary construction easements from Alta Irrigation District and nearby property owners.

The existing bridge and roadway alignment would function as an onsite detour for vehicular traffic during construction of the project. Once the project is completed, the existing bridge would remain intact and continue to serve as an irrigation control structure; with access to the bridge limited to the Alta Irrigation District. No general traffic would be allowed on the bridge after this replacement bridge is operational.

The purpose of the proposed Project is to construct a wider bridge with approaches that meet current design standards, improve sight distance, and improve the curve radius to eliminate the 15-mile per hour curve at the west end of the existing bridge. The existing bridge has been listed by Caltrans as functionally obsolete with a sufficiency rating of 50.5. Deficiencies in the Alta Main Canal Bridge include transverse deck cracking over the bents, longitudinal and pattern cracking, insufficient curb-to-curb clear width, narrow traffic lanes and shoulders, narrow and winding approach roads with poor sight distance, and guardrails and railings that do not meet American Association of State Highway and Transportation Officials (AASHTO) standards.

9. Surrounding land uses and setting: Briefly describe the project's surroundings:

The project is located in a rural community in an area that is visually characterized by scattered agricultural fields with corridors of natural vegetation that border the Kings River and its tributaries. Developed features within the project area include the existing bridge; a mobile home park west of the bridge where Frankwood turns south; and single-family residential developments to the east.

10. Other public agencies whose approval is required (*e.g.*, permits, financing approval, or participation agreement.)

California Department of Transportation, Environmental Protection Agency (NPDES/SWPPP), California Department of Fish and Wildlife (Section 1602 Streambed Alteration Agreement), Central Valley Flood Protection Board (encroachment permit and Waste Discharge Requirement or waiver of Waste Discharge Requirement)

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

The County provided notice of this project to three Native American Tribal Governments who requested such notice pursuant to Assembly Bill 52 (AB 52). The project site was outside of the notification area for Santa Rosa Rancheria Tachi Yokut, as defined by the map they provided to the County. No comments were received during the 30-day response period prescribed by AB 52; however, when JRP reached out to the Tribal Governments provided by the NAHC, the Santa Rosa Rancheria Tachi Yokut Tribe indicated that the project area was sensitive to Tribal Resources and recommended that the County require on-site tribal monitoring during all ground disturbing activities. (JRP 2018). Mitigation has been adopted to require the following: education of construction workers regarding the recognition of tribal and cultural resources, monitoring of excavations by a qualified professional archeologist, invitation to the Santa Rosa Rancheria Tachi Yokut Tribe to be present during construction, requirements to half work if a find is uncovered, and disposition of any resources, including human remains, which are determined to have cultural value.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- ☐ Aesthetics
- ☐ Agriculture and Forestry Resources
- ☐ Air Quality
- ☐ Biological Resources
- ☐ Cultural Resources
- ☐ Energy
- ☐ Geology/Soils
- ☐ Greenhouse Gas Emissions
- ☐ Hazards & Hazardous Materials
- ☐ Hydrology/Water Quality
- ☐ Land Use/Planning
- ☐ Mineral Resources
- ☐ Noise
- ☐ Population/Housing
- ☐ Public Services
- ☐ Recreation
- ☐ Transportation
- ☐ Tribal Cultural Resources
- ☐ Utilities/Service Systems
- ☐ Wildfire
- ☐ Mandatory Findings of Significance

DETERMINATION OF REQUIRED ENVIRONMENTAL DOCUMENT:

On the basis of this initial evaluation:

☐ I find that the proposed project **COULD NOT** have a significant effect on the environment. **A NEGATIVE DECLARATION WILL BE PREPARED.**

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the Mitigation Measures described on the attached sheet have been added to the project. **A MITIGATED NEGATIVE DECLARATION WILL BE PREPARED.**

☐ I find the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required

☐ I find that as a result of the proposed project, no new effects could occur, or new Mitigation Measures would be required that have not been addressed within the scope of a previous Environmental Impact Report.

PERFORMED BY:	**REVIEWED BY:**
[signature]	M Mollring
Chrissy Monfette, Planner	**Marianne Mollring, Senior Planner**
Date: February 11, 2020	**Date:** 2-11-20

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INITIAL STUDY
ENVIRONMENTAL CHECKLIST FORM
(Initial Study Application No. 7594)

The following checklist is used to determine if the proposed project could potentially have a significant effect on the environment. Explanations and information regarding each question follow the checklist.

1 = No Impact

2 = Less Than Significant Impact

3 = Less Than Significant Impact with Mitigation Incorporated

4 = Potentially Significant Impact

I. AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:

_2_ a) Have a substantial adverse effect on a scenic vista?

_2_ b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

_2_ c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

_1_ d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

II. AGRICULTURAL AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology in Forest Protocols adopted by the California Air Resources Board. Would the project:

_1_ a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

_1_ b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?

_1_ c) Conflict with existing zoning for forest land, timberland or timberland zoned Timberland Production?

_1_ d) Result in the loss of forest land or conversion of forest land to non-forest use?

_1_ e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

_2_ a) Conflict with or obstruct implementation of the applicable Air Quality Plan?

_2_ b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

_2_ c) Expose sensitive receptors to substantial pollutant concentrations?

_1_ d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

IV. BIOLOGICAL RESOURCES

Would the project:

_3_ a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

_3_ b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

_2_ c) Have a substantial adverse effect on state or federally-protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

_2_ d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

_3_ e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

_3_ f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan?

V. CULTURAL RESOURCES

Would the project:

_3_ a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

_3_ b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

_3_ c) Disturb any human remains, including those interred outside of formal cemeteries?

VI. ENERGY

Would the project:

_1_ a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?

_1_ b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

VII. GEOLOGY AND SOILS

Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

1 i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

1 ii) Strong seismic ground shaking?

1 iii) Seismic-related ground failure, including liquefaction?

1 iv) Landslides?

2 b) Result in substantial soil erosion or loss of topsoil?

2 c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

2 d) Be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

1 e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

1 f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

VIII. GREENHOUSE GAS EMISSIONS

Would the project:

2 a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

2 b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

2 a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

2 b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

1 c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

1 d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?

1 e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area?

1 f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

1 g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

X. HYDROLOGY AND WATER QUALITY

Would the project:

1 a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

1 b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

2 c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site?

1 i) Result in substantial erosion or siltation on or off site;

1 ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;

1 iii) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or

1 iv) Impede or redirect flood flows?

1 d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

2 e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

XI. LAND USE AND PLANNING

Would the project:

1 a) Physically divide an established community?

3 b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

XII. MINERAL RESOURCES

Would the project:

1 a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

1 b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local General Plan, Specific Plan or other land use plan?

XIII. NOISE

Would the project result in:

2 a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

2 b) Generation of excessive ground-borne vibration or ground-borne noise levels?

1 c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposing people residing or working in the project area to excessive noise levels?

XIV. POPULATION AND HOUSING

Would the project:

1 a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and

businesses) or indirectly (for example, through extension of roads or other infrastructure)?

_1_ b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

XV. PUBLIC SERVICES

Would the project:

_1_ a) Result in substantial adverse physical impacts associated with the provision of new or physically-altered governmental facilities, or the need for new or physically-altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

_1_ i) Fire protection?

_1_ ii) Police protection?

_1_ iii) Schools?

_1_ iv) Parks?

_1_ v) Other public facilities?

XVI. RECREATION

Would the project:

_1_ a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

_1_ b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

XVII. TRANSPORTATION

Would the project:

_1_ a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

_1_ b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

_1_ c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

_1_ d) Result in inadequate emergency access?

XVIII. TRIBAL CULTURAL RESOURCES

Would the project:

_3_ a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

_3_ i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or

_3_ ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.)

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:

_1_ a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

_1_ b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

_1_ c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

_1_ d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

_1_ e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

XX. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

_1_ a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

_1_ b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

_1_ c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

_1_ d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:

_3_ a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

_1_ b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

_1_ c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Documents Referenced:

This Initial Study is referenced by the documents listed below. These documents are available for public review at the County of Fresno, Department of Public Works and Planning, Development Services and Capital Projects Division, 2220 Tulare Street, Suite A, Fresno, California (corner of M & Tulare Streets).

Fresno County General Plan, Policy Document, Final EIR, and Final EIR Background Report

Fresno County Zoning Ordinance

Important Farmland 2014 Map, State Department of Conservation

WEST Consultants, Inc. *Frankwood Avenue over Alta Main Canal Bridge Replacement Bridge Design Hydraulic Study Report.* October 2016.

WEST Consultants, Inc. *Summary Floodplain Encroachment Report.* March 29, 2017

Caltrans. *Water Quality Technical Memorandum.* October 2016.

Caltrans. *Natural Environment Study (Minimal Impacts).* October 2016

Area West Environmental, Inc. *Jurisdictional Determination for Alta Main Canal Bridge Replacement Project.* October 2016

Haro Environmental. *Hazardous Waste Initial Site Assessment.* November 6, 2015

Far Western Anthropological Resource Group Inc. *Historic Property Survey Report for the Alta Main Canal Bridger Replacement Project on North Frankwood Avenue, Fresno, California.* April 2018.

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EVALUATION OF ENVIRONMENTAL IMPACTS

APPLICANT:	County of Fresno, Department of Public Works and Planning, Design Division
APPLICATION NOS.:	Initial Study Application No. 7594
DESCRIPTION:	Replace the existing bridge on Frankwood Avenue where it crosses the Alta Main Canal. The proposed two-lane bridge would be an approximately 145-foot-long, three-span, cast-in-place, concrete slab bridge located downstream of the existing bridge. The proposed bridge will have curb-to-curb width of approximately 32 feet, while the existing bridge only has a clear width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot wide shoulder in each direction, where the existing bridge has none. No new lanes will be added as part of this project. The total width of the proposed bridge deck would be 34.96 feet.
LOCATION:	The existing bridge (Bridge No. 42C0289) is located on North Frankwood Avenue at its intersection with the Alta Canal; approximately 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180. The replacement bridge will be constructed just south of the existing structure.

The bridge foundation is proposed to be driven H-piles with concrete pile caps for both the abutments and piers. Concrete abutment pile caps would be placed outside the invert of the canal and would be excavated to a depth of about 5.5 feet. Two piers with concrete pile caps will be constructed in the canal invert and would be excavated to a depth of about 5.5 feet.

The proposed project would widen the bridge approaches from 19 feet to 32 feet to accommodate the new structure and realign North Frankwood Road to the new bridge location. The alignment change would improve sight distance to the bridge compared to existing conditions. The west bridge approach extends about 460 feet from the bridge and the east extends about 345 feet from the bridge. The new roadway alignment will require the driveways that serve the properties north of Frankwood Avenue and the canal access roads to be modified to conform to the new roadway alignment and profile. The access road to the Alta Irrigation District field office (northwest of bridge) will also need to be realigned to conform to the new roadway alignment. The Alta Irrigation District owns and operates the Alta Main

Canal and associated right of way. The County will work with the Alta Irrigation District to schedule construction of the proposed project and obtain right-of-way for the new alignment. The roadway and bridge alignment may require additional right-of-way acquisition from two adjacent private properties, and project construction would require temporary construction easements from Alta Irrigation District and nearby property owners.

The existing bridge and roadway alignment would function as an onsite detour for vehicular traffic during construction of the project. Once the project is completed, the existing bridge would remain intact and continue to serve as an irrigation control structure; with access to the bridge limited to the Alta Irrigation District. No general traffic would be allowed on the bridge after this replacement bridge is operational.

The purpose of the proposed Project is to construct a wider bridge with approaches that meet current design standards, improve sight distance, and improve the curve radius to eliminate the 15 mile per hour curve at the west end of the existing bridge. The existing bridge has been listed by Caltrans as functionally obsolete with a sufficiency rating of 50.5. Deficiencies in the Alta Main Canal Bridge include transverse deck cracking over the bents, longitudinal and pattern cracking, insufficient curb-to-curb clear width, narrow traffic lanes and shoulders, narrow and winding approach roads with poor sight distance, and guardrails and railings that do not meet American Association of State Highway and Transportation Officials (AASHTO) standards.

Note: The “entire project limits” referenced in this report and by the Mitigation Measures includes the following: eastern and western approaches to the bridge with sufficient width to include both the current and proposed roadway alignments; potential staging areas; modifications and improvements to the canal banks and maintenance roads to provide access from North Frankwood Ave; current right-of-way for North Frankwood Avenue; proposed North Frankwood Ave right-of-way on two parcels; a third parcel where revised access to the right-of-way will be necessary; the current bridge structure; and the portions of the canal above, below, and between the current and proposed bridges; and downstream of the proposed bridge to the limit of canal grading.

I. AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:

A. Have a substantial adverse effect on a scenic vista; or

B. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; or

C. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

FINDING: LESS THAN SIGNIFICANT IMPACT:

North Frankwood Avenue is not designated by Caltrans or the County of Fresno as a scenic highway or scenic roadway. The nearest roadway with such a designation is State Route 180, a designated scenic highway located approximately 1.5 miles south of the project site.

The project is located in a rural community in an area that is visually characterized by scattered agricultural fields with corridors of natural vegetation that border the Kings River and its tributaries. Developed features within the project area include the existing bridge; a mobile home park west of the bridge where Frankwood turns south; and single-family residential developments to the east.

Given the current road and bridge, the introduction of additional roadway pavement and the new bridge would not be inconsistent with the setting of the Project area or the existing visual elements within the viewsheds of local residents and motorists. Removal of valley oak riparian habitat along the canal would constitute a loss of scenic resources; however, the new road and bridge are in general alignment with an existing overhead powerline, the maintenance of which has required substantial pruning and disfigurement of the trees along its route. Approximately half of the trees to be removed are along this corridor. Placing the roadway in this location reduces the number of mature, picturesque oaks to be removed and, if the powerline is relocated in a more appropriate location beyond the reach of growing trees, may reduce future tree-trimming maintenance on the powerline easement.

For residents on the east side of the canal, removal of vegetation and construction of the new bridge and roadway alignment would not result in significant degradation to their viewsheds, given that their homes are substantially offset from the existing road and generally obscured by other vegetation. Additionally, areas disturbed by construction of the Project, but not permanently paved over, will be re-seeded; which would reduce the overall effect of removed vegetation.

Motorists traveling on North Frankwood Avenue are less likely to be affected by changes to viewsheds within the Project area than residents, as their focus is primarily on the road and there are no stop signs or signals that would cause them to pause in this area. Furthermore, while the realignment of North Frankwood Avenue will be noticeable to local motorists familiar with this particular stretch of road, the softening of the turn onto the proposed bridge and lowering of the canal banks will create a more open viewshed, particularly for travelers heading north, enhancing the site’s overall scenic value by providing views of visual elements beyond the Project area, such as the distant hillsides to the east.

Therefore, due to the minimal impacts on residents and motorists and limited impacts on mature, scenic trees, impacts to scenic vistas and scenic resources will be less than significant.

D. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

FINDING: NO IMPACT:

No lighting is proposed as part of this application. The replacement bridge will be made of concrete, which does not reflect light in such a manner as to cause glare.

II. AGRICULTURAL AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology in Forest Protocols adopted by the California Air Resources Board. Would the project:

A. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use; or

B. Conflict with existing zoning for agricultural use, or a Williamson Act Contract?

FINDING: NO IMPACT:

The project site is primarily located within the existing roadway, where the ground is paved, and across the Alta Canal, which does not support active farmland. Zoning on the surrounding parcels is Limited Agricultural (AL-20) to the east and north with Trailer Park Residential (TP) to the southwest where the proposed replacement bridge will connect to South Frankwood Avenue. The Department of Conservation's 2014 Important Farmlands map designates lands in this area as Urban and Built-up land, Rural Residential land, and Farmland of Local Importance. The land designated as farmland is located directly north of the project site, outside the area of direct impacts from this project. None of the surrounding parcels are restricted by Williamson Act Contracts.

As a result of the zoning designations on the surrounding parcels and the designation of surrounding land uses as primarily urban/disturbed and residential, no impacts to agricultural resources are anticipated. Replacement of this bridge will not generate pressure for the conversion of offsite farmland because following construction, there will be minimal change to the baseline operation.

C. Conflict with existing zoning for forest land, timberland or timberland zoned Timberland Production; or

D. Result in the loss of forest land or conversion of forest land to non-forest use?

FINDING: NO IMPACT:

The project site and surrounding parcels are not zoned as forest land or timberland and therefore the proposed project will not have any impact on conflicts with or conversion of such lands.

E. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

FINDING: NO IMPACT:

Based on the lack of important farmlands and timberland in the vicinity of the project site, there will be no adverse impacts on such lands or the pressure to convert away from such uses on off-site parcels.

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

A. Conflict with or obstruct implementation of the applicable Air Quality Plan; or

B. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard; or

FINDING: LESS THAN SIGNIFICANT IMPACT:

The San Joaquin Valley Air Pollution Control District (Air District) reviewed this project and did not identify any concerns with potential air quality standards violations or nonconformity with existing Air Quality Plans. The project is anticipated to return to baseline traffic and use conditions following construction of the replacement bridge and because the original structure will continue to function as flood control for the canal, no new impacts are anticipated. Therefore, the project's contribution to air quality impacts and release of greenhouse gases is limited to the construction period. The Greenhouse Gas Memo prepared by LSA (dated December 17, 2019) used the Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model (ROADMod) to estimate the project's emissions during construction: 647.12 metric tons of Carbon Dioxide equivalent ($MTCO_2e$).

The Air District has not adopted significant thresholds for construction impacts; however, the anticipated release of 647.12 $MTCO_2e$ is less than the 900 $MTCO_2e$ threshold recommended by the California Air Pollution Control Officer's Association (CAPCOA) for construction impacts.

The limitation of the project's scope to the same intensity of use as the existing structure ensures compliance with Plans and Regulations, such as Assembly Bill (AB) 32 and AB 197. In further compliance with these plans, the construction fleet will be required to use vehicles which meet increasingly strict emission standards, in order to minimize the release of pollutants made by motor vehicles during the construction period.

C. Expose sensitive receptors to substantial pollutant concentrations; or

D. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

FINDING: NO IMPACT:

After construction, the bridge will function as an integral part of the circulation system, completely replacing the function existing bridge, although the existing bridge will remain in use to control the flow of the canal. The use of the project site as a bridge will not expose sensitive receptors to substantial pollutant concentration or result in other emissions because there will be no emissions during operation above the existing (baseline) usage of the bridge. Construction of the bridge will be temporary and will not produce substantial pollutant concentrations or odors.

IV. BIOLOGICAL RESOURCES

Would the project:

A. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

FINDING: LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

The woodland in the area of the canal is considered to be Valley Oak Riparian vegetation, which is regulated by the CDFW under Section 1602 of the California Fish and Game Code. Further from the canal, the community is considered Valley Oak Woodland. Up to 0.241 acre of permanent impacts and 0.607 acre of temporary impacts could occur to Valley Oak Woodland as a result of this project. In addition, up to 31 valley oak trees may be removed and the driplines of seven additional oak trees may be impacted. This is considered a significant impact to a sensitive habitat. Compensation for the impacted oak trees must be provided within other habitat in the Kings River watershed at a 3:1 ratio, consistent with the Valley Oak Management Plan.

Surveys were completed to determine if other special status species could be present:

- San Joaquin kit fox (mammal): a federally-endangered and California-threatened species which has been observed twice within ten miles of the project site. No suitable denning habitat was observed in the project area.
- Western pond turtle (reptile): a California species of special concern, which was not observed on the project site; however, suitable habitat is present.
- Migratory birds and raptors: suitable nesting habitat for migratory birds and raptors is present on the project site.

Due to the lack of suitable habitat and the presence of domestic canines in the area (three were observed during the field survey), the San Joaquin kit fox is not likely to be present on the subject parcel; however the western pond turtle, migratory birds, and the special status plants California satin-tail and forked hare-leaf have the potential to be present prior to the start of construction, despite not being observed during the field survey. Therefore, pre-construction surveys for special status plants and animals must be completed before the start of construction. If there is no presence of special-status species indicated by the surveys, then construction may proceed; otherwise appropriate avoidance measures, as defined by the mitigation measures below, must be followed.

* ***Mitigation Measures***

1. *Environmental Awareness Training shall be conducted for every employee before starting work on the project site. The training shall discuss special-status species and sensitive habitat in the area, how to recognize special-status species which might be present on the site, and actions to take in case such species are identified. The training will provide an environmental awareness handout that describes and illustrates sensitive resources to be avoided during project construction.*

2. *Before any ground-disturbing activity occurs within the entire project limits, temporary construction barrier fencing, silt fencing, and/or flagging shall be installed between the work area and environmentally sensitive habitat areas (i.e. waters, riparian habitat, special-status species habitat, and buffers around active bird/raptor nests), as appropriate. Construction personnel and construction activity shall avoid areas outside the fencing. The exact location of the fencing and/or flagging shall be determined by the resident engineer in coordination with a qualified biologist, with the goal of protecting sensitive biological habitat and water quality. The fencing/flagging shall be checked regularly and maintained until all construction is complete. Any required barrier or sediment fencing and a note reflecting this condition shall be shown on the final construction documents.*

3. *The following measures shall be implemented within the entire project limits to reduce the spread of invasive species:*
    a. *Only certified noxious weed-free erosion control materials shall be used. All stray and seed material shall be certified as weed-free prior to being used at the project site.*

   b. *Contractors shall wash all construction equipment prior to bringing it onto the job site. Such equipment shall be inspected to ensure that equipment arrives on site free of mud and seed-bearing material.*
   c. *Any reseeding of disturbed soil areas and newly constructed slopes shall use an appropriate native seed mix.*

4. *The following construction practice measures shall be implemented in order to protect wildlife during Project-related construction activities:*
   a. *All excavated steep-walled holes or trenches more than six inches deep shall be provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each workday. If escape ramps cannot be provided, then holes or trenches shall be covered with plywood or similar materials.*
   b. *All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at the construction site for one or more overnight periods shall be thoroughly inspected for kit fox and other wildlife species before the pipe is subsequently buried, capped, or otherwise used or moved in any way.*
   c. *All trenches and pipes shall be thoroughly inspected for the presence of wildlife at the beginning of each workday. Any species observed shall be allowed to voluntarily move outside of the work area on its own.*
   d. *All construction equipment and Project-related vehicles and construction equipment shall observe a daytime speed limit of 20 miles per hour throughout the entire project limits. In the event of night-time construction, the speed limit shall be 10 miles per hour. Off-road traffic outside of designated project areas shall be prohibited.*
   e. *All food-related trash items shall be disposed of in securely closed containers and removed from the project area daily.*
   f. *Workers shall not be permitted to bring domesticated pets, such as dogs and cats, to the project site to prevent harassment, mortality of kit foxes, or destruction of dens.*
   g. *Any wildlife species observed in the project area shall be allowed to voluntarily move outside of the work area on its own*
   h. *Use of rodenticides and herbicides in project areas shall be restricted. If rodent control must be conducted, zinc phosphide will be used because of a proven lower risk to kit fox and other wildlife species.*
   i. *No firearms shall be permitted at the project site.*

5. *A qualified biologist shall conduct pedestrian surveys for the San Joaquin Kit Fox at least 15 days prior to the start of construction. The entire project limits and a buffer of 200 feet from the project area shall be surveyed. The qualified biologist will conduct walking transects surveys that achieve 100 percent visual coverage for signs of special-status wildlife. If an individual or potential den feature is located during the preconstruction survey, the qualified biologist shall immediately notify Caltrans, who in turn will notify US Fish and Wildlife Service and the California Department of Fish and Wildlife, and additional surveys and reporting may be required.*

6. *A qualified biologist shall conduct a preconstruction clearance survey for western pond turtles within 48 hours prior to any ground disturbance in the project area. Any western pond turtles found within the construction work area shall be allowed to voluntarily move out of the area. If the individual does not move, a qualified biologist will, in coordination with Caltrans and California Department of Fish and Wildlife, assist in removing the turtle. If a western pond turtle nest containing eggs or young is identified within the construction work area, a qualified biologist will determine an appropriate no-disturbance buffer to ensure avoidance of the nest.*

7. *Botanical surveys for California satintail and forked hare-leaf shall be performed during the appropriate bloom period for these species (April-May) within two years of the start of construction. If special-status plants are found within the project site, individual plants shall be fenced off or flagged for avoidance. If the plants cannot be avoided, the topsoil (roughly 3-4 inches of soil where dormant seeds would be present), shall be removed and stockpiled on site. After finished grades generally have been achieved, the stockpiled topsoil will be redistributed within disturbed areas in the entire project limits.*

8. *If construction (including equipment staging and tree removal) will occur during the breeding season for migratory birds and raptors (generally between February 15 and September 1), the County shall retain a qualified biologist to conduct a preconstruction nesting bird and raptor survey before the onset of construction activities. The preconstruction nesting bird and raptor survey shall be conducted between February 15 and September 1 within suitable habitat within the entire project limits. Surveys for nesting migratory birds shall be completed within 100 feet of the entire project limits. Surveys for raptor nests should also extend 0.25 mile from the entire project limits to ensure that nesting raptors are not indirectly affected by construction noise. The survey shall be conducted not more than 14 days before the initiation of construction activities. If no active nests are detected during the survey, no addition mitigation is required to address concerns relating to migratory birds and raptors.*

   If migratory birds or raptors are found to be nesting in or adjacent to the Project area, a no-disturbance buffer of 100 feet around an active bird nest or 300 feet around an active raptor nest shall be established to avoid disturbance of the nest area and to avoid take. The buffer shall be maintained around the nest area until the end of the breeding season, or until a qualified biologist determines that the young have fledged and are foraging on their own. The extent of these buffers may be modified, as determined by the biologist (in coordination with Caltrans and CDFW), depending on the species identified, level of noise or construction disturbances, and other topographical or artificial barriers.

B. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

FINDING: LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

No waters of the U.S. are present within the Project area; however, there is one aquatic community (the canal), which may qualify as a water of the State, which would be regulated by the California Department of Fish and Wildlife (CDFW) and the Regional Water Quality Control Board (RWQCB). Up to 0.186 acres of permanent impacts and 0.204 acres of temporary impacts could occur to this water feature. In the area of the project, the canal has artificially maintained hydrology in a man-made canal excavated in uplands; however, the project will not result in long-term changes to the function and value of the canal. The project will be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) because the area of impacts (from the entire project) will be greater than one acre. The SWPPP will identify potential sources of pollution from the project and adopt measures to reduce releases to the Alta Main Canal. Best Management Practices (BMPs) will be identified to further reduce or minimize impacts as a result of spills or erosion. In addition to the BMPs identified in the SWPPP, the developer shall also implement the following Mitigation Measure identifying key BMPs to prevent adverse impacts from this project:

* ***<u>Mitigation Measures</u>***

 9. *The following Best Management Practices shall be implemented as part of the Stormwater Pollution Prevention Plan to address potential impacts to the Alta Main Canal:*

    a. *Sediment fencing, fiber rolls, or other equivalent erosion and sediment control measures shall be installed between the designated work area and the Alta Main Canal, as necessary, to ensure that construction debris and sediment does not inadvertently enter the waterway. Tightly woven fiber netting (no monofilament netting) or similar material shall be used for erosion control or other purposes within the Project work limits to ensure that wildlife is not trapped.*
    b. *All exposed soil shall be covered or otherwise stabilized within 48 hours prior to potential precipitation events of greater than 0.5 inch.*
    c. *All exposed soil shall be stabilized immediately after bridge construction is complete. Soil stabilization may include, but is not limited to, seeding with a native grass seed mix, planting native plants, and placement of rocks.*
    d. *Refueling, storage, servicing, or maintenance of equipment shall be prohibited within 100 feet of the aquatic habitat.*
    e. *All machinery used during construction of the proposed Project shall be properly maintained and cleaned to prevent spills and leaks that could contaminate soil or water.*
    f. *Any spills or leaks from construction equipment (e.g. fuel, oil, hydraulic fluid, grease, etc.) shall be cleaned up in accordance with applicable local, state, and/or federal regulations.*

C. Have a substantial adverse effect on state or federally-protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; or

D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

FINDING: LESS THAN SIGNIFICANT IMPACT:

During construction, flow from the Alta Canal will need to be diverted around the work area, which may result in temporary impacts to the canal, which is served with water from the Kings River. Because the canal typically discharges most of its water to irrigation turn-outs for agricultural purposes, it does not serve as a migratory corridor for fish and therefore no impacts to such migratory fish would occur.

Compliance to the SWPPP and the specifications of the Streambed Alteration Agreement (SAA) will ensure that permanent impacts to resources present within Alta Canal at this location do not occur. The bridge foundation is proposed to be driven H piles with concrete pile caps for both the abutments and piers. Concrete abutment pile caps would be placed outside the invert of the canal and would be excavated to a depth of about 5.5 feet. Two piers with concrete pile caps will be constructed in the canal invert and would be excavated to a depth of about 5.5 feet. This will result in limited interference in the flow of the canal. Such flow is managed by the existing weir beneath the bridge, which allows Alta Irrigation District to control how much water is released.

E. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

F. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan?

FINDING: LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

The Fresno County General Plan Policy OS-F.11 directs the County to encourage developers to follow the Fresno County Oak Woodlands Management Guidelines, which describe a voluntary process for Developers to reduce their impacts on existing Oak Woodlands. This process will be required as mitigation to ensure that impacts to remaining oaks are reduced to less than significant and that trees which are removed will be replaced at a higher ratio.

***** ***<u>Mitigation Measures</u>***

10. The Applicant shall develop an Oak Woodland Management Plan pursuant to County General Plan Policy OS-F.11 Part 1:

a. Construction shall adhere to the Oak Woodland Management Plan.
b. Compensation for impacted Oak Trees shall be at a ratio of 3:1 and replacement trees shall be planted within the Kings River watershed.

11. *Where possible, development shall avoid grade changes, trenching, compacting soils, and paving with non-porous materials within the drip-line of protected trees. In addition, grade changes that would cause water to pond within the drip-line of native oaks shall be prohibited.*

    Where encroachment of development into the dripline of a protected tree cannot be avoided, a qualified individual will provide recommendations to minimize adverse effects on those trees. For example, trenching within the protected zone of a protected tree may be permitted using hand tools to avoid root injury, all severed roots shall be cut cleanly, and no roots over 1-inch in diameter shall be cut without approval and oversight.

V. CULTURAL RESOURCES

Would the project:

A. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5; or

B. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5; or

C. Disturb any human remains, including those interred outside of formal cemeteries?

FINDING: LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

JRP Historical Consulting, LLC performed an archeological review of the project site and prepared a report titled *Historic Property Survey Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno, California*, dated April 2018. As the first step of that review, JRP Historical Consulting, LLC consulted with John Whitehouse, Caltrans PQS Principal Investigator, Prehistoric Archeology and James Perrault, Caltrans District 6 Local Assistance Engineer, to determine the area of potential effects (APE) on archeological resources. The APE for this project included the following: eastern and western approaches to the bridge with a sufficient buffer to include both the current and proposed alignments; potential staging areas; current right-of-way for North Frankwood Avenue; proposed right-of-way on two parcels; a third parcel where revised access to the right-of-way will be necessary; the current bridge structure; and the portion of the canal above and below the current and proposed bridges. The vertical APE was assumed to be no greater than five feet six inches below the current ground surface in all areas except the footprint of the bridge, where piles and footing may be installed at depths of 10 to 70 feet.

An archaeological pedestrian survey was conducted on June 10, 2016, by Far Western Anthropological Research Group, Inc., archaeologist John Berg who examined all unpaved portions of the APE. No archaeological resources were identified.

JRP conducted a records search, which determined that there were two previously recoded built environmental resources within one-quarter mile of the project site: the

Alta Main Canal and the Friant-Kern Canal, which passes through the southern edge of the records search area but was not determined to be within the APE. Further research into the historic integrity of the Alta Main Canal determined that it does not qualify as a historical resource. In addition, an Archaeological Extended Phase I coring effort included the excavation of four geoprobe cores. No archaeological deposits or stable soils likely to contain archaeological deposits were identified in the project area. The subject bridge was determined not to be eligible for listing in the National Register of Historic Places.

JRP reached out to the Native American Heritage Commission for a review of sacred land files and list of tribes who might have had ancestors in the vicinity of the project site. No known resources were recorded at the project site and none of the ten tribes contacted identified any unlisted resources at the site; however, one tribe identified this area as sensitive to archeological discoveries and recommended full-time tribal monitoring during construction. These concerns are addressed in greater detail in Section XVIII Tribal Cultural Resources. The following mitigation measures will reduce impacts on Cultural Resources to less than significant and are also necessary to address impacts to previously unknown Tribal Resources (Section XVIII):

12. *A qualified archaeologist/paleontologist, defined as one meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology (the "Qualified Archaeologist"), shall be on call during any ground-disturbing activity at the Proposed Project to evaluate any possible resources uncovered.*

13. *The Qualified Archaeologist shall conduct a preconstruction meeting to orient the construction crew to the potential for encountering prehistoric archaeological deposits during construction. This instructional meeting shall include a discussion of the types of artifacts that could be encountered and the steps to take upon discovery to avoid inadvertent impacts to such finds. The tribal monitors may be present at the preconstruction meeting.*

14. *In the event that unanticipated archaeological resources are encountered during Project activities, compliance with federal and state regulations and guidelines regarding the treatment of cultural resources and/or human remains shall be required, along with implementation of the following mitigation:*

    a. *All construction activities within 100 feet shall halt and the County shall be notified.*
    b. *The Qualified Archaeologist shall inspect the findings and report the results of the inspection to the developer and the County.*
    c. *In the event that the identified archaeological resource is determined to be prehistoric, the County and Qualified Archaeologist will coordinate with and solicit input from the appropriate Native American Tribal Representatives, as determined by consultation with the Native American Heritage Commission (NAHC), regarding significance and treatment of the resource as a tribal cultural resource. Any tribal cultural resources discovered during project work shall be treated in consultation with the tribe, with the goal of preserving in place with proper treatment.*

d. *If the County determines that the resource qualifies as a historical resource or a unique archaeological resource (as defined pursuant to CEQA Guidelines) and that the project has potential to damage or destroy the resource, mitigation shall be implemented in accordance with Public Resources Code Section 21083.2 and CEQA Guidelines Section 15126.4. Consistent with CEQA Guidelines Section 15126.4(b)(3), mitigation shall be accomplished through either preservation in place or, if preservation in place is not feasible, data recovery through excavation conducted by a qualified archaeologist implementing a detailed archaeological treatment plan.*

15. *If human remains are uncovered during Project activities, the Project owner shall immediately halt work, contact the Fresno County Sheriff-Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.4 (e)(1). If the County Sheriff-Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c) and Public Resources Code Section 5097.98 (as amended by AB 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per Public Resources Code Section 5097.98, and the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in Public Resources Code Section 5097.98, with the MLD regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains.*

VI. ENERGY

Would the project:

A. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or

B. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

FINDING: LESS THAN SIGNIFICANT IMPACT:

The project will expend the highest amount of energy from non-renewable resources during construction of the new bridge. After construction, it will have no operational emissions or use of energy. Project construction will occur in compliance with regulations which are intended to reduce emissions of criteria pollutants and increase efficiency. Doing so has the impact of also reducing wasteful and inefficient use of energy, specifically gasoline used to power commuter vehicles and construction equipment. Therefore, compliance with these regulations will reduce potential impacts to wasteful use of energy, and conflict with plans for energy efficiency will be less than significant.

VII. GEOLOGY AND SOILS

Would the project:

A. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

   1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

   2. Strong seismic ground shaking?

   3. Seismic-related ground failure, including liquefaction?

   4. Landslides?

   FINDING: NO IMPACT:

   Five soil map units occur within the BSA: Hanford fine sandy loam, gravelly substratum; Hesperia fine sandy loam, moderately deep, saline-alkali; Hesperia fine sandy loam, moderately deep; Tujunga soils, channeled, 0 to 9 percent slopes; and water (Natural Resource Conservation Service [NRCS] 2016). The Hanford fine sandy loam, gravelly substratum and Tujunga soils, channeled, 0 to 9 percent slopes soil map units are listed in the National Hydric Soil List (NHSL) (NRCS 2015). No other soil map units within the Project area are listed in the NHSL. The Initial Site Assessment performed by Haro Environmental and dated November 6, 2015, shows no earthquake fault lines within one mile of the project site. There are also no significant slopes in the vicinity of the project, with the exception of the bank of the Alta Main Canal. However, the existing bridge is currently subject to these conditions and therefore, the replacement will result in no changes to the baseline level of risk to motorists driving over the Canal in this location.

B. Result in substantial soil erosion or loss of topsoil; or

C. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; or

D. Be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property; or

FINDING: LESS THAN SIGNIFICANT IMPACT:

Five soil map units occur within the BSA: Hanford fine sandy loam, gravelly substratum; Hesperia fine sandy loam, moderately deep, saline-alkali; Hesperia fine sandy loam, moderately deep; Tujunga soils, channeled, 0 to 9 percent slopes; and water (Natural Resource Conservation Service [NRCS] 2016). The Hanford fine sandy loam, gravelly substratum and Tujunga soils, channeled, 0 to 9 percent slopes soil map units are listed in the National Hydric Soil List (NHSL) (NRCS 2015). No other soil map units within the Project area are listed in the NHSL. These soils are not considered to have a high shrink-swell potential (expansive).

Best Management Practices will be required by the project's adherence to regulations set forth by the Regional Water Quality Control Board, specifically the preparation of the SWPPP and application for SAA. These practices include the use of erosion control measures to avoid the possibility of landslide and lateral spreading thereby reducing the possibility of such impacts to less than significant.

E. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

FINDING: NO IMPACT:

The proposed project consists of a bridge for motorized transportation. While shoulders are proposed which could accommodate pedestrians and other non-motorized travelers, the purpose is to provide a connection from one side of the canal to the other and no permanent septic systems or other waste water services systems are required. Portable facilities will be provided during construction.

F. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

FINDING: NO IMPACT:

No unique paleontological or geologic resources, sites, or features were identified within the APE of the project. See additional discussion under Section V Cultural Resources and Section XVIII Tribal Cultural Resources. Mitigation measures were adopted to reduce potential impacts to previously-unknown historic, cultural, and/or paleontological resources.

VIII. GREENHOUSE GAS EMISSIONS

Would the project:

A. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

B. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

FINDING: LESS THAN SIGNIFICANT IMPACT:

The project's primary source of greenhouse gas emissions comes from the use of gas-powered machinery during construction and for transportation of construction workers in passenger vehicles. Following construction, the bridge will be part of the existing circulation system and will not result in further emissions. In general, Greenhouse Gas Reduction Plans, such as AB 32 and SB 32 focus on the reduction of operational emissions and increases in efficiency standards for commercial cars and trucks. Construction would comply with all existing regulations and would generate approximately 3.06 tons of CO and after consideration of all other GHGs released during construction, such as NOx, SOx, and $PM_{10/2.5}$, would generate approximately 647.12 Metric Tons of CO_2 equivalent ($MTCO_2e$). There are no thresholds of significance for construction impacts; therefore, due to the limited amount of overall emissions and the lack of operational emissions, there will be a less than significant impact on the generation of greenhouse gases and the project is in compliance with applicable plans, policies, and regulations.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

A. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or

B. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

FINDING: LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

A site visit was performed in order to determine if any hazardous materials or signs of hazardous materials were present at the project site or on surrounding properties. No such products or their indicators were present, which suggests that no storage of hazardous materials occurred on site. Since the project relates to an existing bridge, the use of such materials would not have been anticipated.

Following construction, there will be no movement of hazardous materials because the bridge will function as part of the complete circulation system. However, the following environmental hazards may be present: the concrete used to construct Alta Main Canal may contain asbestos; the paint used on the railing may contain lead; and the pole-mounted transformer may contain polychlorinated biphenyls (PCBs). In addition to the concrete, rails, and transformer, the potential exists for other, currently unknown, hazardous contamination to be encountered during construction. In these cases, existing Caltrans regulations require adherence to Caltrans Unknown Hazards Procedures, which are intended to reduce impacts from discovered hazards.

The following mitigation measures are required to reduce this impact to less than significant:

* ***Mitigation Measures***

16. *The developer shall perform an asbestos survey to determine whether or not the concrete contains asbestos. If asbestos-containing concrete is identified, it shall be treated in accordance with Caltrans' standards for handling of asbestos-containing materials.*

17. *The developer shall perform a lead-based paint survey to determine whether or not the railing paint contains elevated concentrations of lead. If the paint is determined to contain lead, it shall be treated in accordance with Caltrans's standards for handling of lead-based paint.*

18. *The developer shall contact the electric company responsible for the transformer and determine if the transformer contains polychlorinated biphenyls. If it does, then it shall be properly disposed of in accordance with rules and regulations.*

C. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

FINDING: NO IMPACT:

The project site is not located within one-quarter mile of an existing or proposed school.

G. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

FINDING: NO IMPACT:

The project site and nearby properties are not located on the Environmental Data Resources (EDR) list which was reviewed as part of the Phase I Environmental Site Assessment. One nearby site shown near the project site was mislabeled and in actuality, is located more than one mile from the project site. In addition, the National Pipeline Mapping System was reviewed for the presence of gas and hazardous liquid transmission pipelines with negative results. Therefore, due to the lack of reported hazardous materials handlers in the vicinity of the project, there are no impacts relating to public exposure as a result of recognized environmental hazards.

H. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

FINDING: NO IMPACT:

The project site is located near Harris Ranch Airport; however because there is no increase in the baseline usage at the site, there will be no increase in risk associated with employment or residency near an airport.

I. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

J. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

FINDING: NO IMPACT:

The proposed bridge will serve as an in-kind replacement for the existing deficient bridge which currently serves as part of the roadway network in the vicinity of Alta Main Canal. Because some of the bridge will be redesigned for improved safety, persons using the bridge as part of an evacuation will not be adversely impacted. Similarly, because this is a bridge replacement project and because the existing bridge will function as a detour during construction, there are no changes from the baseline risk of loss, injury, or death associated with wildland fires as the road will remain open continuously in this area.

X. HYDROLOGY AND WATER QUALITY

Would the project:

A. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality; or

B. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

FINDING: NO IMPACT:

Two groundwater wells are located within a one-quarter mile radius of the site with the closest well 276 feet to the west-north-west of the project site and used as an irrigation well. The nearest surface water body is the Alta Main Canal which is in the project area. No groundwater wells are located within the project area. Compliance with existing regulations relating to the discharge of pollutants to Alta Main Canal will reduce impacts to groundwater quality. The site will use a water truck for dust suppression purposes and will use portable sanitary facilities during construction, and therefore will not have an adverse impact on local groundwater supply.

C. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site?

1. Result in substantial erosion or siltation on- or off-site;
2. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?
3. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
4. Impede or redirect flood flows?

FINDING: LESS THAN SIGNIFICANT IMPACT:

The roadway and bridge profile are designed to slope from the east to the west, with the maximum slip of 1.15% occurring across the bridge. This will allow the canal freeboard desired by Alta Irrigation District while maintaining a similar elevation to the existing bridge. The grade at the north and south banks of the canal may be lowered to accommodate the proposed height of the bridge.

Construction shall occur during the dry season, when the flow of Alta Canal is at its lowest. However, because water does not cease flowing even during the driest parts of the year, a temporary diverter will be installed to protect the work area. Temporary diversion of the water will not have significant environmental impacts as the canal is expected to return to typical flow following completion of the project.

D. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

FINDING: NO IMPACT:

The project site is not located in an area at risk of seiche or tsunami based on its distance from large, still bodies of water or the ocean, respectively. The area of Alta Canal north of the existing bridge is designated by the Federal Emergency Management Agency (FEMA) as Flood Zone A, which is a special flood hazard area. The end of such designation occurs with the weir beneath the existing bridge and FEMA has not conducted further evaluation of the canal. Because this weir will continue to function controlling water flow during construction and operation of the replacement bridge, there will be no change in the flood zones and therefore no impact to the risk of flooding at the project site.

The project site is not located near the ocean, preventing impacts from tsunami; and is not located near a standing body of water which could be subject to seiche.

E. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

FINDING: LESS THAN SIGNIFICANT IMPACT:

California regulates activities and discharges in waters of the state through the State Water Resources Control board (SWRCB), which acts through the Regional Water Quality Control Board (RWQCB). The RWQCB requires that any entity proposing to discharge into State Waters first notify the RWQCB, who may then place waste discharge requirements on the project to ensure the protection of such waters. This project is obligated to provide such notification to the RWQCB and to implement any waste water discharge requirements. Such compliance will ensure that the project does not create a new source of pollution within the Alta Main Canal.

Because the project will disturb more than one acre of land, it is also required to prepare a Storm Water Pollution Prevention Plan (SWPPP), which will minimize construction and storm water impacts.

Work is proposed within the bed of the Alta Canal and the flow will be temporarily diverted around the work area. As a result, the developer is required to obtain a Streambed Alteration Agreement, which will outline additional measures that must be taken in order to prevent adverse impacts to water quality and special-status species. These actions are not considered mitigation because the project is required by law to apply for, obtain, and observe this agreement, although some required actions may be identified separately as mitigation measures within this document if such actions are determined to be necessary to reduce a potential impact to less than significant. In the case of impacts to the implementation of a water quality control plan, the impacts would be less than significant with compliance to existing regulations administered by the Water Resources Control Boards.

The project does not propose the use of groundwater during construction and will not require the use of water during operation, resulting in no impacts to groundwater sustainability.

XI. LAND USE AND PLANNING

Would the project:

A. Physically divide an established community?

FINDING: NO IMPACT:

This bridge replacement project will not physically divide an established community; it will create a new connection between the east and west sides of the Alta Canal, which will completely replace the existing bridge in that function. The existing bridge will continue to function as a weir for the canal but will not create a divide within an established community.

B. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

FINDING: LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

The replacement of a deficient bridge with one which has been designed for improved safety and meets current standards is not in conflict with any part of the General Plan. Improvements to the road system, including bridges, are encouraged by Goal TR-A: "to plan and provide a unified, coordinated, and cost-efficient countywide street and highway system that ensures the safe, orderly, and efficient movement of people and goods." Other policies which support the noted goal also support the replacement of deficient roadway structures with new ones that meet current safety standards.

In compliance with the Fresno County Oak Woodland Management Guidelines, the applicant will be required to prepare an Oak Woodland Management Plan to retain existing oaks, avoid tree root compaction, and replace trees whose removal was unavoidable. The need to replace removed oak trees at a 3:1 ratio is noted as mitigation in Section IV. Biological Resources. The project is therefore in conformance with the general plan and there will be less than significant impacts on the environment resulting from violation of a plan, policy, or regulation with compliance to the Mitigation Measure identified in Section IV, requiring the preparation and adherence to a Valley Oak Management Plan.

***** ***Mitigation Measures***

See Section IV. Biological Resources

XII. MINERAL RESOURCES

Would the project:

A. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or

B. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local General Plan, Specific Plan or other land use plan?

FINDING: NO IMPACT:

Figure 7-7 of the Fresno County General Plan Background Report maps areas where valuable material resources are located. The project site is not in the vicinity of such resources and therefore will have no impact on their availability.

XIII. NOISE

Would the project result in:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

FINDING: LESS THAN SIGNIFICANT IMPACT:

After construction, the project will be a seamless part of the existing circulation system and will not result in additional noise in the vicinity. Because the replacement bridge will be built downstream of the existing, it will be closer to the residential development on the west side of South Frankwood Avenue; however, the road is approximately 300 feet away with an average of 1,080 vehicles per day, therefore, the increase in noise levels due to the reduction in the distance of the bridge will be not be significant.

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or

FINDING: NO IMPACT:

The project site is not located in the vicinity of a private airstrip or airport land use plan. Following construction, the project site will be unmanned. Therefore, no impacts will occur as a result of location proximate to an airstrip.

XIV. POPULATION AND HOUSING

Would the project:

A. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); or

B. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

FINDING: NO IMPACT:

This project proposes to build a replacement bridge with improved geometric design slightly downstream from the existing bridge, which will continue to function as a weir after the bridge has been decommissioned. There are no residents in the project area although some driveways may need to be relocated as a result of the new bridge location. This impacts residents' approaches to their homes, but will not result in displacement, even temporarily, from their homes.

With the exception of the construction period, no employees will be present on the site. Construction is anticipated to take less than six months, making it unlikely that a large number of residents would move to the area as a result of the increased employment opportunity. The improved safety of the bridge is an asset to users of the road, but similarly not likely to attract a large number of new residents. Therefore, this project will have no impact on population growth in this area and will have no impact on the displacement of persons from existing housing.

XV. PUBLIC SERVICES

Would the project:

A. Result in substantial adverse physical impacts associated with the provision of new or physically-altered governmental facilities, or the need for new or physically-altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services?

1. Fire protection;

2. Police protection;

3. Schools;

4. Parks; or

5. Other public facilities?

FINDING: NO IMPACT:

While there may be a minor increase in the need for fire protection, police protection, and emergency services as a result of the increased activity on the project site associated with construction, these impacts will be temporary. Following construction, the replacement bridge will serve in identical capacity as the existing bridge and will not require the improvement or creation of public services in this area.

XVI. RECREATION

Would the project:

A. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or

B. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

FINDING: NO IMPACT:

The project will not increase the population size in the area (see discussion in Section XIV) and there are no parks in the vicinity of the bridge. Therefore, no impacts to existing neighborhood and regional parks will occur as a result of this project.

XVI. TRANSPORTATION

Would the project:

A. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities; or

B. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b); or

C. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or

D. Result in inadequate emergency access?

FINDING: NO IMPACT:

During construction of the replacement bridge, motorists will continue to have access to the existing bridge, which will result in no variation in the baseline circulation system in this area. Emergency access will be maintained. The improvement of old bridges is consistent with the General Plan (see Section XI Land Use and Planning).

Similarly, during operation, the replacement bridge will serve in the exact capacity as the existing bridge, albeit with a design that has been modified for improved safety. This will result in fewer geometric design hazards, as the bridge’s curve will be softened, which may be considered a minor benefit regarding design hazards. Therefore, the project will have no impact on increased hazard due to geometric designs or inadequate emergency access.

XVIII. TRIBAL CULTURAL RESOURCES

Would the project:

A. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

   1. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

   2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in

subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

FINDING: LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

Review of the study prepared by JRP Historical Consulting, LLC (JRP) indicated that there were no known resources at the project site. JRP also reached out to ten different Tribal Governments and several resource lists (such as the Sacred Lands files) and no resources were identified from any of these sources.

The County provided notice of this project to three Native American Tribal Governments who requested such notice pursuant to Assembly Bill 52 (AB 52). The project was determined to be outside of the area where the Santa Rosa Rancheria Tachi Yokut Tribal Government formally requested notice from the County. No comments were received during the 30-day response period prescribed by AB 52; however, when JRP reached out to the Tribal Governments provided by the NAHC, the Santa Rosa Rancheria Tachi Yokut Tribal Government indicated that the project area was sensitive to Tribal Resources and recommended that the County require on-site tribal monitoring during all ground disturbing activities.

In response to these concerns, JRP performed a buried archaeological site assessment to determine the site’s likely sensitivity to buried archeological resources. The buried site potential was determined using three main assumptions: that archaeological sites tend to be located near perennial or reliable water sources; that archaeological deposits from later time periods are more common because the density of human populations increased over time; and the longer a landform remained at the surface, the greater the probability that any one spot on that landform was occupied (JRP 2018).

As discussed under Section VII Geology and Soils, the soils at the project site are primarily Hesperia fine sandy loam with some Hanford fine sandy loam. On a geologic scale, these soils were recently deposited (late to recent Holocene) and due to their location near the Kings River are considered to have “high to highest” sensitivity for buried archaeological sites.

Since it cannot be shown with certainty that previously-unknown resources are not present below the ground surface and because this project site exhibits high potential for the presence of resources, mitigation measures are necessary to ensure that impacts to possible Tribal Cultural Resources are not significant. Mitigation Measures listed in Section V Cultural Resources also serve to reduce impacts on Tribal Cultural Resources; however, the following measure is necessary to address potential impacts specifically to previously undiscovered tribal resources:

***** ***<u>Mitigation Measures</u>***

See Section V. Cultural Resources

19. *Forty-eight (48) hours prior to any ground-disturbing activities within the entire project limits, such as digging, trenching, or grading, the Applicant shall notify all*

Tribes that participated in consultation of the opportunity to have a certified Native American Monitor present during those construction activities. Notification shall be by email to Shana Brum, Cultural Specialist II with the Santa Rosa Rancheria Tachi Yokut Tribe at spowers@tachi-yokut-nsn.gov. The tribal monitors shall be independently insured with policies conforming to County of Fresno requirements in order to enter the construction zone. Notification shall also be provided in the same manner at least 48 hours prior to any preconstruction meetings.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:

A. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects; or

B. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years; or

C. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments; or

D. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or

E. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

FINDING: NO IMPACT:

The project will have sufficient water supplies available to accommodate construction needs and no water would be necessary during operation of the project. Workers will be onsite for the construction period and portable sanitary facilities would be provided, as the project site will not be occupied following the end of construction. During operation, the bridge will be part of the transportation system in this area of the County and will function as part of the road.

No new facilities are required to address impacts from this project as all impacts will be temporary in nature and no permanent water supply, wastewater facilities, or other utilities are proposed as part of this application.

XX. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

A. Substantially impair an adopted emergency response plan or emergency evacuation plan, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects; or

B. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; or

C. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or

D. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

FINDING: NO IMPACT:

This project proposes to construct a new bridge over Alta Main Canal, to be built adjacent to the existing bridge, but with a softer curve to improve safety. Because the existing bridge serves as a weir for the canal, it will not be demolished; however, future access across the bridge would be limited to employees of the Alta Irrigation District.

The original bridge will remain open to the public during construction. Therefore, no detours would be required and there would be no impact on increased emergency response times. Further, the project site is not located in an area determined to be a very high fire hazard severity zone.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:

A. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

FINDING: LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

Biological and archeological surveys were conducted to determine if any existing resources were present within and around the project site. Neither study identified existing sensitive resources; however, the biological study determined that habitat was present which could support special-status species and the archeological investigation determined that the soils around the project site had high sensitivity to previously-undiscovered resources. Therefore, additional studies and minimization efforts are required to ensure that impacts to biological and cultural resources remain less than significant.

***** ***Mitigation Measures***

See Section IV. Biological Resources
See Section V. Cultural Resources
See Section XVIII. Tribal Cultural Resources

B. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects); or

C. Have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

FINDING: NO IMPACT:

Because the replacement bridge will perform the same function as the existing bridge, in the same capacity, impacts from the project would only result from the construction period. No significant cumulative impacts were identified as a result of construction of the proposed project.

CONCLUSION/SUMMARY

Based upon the Initial Study prepared for the Alta Main Canal Bridge Replacement, staff has concluded that the project will not have a significant effect on the environment.

It has been determined that there would be no impacts to Agricultural and Forestry Resources, Energy, Mineral Resources, Population and Housing, Public Services, Recreation, Transportation, Utilities and Service Systems, and Wildfire. Potential impacts related to Aesthetics, Air Quality, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, and Noise have been determined to be less than significant. Potential impacts relating to Biological Resources, Cultural Resources, Land Use and Planning, and Tribal Cultural Resources have determined to be less than significant with compliance with the noted Mitigation Measures.

A Mitigated Negative Declaration is recommended and is subject to approval by the decision-making body. The Initial Study is available for review at 2220 Tulare Street, Suite A, street level, located on the southwest corner of Tulare and "M" Street, Fresno, California.

CMM
G:\4360Devs&Pln\PROJSEC\PROJDOCS\Environmental\Initial Studies - Environmental Assessments\7000-7999\IS 7594 Alta Main Canal\IS-CEQA\IS 7594 wu.docx

County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

NOTICE OF DETERMINATION

To: ☐ Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

☒ County Clerk, County of Fresno
2221 Kern Street
Fresno, CA 93721

From: Fresno County Department of Public Works and Planning, Development Services and Capital Projects
2220 Tulare Street (corner of Tulare and "M") Suite "A", Fresno, CA 93721

Contact: Chrissy Monfette, (559) 600-4245

Subject: Filing of Notice of Determination in compliance with Section 21152 of the Public Resource Code

Project: Initial Study Application No. 7594

Location: The existing bridge (Bridge No. 42C0289) is located on North Frankwood Avenue at its intersection with the Alta Canal; approximately 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180. The replacement bridge will be constructed just south of the existing structure. County of Fresno.

Sponsor: Fresno County Department of Public Works and Planning Design Division

Description: The proposed two-lane bridge would be an approximately 145-foot-long, three-span, cast-in-place, concrete slab bridge located downstream of the existing bridge. The proposed bridge will have curb-to-curb width of approximately 32 feet, while the existing bridge only has a clear width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot wide shoulder in each direction, where the existing bridge has none. No new lanes will be added as part of this project. The total width of the proposed bridge deck would be 34.96 feet.

This is to advise that the County of Fresno (☒ Lead Agency ☐ Responsible Agency) has approved the above described project on April 14, 2020, and has made the following determination:

1. The project [☐ will ☒ will not] have a significant effect on the environment.
2. ☐ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☒ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project.

4. A mitigation reporting or monitoring plan [☒ was ☐ was not] adopted for this project.

5. A statement of Overriding Considerations [☐ was ☒ was not] adopted for this project.

6. Findings [☐ were ☒] were not made pursuant to the provisions of CEQA.

This is to certify that the Initial Study with comments and responses and record of project approval is available to the General Public at Fresno County Department of Public Works and Planning, 2220 Tulare Street, Suite A, Corner of Tulare and "M" Streets, Fresno, California.

_______________________________ _______________________________

Chrissy Monfette, Planner Date
(559) 600-4245 /EMAIL cmonfette@fresnocountyca.gov

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File original and one copy with: **Fresno County Clerk** **2221 Kern Street** **Fresno, Californima 93721**	Space Below For County Clerk Only. CLK-2046.00 E04-73 R00-00

Agency File No:		County Clerk File No:
IS 7594	**LOCAL AGENCY PROPOSED MITIGATED NEGATIVE DECLARATION**	**E-**

Responsible Agency (Name):	Address (Street and P.O. Box):	City:	Zip Code:
Fresno County	2220 Tulare St. Sixth Floor	Fresno	93721

Agency Contact Person (Name and Title):	Area Code:	Telephone Number:	Extension:
Chrissy Monfette, Planner	559	600-4245	N/A

Project Applicant/Sponsor (Name):	Project Title:
Alexis Rutherford, Design Division	Alta Main Canal Bridge Replacement

Project Description:

Replace the existing bridge on Frankwood Avenue where it crosses the Alta Main Canal. The proposed two-lane bridge would be an approximately 145-foot-long, three-span, cast-in-place, concrete slab bridge located downstream of the existing bridge. The proposed bridge will have curb-to-curb width of approximately 32 feet, while the existing bridge only has a clear width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot wide shoulder in each direction, where the existing bridge has none. No new lanes will be added as part of this project. The total width of the proposed bridge deck would be 34.96 feet.

Justification for Negative Declaration:

It has been determined that there would be no impacts to Agricultural and Forestry Resources, Energy, Mineral Resources, Population and Housing, Public Services, Recreation, Transportation, Utilities and Service Systems, and Wildfire.

Potential impacts related to Aesthetics, Air Quality, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, and Noise have been determined to be less than significant.

Potential impacts relating to Biological Resources, Cultural Resources, Land Use and Planning, and Tribal Cultural Resources have determined to be less than significant with compliance with the noted Mitigation Measures.

FINDING:

The proposed project will not have a significant impact on the environment.

Newspaper and Date of Publication:	Review Date Deadline:
Fresno Business Journal –	Board of Supervisors –

Date:	Type or Print Signature:	Submitted by (Signature):
	Marianne Mollring, Senior Planner	Chrissy Monfette, Planner

State 15083, 15085

County Clerk File No.:________________

LOCAL AGENCY MITIGATED NEGATIVE DECLARATION

County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

DATE: February 22, 2019

TO: Department of Public Works and Planning, Attn: Steven E. White, Director
Department of Public Works and Planning, Attn: Bernard Jimenez, Assistant Director
Department of Public Works and Planning, Attn: John R. Thompson, Assistant Director
Development Services and Capital Projects, Attn: William M. Kettler, Division Manager
Development Services and Capital Projects, Attn: Chris Motta, Principal Planner
Development Services and Capital Projects, Current Planning, Attn: Marianne Mollring, Senior Planner
Development Services and Capital Projects, Policy Planning, ALCC, Attn: Mohammad Khorsand, Senior Planner
Development Services and Capital Projects, Zoning & Permit Review, Attn: Tawanda Mtunga
Development Services and Capital Projects, Building & Safety/Plan Check, Attn: Chuck Jonas
Resources Division, Solid Waste, Attn: Amina Flores-Becker/Sally Lopez
Development Engineering, Attn: Laurie Kennedy, Grading/Mapping
Road Maintenance and Operations, Attn: Frank Daniele/Nadia Lopez
Design Division, Special Projects/Road Projects, Attn: Mohammad Alimi/Dale Siemer
Design Division, Transportation Planning, Attn: Mohammad Alimi/Dale Siemer
Water and Natural Resources Division, Attn: Glenn Allen, Division Manager
Department of Public Health, Environmental Health Division, Attn: Deep Sidhu/ Steven Rhodes
Sheriff's Office, Attn: Captain John Zanoni, Lt. John Reynolds, Lt. Louie Hernandez, Lt. Kathy Curtice, Lt. Ryan Hushaw
U.S. Fish and Wildlife Service, San Joaquin Valley Division, Attn: Sarah Yates
U.S. Environmental Protection Agency, Air Division, Air Planning Office, Region 9, Attn: Dawn Richmond
CA Regional Water Quality Control Board, Attn: Dale Harvey
CALTRANS, Attn: Dave Padilla
CA Department of Fish and Wildlife, Attn: Craig Bailey, Environmental Scientist & R4CEQA@wildlife.ca.gov
CA Environmental Protection Agency, Department of Toxic Substance Control, Attn: Supervising Hazardous Substance Scientist
CA Department of Toxic Substance Control (CEQA unit), Attn: Dave Kereazis (PIC-CEQA Division),
Attn: PIC Supervisor
Sierra Resource Conservation District, Attn: Steve Haze, District Manager

FROM: Chrissy Monfette, Planner
Development Services and Capital Projects Division

SUBJECT: Initial Study Application No. 7594

The Department of Public Works and Planning, Development Services and Capital Projects Division is reviewing the subject application proposing to replace the existing Alta Main Canal Bridge on Frankwood Avenue on a new alignment downstream from the existing bridge.

The Department is also reviewing for environmental effects, as mandated by the California Environmental Quality Act (CEQA) and for conformity with plans and policies of the County.

Based upon this review, a determination will be made regarding conditions to be imposed on the project, including necessary on-site and off-site improvements.

We must have your comments by **March 11, 2019**. Any comments received after this date may not be used.

If you do not have comments, please provide a "NO COMMENT" response to our office by the above deadline (e-mail is also acceptable; see email address below).

Please address any correspondence or questions related to environmental and/or policy/design issues to me, Chrissy Monfette, Planner Development Services and Capital Projects Division, Fresno County Department of Public Works and Planning, 2220 Tulare Street, Sixth Floor, Fresno, CA 93721, or call (559) 600-4245 or email CMonfette@co.fresno.ca.us.

CMM:
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Activity Code (Internal Review):2335

Enclosures

Project Description

Alta Main Canal Bridge Replacement Project
on Frankwood Ave., 1.15 mi. S/o Piedra Rd.

The County of Fresno, in cooperation with California Department of Transportation (Caltrans), is proposing to replace the existing Alta Main Canal Bridge on Frankwood Avenue on a new alignment downstream from the existing bridge, see Attachment A for a Location Map and Attachment B for a schematic drawing of the proposed project, including potential area for staging.

Project History

The existing two-lane bridge (Bridge No. 42C0289), located on North Frankwood Avenue 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180, is integrated with a controlled weir structure that stretches the full length of the bridge, and is owned and operated by the Alta Irrigation District. The existing bridge was built in 1925, and is a four-span cast-in-place/reinforced concrete bridge with asphalt surfacing on the deck. Last inspected in 2014, the existing bridge has a sufficiency rating of 50.5 and has an Average Daily Traffic (ADT) of 1,080.

Project Purpose

The purpose of the proposed project is to construct a new wider bridge and bridge approaches that meet current design standards, improve sight distance and improve the curve radius to eliminate the 15 mile per hour curve at the west end of the existing bridge. Deficiencies in the Alta Main Canal Bridge include transverse deck cracking over the bents, longitudinal and pattern cracking, insufficient curb-to-curb clear width, narrow traffic lanes ,without shoulders, narrow and winding approach roads with poor sight distance, and guardrails and railings that do not meet American Association of State Highway and Transportation Officials (AASHTO) standards. The project is needed to replace a deficient bridge and improve overall safety conditions along North Frankwood Avenue.

Project Description

The proposed two-lane bridge would be an approximately 145-foot-long, three-span, cast-in-place, concrete slab bridge located downstream of the existing bridge. The proposed bridge will have curb-to-curb width of approximately 32 feet, while the existing bridge only has a clear width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot wide shoulder in each direction, whereas the existing bridge has none. The total width of the bridge deck would be approximately 34.96 feet. The bridge foundation is proposed to be driven H piles with concrete pile caps for both the abutments and piers. Concrete abutment pile caps would be placed outside the invert of the canal and would be excavated to a depth of about 5.5 feet. Two piers with concrete pile caps will be constructed in the canal invert and would be excavated to a depth of about 5.5 feet. All elements of the new bridge would meet or exceed AASHTO standards.

The proposed project would widen the bridge approaches from 19 feet to 32 feet to accommodate the new structure, and realign North Frankwood Road to the new bridge location. The alignment change would improve sight distance to the bridge compared to existing conditions. The west bridge approach conform extends about 460 feet from the bridge and the east conform extends about 345 feet from the bridge. The new roadway alignment will require the driveways that serve the properties north of Frankwood Avenue and the canal access roads to be modified to conform to the new roadway alignment and profile. The access to the Alta Irrigation District field office (northwest of bridge) will also need to be realigned to conform to the new roadway alignment.

The Alta Irrigation District owns and operates the Alta Main Canal and associated right of way. The County will work with the Alta Irrigation District to schedule construction of the proposed project and obtain right of way for the new alignment. The roadway and bridge alignment may require additional right of way acquisition from two adjacent private properties, and project construction would require temporary construction easements from Alta Irrigation District and nearby property owners.

The existing bridge and roadway alignment would function as an onsite detour for vehicular traffic during construction of the project. Once the project is completed, the existing bridge would remain intact and continue to serve as an irrigation control structure; with access to the bridge limited to the Alta Irrigation District.

Construction Methods and Schedule

New bridge construction will require temporary access to the canal to provide temporary formwork for the new abutments and piers. It is anticipated that bridge abutments would be diaphragm abutments supported on driven "H" piles. At the pier locations, driven "H" piles would support solid pier walls that would be aligned with the centerline of the canal. Because Alta Irrigation District operates the canal during the spring/summer irrigation season (typically May through August), bridge construction will occur during the fall/winter season when the canal is not in operation and will have minimal flow. The canal gates on the control structure do not seal; therefore, it will be necessary to install a temporary water diversion utilizing a sand bag coffer dam within the channel to divert canal flows from the work area. Based on preliminary estimates, the Project is anticipated to require one construction season and approximately 100-120 working days (5 to 6 months) to complete.

Construction staging could occur within the project area, or in other areas negotiated by the contractor. Expected activities in staging areas include but are not limited to the following:

- Worker parking;
- Assembly area for formwork and active equipment use (e.g., cranes, concrete pump trucks);
- Overnight parking and temporary storage of construction equipment;
- Fueling and maintenance of construction equipment;
- Temporary storage of construction materials; and
- Construction trailers for the contractor, resident engineer, and/or inspector (if needed).

Attachments:

A – Location Map
B – Schematic drawing project and area for potential staging
C – Photos

D – Geotracker Map
E – FEMA FIRM
F – National Wetlands Inventory Map

Technical Reports transmitted via G:\PUBLIC\JMartin\Alta Main Bridge on Frankwood

Original Project Routing

IS 7594
(Application No.)

Fresno County Department of Public Works and Planning

MAILING ADDRESS:
Department of Public Works and Planning
Development Services Division
2220 Tulare St., 6th Floor
Fresno, Ca. 93721

LOCATION:
Southwest corner of Tulare & "M" Streets, Suite A
Street Level
Fresno Phone: (559) 600-4497
Toll Free: 1-800-742-1011 Ext. 0-4497

APPLICATION FOR:

- ☐ Pre-Application (Type) ____________
- ☐ Amendment Application
- ☐ Amendment to Text
- ☐ Conditional Use Permit
- ☐ Variance (Class)/Minor Variance
- ☐ Site Plan Review/Occupancy Permit
- ☐ No Shoot/Dog Leash Law Boundary
- ☐ General Plan Amendment/Specific Plan/SP Amendment)
- ☐ Time Extension for ____________
- ☐ Director Review and Approval
  - ☐ for 2nd Residence
- ☐ Determination of Merger
- ☐ Agreements
- ☐ ALCC/RLCC
- ☒ Other Environmental Review

DESCRIPTION OF PROPOSED USE OR REQUEST:
Alta Main Canal Bridge Replacement on N. Frankwood Ave.

CEQA DOCUMENTATION: X *Initial Study* ☐ *PER* ☐ *N/A*

PLEASE USE FILL-IN FORM OR PRINT IN BLACK INK. Answer all questions completely. Attach required site plans, forms, statements, and deeds as specified on the Pre-Application Review. **Attach Copy of Deed, including Legal Description**.

LOCATION OF PROPERTY: ____________ side of N. Frankwood Ave., 1.15 mi S/o Piedra Rd.

between ____________ and ____________

Street address: ____________

APN: ____________ Parcel size: ____________ Section(s)-Twp/Rg: S ____ - T ____ S/R ____ E

ADDITIONAL APN(s): ____________

I, Jeffrey Martin (*signature*), declare that I am the owner, or authorized representative of the owner, of the above described property and that the application and attached documents are in all respects true and correct to the best of my knowledge. The foregoing declaration is made under penalty of perjury.

	Address	City	Zip	Phone
County of Fresno Owner (Print or Type)				
PW&P, Design Division Applicant (Print or Type)				
Jeffrey Martin Representative (Print or Type)	2220 Tulare Stree, 7th Floor	Fresno	93721	04530

CONTACT EMAIL:

OFFICE USE ONLY (*PRINT FORM ON GREEN PAPER*)

Application Type / No.:	Fee: $
Application Type / No.:	Fee: $
Application Type / No.:	Fee: $
Application Type / No.:	Fee: $
~~PER~~/Initial Study No.: 7594	Fee: $ 1,212.00
Ag Department Review:	Fee: $
Health Department Review:	Fee: $ 338.00
Received By: CMM Invoice No.:	TOTAL: $ 1,550.00

UTILITIES AVAILABLE:

WATER: Yes ☐/ No ☐
Agency: N/A

SEWER: Yes ☐/ No ☐
Agency: N/A

STAFF DETERMINATION: This permit is sought under Ordinance Section:

Sect-Twp/Rg: ____ - T____ S/R____ E

Related Application(s): ____________

APN # ___ - ___ - ___

Zone District: ____________

APN # ___ - ___ - ___

Parcel Size: ____________

APN # ___ - ___ - ___

APN # ___ - ___ - ___

(*PRINT FORM ON GREEN PAPER*)

County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

INITIAL STUDY APPLICATION

OFFICE USE ONLY
IS No. ____________
Project No(s). ____________
Application Rec'd.: ____________

INSTRUCTIONS

Answer all questions completely. An incomplete form may delay processing of your application. Use additional paper if necessary and attach any supplemental information to this form. Attach an operational statement if appropriate. This application will be distributed to several agencies and persons to determine the potential environmental effects of your proposal. Please complete the form in a legible and reproducible manner (i.e., USE BLACK INK OR TYPE).

GENERAL INFORMATION

1. Property Owner : County of Fresno ***Phone/Fax*** ____________

Mailing Address: ____________
Street ***City*** ***State/Zip***

2. Applicant : Dept. of Public Work and Planning ***Phone/Fax:*** 04509

Mailing Address: 2220 Tulare Street, 7th Floor, Fresno, CA 93721
Street ***City*** ***State/Zip***

3. Representative: Jeffrey Martin/Alexis Rutherford ***Phone/Fax:*** 04509/04530

Mailing Address: Same as above
Street ***City*** ***State/Zip***

4. Proposed Project: Alta Main Canal Bridge Replacement Project on Frankwood Avenue

5. Project Location: N. Frankwood Ave., 1.15 mi S/o Piedra Rd.

6. Project Address: N/A

7. Section/Township/Range: ______/______/______ ***8. Parcel Size:*** N/A

9. Assessor's Parcel No. N/A

OVER.......

10. ***Land Conservation Contract No. (If applicable):*** ______

11. ***What other agencies will you need to get permits or authorization from:***

- [ ] ***LAFCo (annexation or extension of services)***
- [ ] ***CALTRANS***
- [ ] ***Division of Aeronautics***
- [ ] ***Water Quality Control Board***
- [x] ***Other*** Caltrans
- [ ] ***SJVUAPCD (Air Pollution Control District)***
- [ ] ***Reclamation Board***
- [ ] ***Department of Energy***
- [ ] ***Airport Land Use Commission***

12. ***Will the project utilize Federal funds or require other Federal authorization subject to the provisions of the National Environmental Policy Act (NEPA) of 1969?*** x ***Yes*** ______ ***No***

If so, please provide a copy of all related grant and/or funding documents, related information and environmental review requirements.

13. ***Existing Zone District[1]:*** ______

14. ***Existing General Plan Land Use Designation[1]:*** Transportation

ENVIRONMENTAL INFORMATION

15. ***Present land use:*** Transportation

Describe existing physical improvements including buildings, water (wells) and sewage facilities, roads, and lighting. Include a site plan or map showing these improvements:

Describe the major vegetative cover: See biological report

Any perennial or intermittent water courses? If so, show on map: yes

Is property in a flood-prone area? Describe:

no

16. ***Describe surrounding land uses (e.g., commercial, agricultural, residential, school, etc.):***

North: rural residential

South: rural residential/trailer park

East: rural residential

West: rural residential/trailer park

17. ***What land use(s) in the area may be impacted by your Project?:*** None

18. ***What land use(s) in the area may impact your project?:*** None

19. ***Transportation:***

NOTE: The information below will be used in determining traffic impacts from this project. The data may also show the need for a Traffic Impact Study (TIS) for the project.

A. Will additional driveways from the proposed project site be necessary to access public roads?
_______ ***Yes*** x ***No***

B. Daily traffic generation:

I. Residential - Number of Units N/A
Lot Size N/A
Single Family N/A
Apartments N/A

II. Commercial - Number of Employees N/A
Number of Salesmen N/A
Number of Delivery Trucks N/A
Total Square Footage of Building N/A

III. Describe and quantify other traffic generation activities: None

20. ***Describe any source(s) of noise from your project that may affect the surrounding area:***
Temporary construction noise

21. ***Describe any source(s) of noise in the area that may affect your project:*** None

22. ***Describe the probable source(s) of air pollution from your project:*** Temporary dust from construction activities

23. ***Proposed source of water:***
☐ ***private well***
☐ ***community system[3]--name:*** N/A

OVER.........

24. Anticipated volume of water to be used (gallons per day)[2]: N/A

25. Proposed method of liquid waste disposal:
( ) septic system/individual
( ) community system[3]–name N/A

26. Estimated volume of liquid waste (gallons per day)[2]: N/A

27. Anticipated type(s) of liquid waste: N/A

28. Anticipated type(s) of hazardous wastes[2]: N/A

29. Anticipated volume of hazardous wastes[2]: N/A

30. Proposed method of hazardous waste disposal[2]: N/A

31. Anticipated type(s) of solid waste: N/A

32. Anticipated amount of solid waste (tons or cubic yards per day): N/A

33. Anticipated amount of waste that will be recycled (tons or cubic yards per day): N/A

34. Proposed method of solid waste disposal: N/A

35. Fire protection district(s) serving this area: N/A

36. Has a previous application been processed on this site? If so, list title and date: N/A

37. Do you have any underground storage tanks (except septic tanks)? Yes______ No X

38. If yes, are they currently in use? Yes______ No______

TO THE BEST OF MY KNOWLEDGE, THE FOREGOING INFORMATION IS TRUE.

SIGNATURE **DATE**

[1]Refer to Development Services and Capital Projects Conference Checklist
[2]For assistance, contact Environmental Health System, (559) 600-3357
[3]For County Service Areas or Waterworks Districts, contact the Resources Division, (559) 600-4259

(Revised 12/14/18)

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

April 25, 2017

Regulatory Division (SPK-2017-00311)

County of Fresno
Attn: Ms. Alexis Rutherford
2220 Tulare Street, 7th Floor
Fresno, California 93721

Dear Ms. Rutherford:

We are responding to your March 20, 2017, request for a preliminary jurisdictional determination (JD) for the Alta Main Canal Bridge Replacement site. The approximately 2.875-acre project site is located on Alta Main Canal, at Latitude 36.7425°, Longitude -119.4460°, Fresno County, California.

Based on available information, we concur with your aquatic resources delineation for the site as depicted on the enclosed April 21, 2017, Alta Main Canal Bridge Replacement Preliminary Jurisdictional Determination prepared by Area West Environmental (enclosure 1). The approximately 0.657 acre of open water present within the survey area is a potential jurisdictional aquatic resource ("waters of the United States)" regulated under Section 404 of the Clean Water Act.

At your request, we have completed a preliminary JD for the site. Enclosed find a copy of the *Preliminary Jurisdictional Determination Form* (enclosure 2). Please sign and return the completed form to this office, at the address listed below, within 30 days of the date of this letter. If you do not return the signed form within 30 days, we will presume concurrence and finalize the preliminary jurisdictional determination.

You may request an approved JD for this site at any time prior to starting work within waters, including after a permit decision is made.

We recommend you provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This preliminary jurisdictional determination has been conducted to identify the potential limits of wetlands and other aquatic resources at the project site which may be subject to U.S. Army Corps of Engineers jurisdiction under Section 404 of the Clean Water Act and/or Section 9 and 10 of the Rivers and Harbors Act. A *Notification of Appeal Process and Request for Appeal Form* is enclosed to notify you of your options with this determination (enclosure 3).

We appreciate feedback, especially about interactions with our staff and processes.

Please refer to identification number SPK-2017-00311 in any correspondence concerning this project. If you have any questions, please contact me at U.S. Army Corps of Engineers, Regulatory Division, California South Branch, 1325 J Street, Room 1350, Sacramento, California 95814-2922, by email at *Marc.A.Fugler@usace.army.mil*, or telephone at (916) 557-5255. For program information or to complete our Customer Survey, visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

Sincerely,

Marc A. Fugler
Senior Project Manager, CA South Branch
Regulatory Division

Enclosures

cc: (w/o encls)

Mr. Matt Scroggins, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board (5F); mscroggins@waterboards.ca.gov
Ms. Linda Connolly, California Department of Fish and Wildlife, Region 4; linda.connolly@wildlife.ca.gov
Ms. Becky Rozumowicz, Area West Environmental; becky@areawest.net
Mr. Elmer Llamas, Caltrans, District 6; elmer.llamas@dot.ca.gov

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: April 25, 2017

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Alexis Rutherford

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento, SPK-2017-00311
Alta Main Canal Bridge Replacement

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: CA County/parish/borough:Fresno City:

Center coordinates of site (lat/long in degree decimal format):

Lat.: 36.7423 Long.: -119.4459

Universal Transverse Mercator: Zone 11

Name of nearest waterbody: Alta Main Canal

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: April 25, 2017

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
1	36.7423	-119.4459	0.657	Non-wetland Waters	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- [x] Maps, plans, plots or plat submitted by or on behalf of the PJD requestor: Alta Main Canal Bridge Replacement, 4-21-17.
- [ ] Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - [ ] Office concurs with data sheets/delineation report.
  - [ ] Office does not concur with data sheets/delineation report. Rationale: _______.
- [ ] Data sheets prepared by the Corps: ________.
- [ ] Corps navigable waters' study: ____________.
- [ ] U.S. Geological Survey Hydrologic Atlas: ________.
  - [ ] USGS NHD data.
  - [ ] USGS 8 and 12 digit HUC maps.
- [x] U.S. Geological Survey map(s). Cite scale & quad name: Wahtoke Quad.
- [x] Natural Resources Conservation Service Soil Survey. Citation: NRCS 2016.
- [x] National wetlands inventory map(s). Cite name: FWS 2016
- [ ] State/local wetland inventory map(s): ____________.
- [ ] FEMA/FIRM maps: ______________.
- [ ] 100-year Floodplain Elevation is: ____. (National Geodetic Vertical Datum of 1929)
- [x] Photographs: [x] Aerial (Name & Date): .
  - [ ]
- [ ] Previous determination(s). File no. and date of response letter: __________.
- [ ] Other information (please specify): ____________.

<u>**IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.**</u>

Marc A Fugl 4/25/2017

Signature and date of Regulatory staff member completing PJD

Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: County of Fresno, Attn: Ms. Alexis Rutherford		File No.: SPK-2017-00311	Date: April 25, 2017
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
	APPROVED JURISDICTIONAL DETERMINATION		D
X	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at *http://www.usace.army.mil/cecw/pages/reg_materials.aspx* or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT
REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Marc A. Fugler U.S. Army Corps of Engineers Regulatory Division California South Branch 1325 J Street, Room 1350 Sacramento, California 95814 Phone: (916) 557-5255, FAX 916-557-7803 Email: Marc.A.Fugler@usace.army.mil	Thomas J. Cavanaugh Administrative Appeal Review Officer U.S. Army Corps of Engineers South Pacific Division 1455 Market Street, 2052B San Francisco, California 94103-1399 Phone: 415-503-6574, FAX 415-503-6646) Email: Thomas.J.Cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

ALTA MAIN CANAL BRIDGE REPLACEMENT PROJECT

Preliminary Jurisdictional Determination

- Project Area (2.875 acres)
- Open Water (OW; 0.657 acre)
- Ordinary High Water Mark (OHWM)
- Photo Point and Direction (PP-1)
- Wetland Data Points (DP-A)
- Elevation Contours (feet)

N

0 100 200 feet

1 inch = 100 feet

Data Source:
- ESRI Aerial Basemaps, June 18, 2014

Date: 7-6-16
Revised Date: 4-21-17

AREA WEST ENVIRONMENTAL, INC.

THE COUNTY OF FRESNO 1856

D:\AWE\15-013-001 NTP for Alta\mxd\Alta_Wet_Landscape.mxd

Historic Property Survey Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno, California

By:
Adrian Whitaker, Ph.D.
Far Western Anthropological Research Group, Inc.

Cheryl Brookshear, M.A.
JRP Historical Consulting, LLC

April 2018

Submitted to:
Aimee Dour-Smith
Area West Environmental, Inc.
6248 Main Avenue, Suite C
Orangevale, CA 95662

FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
http://www.farwestern.com 530-756-3941

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State of California Transportation Agency | Department of Transportation

HISTORIC PROPERTY SURVEY REPORT

1. UNDERTAKING DESCRIPTION AND LOCATION

District	*County*	*Federal Project. Number. (Prefix, Agency Code, Project No.)*	*Location*
6	FRE	BRLO 5942(247)	North Frankwood over Alta Main Canal

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

The studies for this undertaking were carried out in a manner consistent with Caltrans' regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 CFR Part 800) and pursuant to the January 2014 *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act* (Section 106 PA), as well as under Public Resources Code 5024 and pursuant to the January 2015 *Memorandum of Understanding Between the California Department of Transportation and the California State Historic Preservation Office Regarding Compliance with Public Resources Code Section 5024 and Governor's Executive Order W-26-92* (5024 MOU) as applicable.

Project Description:

The County of Fresno is proposing the Alta Main Canal Bridge Project, which would replace the existing four-span, integrated controlled weir concrete slab bridge (Bridge No. 42C0289) over the Alta Main Canal with a new four-span, cast-in-place, concrete slab bridge. The new bridge construction would include widening North Frankwood Avenue as part of the new approach. The project is located on North Frankwood Avenue, approximately nine miles northeast of the City of Sanger, California.

The original bridge crossing the Alta Main Canal was constructed in 1914 as a four-span structure consisting of one integrated weir, concrete slab bridge.

The existing bridge is functionally obsolete with a sufficiency rating of 50.6. It cannot be widened to current standards; thus, a replacement bridge is required. To avoid lengthy road closures, the existing bridge will remain open until the new bridge and approaches are finished, and will then be used solely by the Alta Irrigation District for the maintenance of the weir and canal.

The new bridge alignment to the south of the existing bridge is necessary to allow for the improved west bridge approach and the eastern bridge approach realignment of North Frankwood Avenue while maintaining access to the current bridge to traffic. The new bridge would be approximately 145 feet long and would span the Alta Main Canal to the south of the existing bridge. Foundation construction would consist of either spread footings (which would result in 10–20 feet of excavation) or cast-in-drilled hole piles not more than 50–70 feet deep. Curb-to-curb bridge width will be no less than 22 feet, following American Association of State Highway Transportation Officials requirements.

Additional right-of-way will be required for the eastern and western roadway approaches, and existing overhead utility lines may need to be relocated. The potential staging areas would be located within the project boundary, likely within open areas south.

2. AREA OF POTENTIAL EFFECTS

In accordance with Section 106 Programmatic Agreement Stipulation VIII.A, the Area of Potential Effects (APE) for the project was established in consultation with John Whitehouse, PQS Principal Investigator, Prehistoric Archaeology, and James Perrault, District 6 Local Assistance Engineer and signed on June 15, 2016. The APE is in the Historical Resources Evaluation Report (HRER; Attachment A, Appendix A, Figure 3) and Archaeological Survey Report (ASR; Attachment B; Figure 3).

The archaeological APE includes both eastern and western approaches to the bridge with a sufficient buffer to include both the current and proposed alignments. The potential staging areas are also included. The vertical APE is assumed to be no greater than five feet six inches below current ground surface in all areas except the footprint of the new bridge, where piles and footings may be installed at a depth of 10 to 70 feet.

The APE for this project includes the current right-of-way for North Frankwood Avenue and two parcels that contain the new right-of-way. A third parcel, owned by Alta Irrigation District, will require revised access to the new right-of-way and is also included in the APE. The APE includes the current bridge structure and a portion of the Alta Main Canal above and below the current and proposed bridges.

3. CONSULTING PARTIES / PUBLIC PARTICIPATION

☒ Local Government

- A letter was sent to Alberto Custodio, Chair of the Planning Commission, City of Reedley on September 7, 2016. A follow-up email was sent to Mr. Custodio on October 14, 2016. No responses received.
- A letter was sent to Cindy Freeland, Secretary of the Fresno County Historical Landmarks & Records Advisory Commission on September 7, 2016.
- Penny Raven of the Fresno County Historical Landmarks & Records Advisory Commission called Cheryl Brookshear of JRP Historical Consulting, LLC, (JRP) on October 11, 2016, and contact was established on October 14, 2016. Penny Raven indicated that the organization had no real comments about the project, but had several questions. Ms. Raven inquired as to the date of construction for the bridge (1914), and what would happen to the bridge once the new bridge was constructed, and the location of the new bridge. Ms. Raven and her husband also own property southeast of the bridge.
- Ms. Raven sent a letter from the Fresno County Historical Landmarks & Records Advisory Commission to JRP via email on October 17, 2016, stating that the commission did not know of any historical resources in the APE.

☒ Native American Heritage Commission

- No sacred lands were identified in a search on July 1, 2016.
- List of 10 interested Native Americans was provided on July 1, 2016.

☒ Native American Tribes, Groups and Individuals

- A letter was sent to Claudia Gonzalez, Picayune Rancheria of Chukchansi on July 7, 2016. No response was received and no email or telephone number were provided by the Native American Heritage Commission.
- A letter was sent to Mary Matola, Picayune Rancheria of Chukchansi on July 7, 2016. No response was received and no email or telephone number were provided by the Native American Heritage Commission.
- A letter was sent to Michael Russel, Table Mountain Rancheria, on July 7, 2016. No response was received. In a follow-up telephone call on July 28, 2016, the caller was informed that Mr. Russel no longer worked at Table Mountain and the call was transferred to Mr. Bob Pennell.
- A letter was sent to Bob Pennell, Table Mountain Rancheria, on July 7, 2016. A telephone message was left on July 28, 2016, but to date no response has been received.
- A letter was sent to Leane Walker-Grant, Table Mountain Rancheria, on July 7, 2016. A telephone message was left on July 28, 2016, but to date no response has been received.
- A letter was sent to Neil Peyron, Tule River Indian Tribe, on July 7, 2016. An email was sent to Mr. Peyron and a telephone message was left on July 28, 2016, but to date no response has been received.
- A letter was sent to Kerri Vera, Tule River Indian Tribe, on July 7, 2016. An email was sent to Ms. Vera on July 28, 2016, and in a follow-up phone call Ms. Vera requested a copy of the letter be sent via email. The letter was transmitted and no further comment has been received.
- A letter was sent to Joey Garfield, Tule River Indian Tribe, on July 7, 2016. In correspondence with Ms. Kerri Vera, also of the Tule River Indian Tribe we were informed that Mr. Garfield was on the tribal council now and no longer part of the cultural office. No further response was received from Mr. Garfield.
- A letter was sent to Rueben Barrios Sr., Santa Rosa Rancheria Tachi Yokut Tribe, on July 7, 2016. Ms. Shana Brum responded in an email on behalf of the Tachi Yokut Tribe on July 14, 2016, that the project is in a highly sensitive area and recommended full-time Native American monitoring during construction.
- A letter was sent to Lalo Franco, Santa Rosa Rancheria Tachi Yokut Tribe, on July 7, 2016. Ms. Shana Brum responded in an email on behalf of the Tachi Yokut Tribe on July 14, 2016, that the project is in a highly sensitive area and recommended full-time Native American monitoring during construction.

☒ Local Historical Society / Historic Preservation Group

- A letter was sent to Ruth Lang of the Fresno Historical Society on September 7, 2016.
- A letter was sent to Ann Johnson, Corresponding Secretary of the Tulare County Historical Society on September 7, 2016.
- A letter was sent to the Tulare County Museum on September 7, 2016.
- Follow up email communication was sent to the above organizations on October 14, 2016. No responses received.

4. SUMMARY OF IDENTIFICATION EFFORTS

☒ National Register of Historic Places (NRHP)

☐ California Points of Historical Interest

☒ California Register of Historical Resources (CRHR)

☒ California Historical Resources Information System (CHRIS)

☒ National Historic Landmark (NHL)

☒ Caltrans Historic Bridge Inventory

☒ California Historical Landmarks (CHL)

☐ Caltrans Cultural Resources Database (CCRD)

☒ Other Sources consulted:

- JRP conducted research in the files of the Alta Irrigation District, Dinuba on September 14, 2016.
- JRP conducted research in the Special Collection and regular collection of the Henry Madden Library, California State University, Fresno on September 15, 2016.
- Additional research was conducted at Shields Library, University of California, Davis; and the California State Library, Sacramento and in materials previously collected by JRP at the above mentioned repositories.

☒ Results:

- Records Search: Archival records searches revealed two previously recorded built environmental resources within one-quarter mile of the project area. The first is the Alta Main Canal (FRE-PRO-002) while the second is the Friant-Kern Canal (P-10-005801), which passes through the southeastern edge of the records search area, but is outside of the APE.
- An archaeological pedestrian survey was conducted on June 10, 2016, by Far Western Anthropological Research Group, Inc., archaeologist John Berg who examined all unpaved portions of the APE. No archaeological resources were identified.
- An Archaeological Extended Phase I coring effort included the excavation of four geoprobe cores. No archaeological deposits or stable soils likely to contain archaeological deposits were identified in the project area.
- JRP reviewed the California Historic Bridge Inventory, which listed Alta Main Canal headgate/bridge (42C0289) as ineligible for listing in the National Register of Historic Places (National Register). Consultation with Caltrans Architectural Historian John Whitehouse concluded that the bridge required re-evaluation to assess its potential significance for including a water conveyance control structure as part of an irrigation system.
- Review of the Historic Property Data File for Tulare and Fresno Counties maintained by the Office of Historic Preservation indicates that several canals in the Alta Irrigation District, not including the Alta Main Canal, were previously evaluated. These canals—A. B. Clark Ditch, Traver Canal, Caesar Canal, Kennedy Wasteway, Dinuba Town Ditch, Smith Mountain Canal, and Horsman Ditch—were found not eligible for the National Register or California Register of Historical Resources largely due to integrity issues.

- JRP also reviewed research the company had conducted for evaluation of AID canals in 2008 for the Historical Resources Inventory and Evaluation Report, prepared for the Kings River Conservation District Community Power Plant Project, Fresno County Supplemental Report of the Gas Pipeline Route. The canals studied for that project included the Traver Canal, Caesar Canal, Banks Ditch, West Section 20 Canal, McClanahan Ditch, Grove Ditch, and the Cross Creek Wasteway. JRP concluded these canals were not eligible due to diminished integrity or late addition to the system. No confirmation of State Historic Preservation Officer (SHPO) concurrence was identified.
- JRP's research conducted at Alta Irrigation District offices, as well as at the Henry Madden Library, California State University, Fresno; Shield Library, University of California, Davis; and California State Library, Sacramento resulted in general and property-specific information used in the historic context and Department of Parks and Recreation (DPR) 523 forms in the HRER (Attachment A).

5. PROPERTIES IDENTIFIED

☒ Cheryl Brookshear, JRP Historical Consulting, LLC, who meets the Professionally Qualified Staff (PQS) Standards in Section 106 PA Attachment 1 and as applicable PRC 5024 MOU Attachment 1 as an Architectural Historian, has determined that the only/only other properties present within the APE meet the criteria for Section 106 PA Attachment 4 (**Properties Exempt from Evaluation**) and as applicable PRC 5024 MOU Stipulation VIII.C.1 and Attachment 4 as Type 2 properties (buildings, structures, objects less than 30 years old).

☒ Caltrans, in accordance with Section 106 PA Stipulation VIII.C.5 and as applicable PRC 5024 MOU Stipulation VIII.C.5 has determined there are cultural resources within the APE that were **previously determined not eligible** for inclusion in the NRHP and/or not eligible for registration as a CHL with SHPO concurrence and those determinations remain valid. Copy of SHPO/Keeper correspondence is attached.

☒ Bridges listed as **Category 5** (previously determined not eligible for listing in the NRHP) in the Caltrans Historic Bridge Inventory are present within the APE and those determinations remain valid. Appropriate pages from the Caltrans Historic Bridge Inventory are attached.

- JRP reviewed the California Historic Bridge Inventory, which listed Alta Main Canal headgate/bridge (42C0289) as ineligible for listing in the National Register. As noted, consultation with Caltrans Architectural Historian John Whitehouse concluded that the bridge required re-evaluation to assess its potential significance for including a water conveyance control structure as part of an irrigation system. This evaluation is provided on the DPR 523 form in the HRER (Attachment A, Appendix B).

☒ Caltrans has determined there are cultural resources within the APE that were evaluated as a result of this project and are **not eligible** for inclusion in the NRHP/CHL. Under Section 106 PA Stipulation VIII.C.6 and as applicable PRC 5024 MOU Stipulation VIII.C.6, Caltrans requests SHPO's concurrence in this determination.

Name	Address/Location	Community	OHP Status Code	Map Reference
Alta Main Canal	Wahtoke, California Quadrangle	Fresno County	6Z	1
Alta Main Canal Bridge (42C0289)/Alta Main Canal Headgate	North Frankwood Avenue	Sanger (vic), California	6Z	2
Alta Irrigation Ditch Tender's Residence	347 North Frankwood Avenue	Sanger (vic), California	6Z	3

6. FINDING FOR THE UNDERTAKING

☒ Caltrans, pursuant to Section 106 PA Stipulation IX.A and as applicable PRC 5024 MOU Stipulation IX.A.2, has determined a Finding of **No Historic Properties Affected** is appropriate for this undertaking because there are no historic properties within the APE.

7. CEQA CONSIDERATIONS

☒ Caltrans PQS has determined that there are resources in the project area that **are not significant resources** under CEQA; see Section 5.

8. LIST OF ATTACHED DOCUMENTATION

☒ Project Vicinity, Location, and APE Maps

See Attachment B, Figures 1, 2, and 3.

☒ Attachment A: Historical Resources Evaluation Report (HRER)

JRP Historical Consulting, LLC (2017) *Historical Resources Evaluation Report Alta Main Canal Bridge Replacement Project, Fresno County, California*.

☒ Attachment B: Archaeological Survey Report (ASR)

Wisely, Justin (2017) *Archaeological Survey Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno County, California*.

☒ Attachment C: Extended Phase I Report (XPI)

Scher, Naomi, Nick Longo, and Jack Meyer (2018) *Extended Phase I Archaeological Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno, California.*

9. HPSR PREPARATION AND CALTRANS APPROVAL

Prepared by:

4/2/18

Consultant:	Adrian Whitaker, Principal Investigator, Prehistoric Archaeology	Date
Affiliation:	*Far Western Anthropological Research Group, Inc.*	

Reviewed for approval by:

District 6 Caltrans PQS discipline/level:	John Whitehouse, Principal Investigator, Archaeology and Architectural History	Date

Approved by:

District EBC:	Shane Gunn, Senior Environmental Planner	Date

ATTACHMENT A

HISTORICAL RESOURCES EVALUATION REPORT
(JRP HISTORICAL CONSULTING 2017)

Original Project Routing

HISTORICAL RESOURCES EVALUATION REPORT

Alta Main Canal Bridge Replacement Project

Fresno County, California

Federal Aid Project No. BRLO 5942(247)

Prepared for:

County of Fresno Department of Public Works and Planning
2220 Tulare Street, Sixth Floor
Fresno, CA 93721

Reviewed by:

____

John Whitehouse
Caltrans PQS, Architectural Historian
Caltrans District 6
855 M Street, Suite 200
Fresno, CA 93721

Approved by:

____

Shane Gunn, Environmental Planning Branch Chief
Caltrans District 6
855 M Street, Suite 200.
Fresno, CA 93721

Prepared by:

____

Christopher McMorris, Partner / Architectural Historian
Cheryl Brookshear, Staff Architectural Historian
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

April 2017

SUMMARY OF FINDINGS

The County of Fresno, in cooperation with the California Department of Transportation (Caltrans), proposes to replace the bridge across the Alta Main Canal on North Frankwood Avenue. The new bridge would meet current standards and be constructed on a new alignment that will soften the existing curve and improve sight distance. The replacement bridge will be constructed south of the existing bridge, which will remain as an irrigation structure. The project vicinity and location are illustrated in **Figures 1** and **2** in **Appendix A**. The Area of Potential Effect (APE) for this project includes a portion of the Alta Main Canal, parcels that contain the new right of way, and a parcel that will require new access to the realigned North Frankwood Avenue. See **Appendix A**, **Figure 3** for a map of the APE.

JRP Historical Consulting, LLC (JRP) prepared this Historical Resources Evaluation Report (HRER) and identified three properties in the APE that required formal evaluation. These include the Alta Main Canal, Alta Main Canal Bridge (Bridge No. 42C0289), and Alta Irrigation District Ditch Tender's Residence (Assessor Parcel Number 333-43-15). This HRER concludes that none of these properties meet the criteria for listing in the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR). This conclusion is pursuant with Stipulation VIII.C of the *First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (Section 106 PA). Additionally, pursuant to Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA), using criteria outlined in Section 5024.1 of the California Public Resources Code, the resources studied for this report are not historical resources for the purposes of CEQA. The resources are document are California Department of Parks and Recreation (DPR) 532 forms, provided in **Appendix B**.

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ATTACHMENTS

1. PROJECT DESCRIPTION [1]

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is proposing to replace the existing bridge on North Frankwood Avenue over the Alta Main Canal (Canal) with the construction of a new bridge built to current standards on a new alignment. Construction of the new bridge would require the realignment and widening of North Frankwood Avenue. This realignment and widening will soften the existing curve in the road and improve overall sight distance.

The existing two-lane bridge (Bridge No. 24C0289), located on North Frankwood Avenue 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180, is integrated with a controlled weir structure that stretches the full length of the bridge and is owned and operated by the Alta Irrigation District (AID). The existing bridge was built in 1914 and is a four-span cast-in-place/reinforced concrete bridge with asphalt surfacing on the deck.

The proposed two-lane bridge would be an approximately 145-foot-long, four-span, cast-in-place, concrete slab bridge located downstream of the existing bridge. The proposed bridge will have curb-to-curb width of 32 feet, while the existing bridge only has a width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot shoulders in each direction, whereas the existing bridge has none. The total width of the bridge deck would be 34.8 feet. Concrete footings would be placed outside the invert of the canal and would be excavated to a depth of about 5.5 feet. All these improvements to the existing bridge would meet or exceed American Association of State Highway and Transportation Officials (AASHTO) standards.

The proposed Project would widen the bridge approaches from 19 feet to 32 feet to accommodate the new structure and realign North Frankwood Road to the new bridge location. The alignment change would improve sight distance to the bridge compared to existing conditions. The west bridge approach conform extends about 460 feet from the bridge and the east conform extends about 345 feet from the bridge. The new roadway alignment will require the driveways that serve the properties north of North Frankwood to be modified to conform to the new roadway alignment and profile. The access to the AID field office (northwest of bridge) will need to be realigned to conform to the new roadway alignment. The roadway and bridge profile is designed to slope from the east to the west, with the maximum slope of 1.15% occurring across the bridge. The intent is for the bridge deck elevation to approximate the elevation of the existing bridge while providing the canal freeboard desired by AID. The preliminary profile shows it will be necessary to lower the grade at the north and south banks of the canal to accommodate the realigned North Frankwood Avenue, but will not encroach on the

[1] Project Description provided by Area West Environmental, Inc.

canal freeboard. The roadway and bridge realignment will require the acquisition of right-of-way from AID and the Project construction would most likely require temporary construction easements from adjacent property owners. The road right-of-way for the existing bridge and the portions of North Frankwood that will no longer be needed will be relinquished to AID.

The existing bridge and roadway alignment would function as an onsite detour for vehicular traffic during construction of the Project. Once the Project is completed, the existing bridge would remain intact and continue to serve as an irrigation control structure; access to the bridge will be limited to AID.

To alleviate access constraints on maintenance activities and to minimize scour, the County is considering the placement of a concrete liner in the canal between the existing bridge and the downstream limit of the proposed bridge. The use of rip-rap is not proposed at this time.

Purpose and Need

The purpose of the proposed Project is to construct a new wider bridge and bridge approaches that meet current design standards, improve sight distance and improve the curve radius to eliminate the 15 mph curve at the west end of the existing bridge. The existing bridge has been listed by Caltrans as functionally obsolete. Deficiencies in the Alta Main Canal Bridge include: transverse deck cracking over the bents, longitudinal and pattern deck cracking, insufficient curb-to-curb clear width, narrow traffic lanes and shoulders, narrow and winding approach roads with poor sight distance, and guardrails and railings that do not meet AASHTO standards. The Project is needed to replace a functionally obsolete bridge and improve overall safety conditions along North Frankwood Avenue.

Construction Methods and Schedule

New bridge construction will require temporary access to the canal to provide temporary formwork for the new abutments and piers. It is anticipated that bridge abutments would be diaphragm abutments supported on driven "H" piles. At the pier locations, driven "H" piles would support solid pier walls that will be aligned with the centerline of the canal. Because Alta Irrigation District operates the canal during the spring/summer irrigation season (typically May through August), bridge construction will occur during the fall/winter season when the canal is not in operation and will have minimal flow. The canal gates on the control structure do not seal; therefore, it will be necessary to install a temporary water diversion within the channel to divert canal flows from the work area. Based on preliminary estimates, the project is anticipated to require one construction season and approximately 100 to 120 working days (5 to 6 months) to complete.

Construction staging would occur within the Project area (Figure 1-3), including areas that are paved or have been previously disturbed in the Project area, or in other areas negotiated by the contractor. The contractor would be responsible for ensuring environmental clearance for any staging areas outside the Project area evaluated in this report. Expected activities in staging areas include but are not limited to the following:

- Worker parking;
- Assembly area for formwork and active equipment use (e.g., cranes, concrete pump trucks);
- Overnight parking and temporary storage of construction equipment;
- Fueling and maintenance of construction equipment;
- Temporary storage of construction materials; and
- Construction trailers for the contractor, resident engineer, and/or inspector (if needed).

Typical construction equipment will include, but is not limited to, those listed in table below.

Proposed Construction Equipment

Equipment	Construction Purpose
Asphalt Concrete Paver	Paving roadways
Backhoe	Soil manipulation and drainage work
Bobcat	Fill distribution
Bulldozer/Loader	Earthwork construction, cleaning and grubbing
Crane	Placement of placing of forms, and rebar
Concrete Truck	Concrete delivery
Concrete Pump	Concrete Placing
Dump Truck	Fill material delivery/surplus removal
Excavator	Soil manipulation
Front –end Loader	Dirt or gravel manipulation
Grader	Ground leveling
Haul Truck	Earthwork construction; clearing and grubbing
Pile Driving Hammers and Equipment	Bridge pile placement
Roller / Compactor	Earthwork construction
Scraper	Earthwork construction; clearing and grubbing
Truck with Seed Sprayer	Landscaping
Water Truck	Earthwork construction; clearing and grubbing; dust supression

APE

The APE for this project includes the current right of way for North Frankwood Avenue and two parcels that contain the new right of way. A third parcel that is owned by AID, and which will require revised access to the new right of way, is also included. The APE includes the current bridge / headgate structure and a portion of the Alta Main Canal above and below the current and proposed bridge. The project vicinity and location are illustrated in Figures 1 and 2 in **Appendix A.** The APE for this project is Figure 3 in **Appendix A.**

2. RESEARCH AND FIELD METHODS

Survey and evaluation for the Alta Main Canal Bridge (42C0289) Replacement Project included research for developing a general historic context relative to the Alta Irrigation District (AID), and Fresno County development, as well as resource-specific research to confirm dates of construction, establish the physical history of Alta Main Canal and ditch tender's residence, and to place the buildings and structures into their appropriate historic contexts. JRP conducted research at Alta Irrigation District, Dinuba; Shields Library, University of California – Davis; Special Collections, Henry Madden Library, California State University – Fresno; California State Library, Sacramento; online databases; and in JRP's in-house library. In addition, JRP examined standard sources of information that identify known and potential historic resources to determine whether any buildings, structures, objects, districts, or sites had been previously recorded or evaluated in or near the APE. JRP reviewed the California Historic Bridge Inventory which listed Alta Main Canal headgate/ bridge (42C0289) as ineligible for listing in the NRHP. Consultation with Caltrans resolved that since the bridge had not been evaluated as an irrigation structure a full evaluation was indicated. Review of additional standard resources included reviewing the California Historical Landmarks and Points of Interest publications and updates, NRHP, and CRHR, as well as the results of a California Historical Resources Information System records search through the Central California Information Center (CCIC File No. 16-250) performed by Far Western Anthropological Research Group (Far Western), which prepared the Archaeological Survey Report (ASR) for this project.[2] This review indicated that no resources within the APE, beyond the headgate/bridge, had been previously evaluated. The Alta Main Canal was previously recorded in 1991 at two points, but not evaluated. Review of the Historic Property Data File for Tulare and Fresno Counties maintained by the Office of Historic Preservation indicates that several AID canals, not including the Alta Main Canal, were previously evaluated. These included the A.B. Clark Ditch, Traver Canal, Caesar Canal, Kennedy Wasteway, Dinuba Town Ditch, Smith Mountain Canal, and Horsman Ditch. None of these was found eligible. JRP conducted a previous study in Tulare County and studied several AID canals including Traver Canal, Caesar Canal, Banks Ditch, West Section 20 Canal, McClanahan Ditch, Grove Ditch, and the Cross Creek Wasteway; these canals found not eligible for the NRHP or CRHR largely based on their diminished levels of historic integrity or because they were late additions to the system.[3]

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[2] National Park Service, National Register Information System, online database: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome (accessed August 2016); Department of Parks and Recreation, *California Inventory of Historic Resources*, (Sacramento: Department of Parks and Recreation, March 1976); Office of Historic Preservation, *California Historical Landmarks* (Sacramento: California State Parks, 1996); and Office of Historic Preservation, *California Points of Historical Interest* (Sacramento: California State Parks, May 1992).

[3] Office of Historic Preservation, Historic Property Data File Fresno and Tulare Counties, August 5, 2011; JRP Historical Consulting, LLC, *Historical Resources Inventory and Evaluation Report for the Kings River Conservation District Community Power Plant Project Fresno County Supplemental Report of the Gas Pipeline Route,* for Navigant Consulting, October 2008.

JRP staff conducted a field survey of the APE on September 14-15, 2016, and recorded the historic resources on the DPR 523 forms provided in **Appendix B**.

JRP identified potential local interested parties for this project and sent notification letters on September 7, 2016. Recipients of the letter were the Fresno Historical Society, Reedley Planning Commission, Fresno County Historical Landmarks & Records Advisory Commission, Tulare County Historical Society and the Tulare County Museum. The letters were followed with e-mails on October 14, 2015. Penny Raven of the Fresno County Historical Landmarks & Records Advisory Commission contacted JRP via telephone. In a conversation on October 14, 2016 she indicated that the commission had no concerns, but did have questions about the project. Per her inquiry JRP provided the year the bridge was built, the proposed disposition of the bridge, and the general proposed location for the new bridge. Ms. Raven also indicated that she and her husband owned property southeast of the proposed project. Ms. Raven forwarded a letter stating that they knew of no historical resources in the area from the commission on October 17, 2016. No other responses have been received. See **Appendix C** for a copy of the letter to interested parties and follow up correspondence.

3. HISTORICAL OVERVIEW

The Alta Main Canal Bridge on North Frankwood Avenue is located in the San Joaquin Valley in an unincorporated area of Fresno County on the southeast side of the Kings River as it exits the foothills of the Sierra Nevada. This section of the Kings River, from the Alta Main Canal to the pioneer settlement of Centerville known as the Centerville Bottoms, became the nexus for river diversions that irrigated portions of Fresno and Tulare counties. The development of irrigation spurred the settlement of this region. The predecessor of the Alta Irrigation District (AID) was the 76 Land and Water Company, which introduced irrigation to the northwest section of Tulare County and southern Fresno County (downstream from the APE) contributing to the area's settlement. In comparison to other patterns of settlement in this region and as discussed below, the 76 Land and Water Company varied slightly in that in the 1880s it constructed a complete irrigation system from diversion to delivery in order to promote its own land holdings; actions previously and contemporaneously conducted separately from one another. The company and AID both struggled with legal issues regarding their land and water practices, as well as regarding access to water, that influenced the region's early growth and development. AID remains the primary irrigation system in northwestern Tulare County and a small area of Fresno County starting approximately five miles south of the study area for this report. Water from AID does not serve the vicinity in and around the APE.

The resources evaluated in this HRER are all associated with AID. Thus, this context provides a history of AID and the forces that shaped its development. The APE is located at the northern tip of the district; the surrounding landscape is little influenced by the system's features therein. The AID head works and main canal for the district originate in this region, which affected the development of system and the region it served (mostly in Tulare County). The context discusses the development of the main canal, headgate, and ditch tender's residence located within the APE.

3.1. Centerville Bottoms

Spanish explorer Gabriel Moroza named the Kings River when he camped along it in 1805. Fresno County remained largely unaffected by European settlement through the Mexican era with only a single land grant issued within the county. With the transfer of California to the United States and the discovery of gold in the Sierra Nevada, settlement in Fresno County began along the Kings River. The oldest settlement in the area was Centerville located approximately three miles west of the APE. The area was an early population and agricultural center.[4]

[4] Paul E. Vandor, *History of Fresno County California* (Fresno, California: Historic Record Company, 1919) 277; Eva Garbarino Cortner and Illawaynne Goodall, *A History of the Centerville Community and its Schools* (n.p: no publisher, no date) 2-4; John Hazelton, "Centerville," *Fresno Centennial Almanac* (Fresno, California: Fresno County Centennial Committee, 1956) 94.

The success of agriculture in the area using the numerous channels of the Kings River led to the development of irrigated agriculture. Settlers in the San Joaquin Valley were among the earliest in the state to establish irrigation for agriculture. Starting as early as the late 1850s and early 1860, earthen ditches and diversions were built to take irrigation water out of the Kings and Kaweah rivers to serve nearby farms. These early efforts were rare as most of the settlers in this region preferred cattle raising and dry-farm cultivation of grains. The passage of the "no fence" law in 1874, however, forced stockmen to fence or remove their stock increasing the interest in agriculture and irrigation, and the San Joaquin Valley became California's wheat belt in the 1870s. Among the first successful efforts in irrigation was at Centerville where a group of landowners formed the Centerville Canal and Irrigation Company in the late 1860s and cleared a natural channel to create the Centerville Ditch to facilitate irrigation within the Centerville Bottoms. There was also Sweem's Ditch built north of Centerville in 1869 that powered a grist mill that later came to be used for irrigation. Further west near Fresno at this time local irrigation proponent M. J. Church, with the help of local large landowner A.Y. Esterby, formed the Fresno Canal and Irrigation Company and purchased the Centerville and Sweem's ditches in the mid-1870s to bring Kings River water to the Fresno plain via the Fresno Canal. The canal also served lands owned by large scale owners Williams S. Chapman and Issac Friedlander. Also during the early 1870s the Kings River and Fresno Canal Company system was established by L. A. Gould. Gould initially created the company to provide Kings River water to his farmland north of the Fresno Canal, which expanded to serve 15,000 acres by 1900. Both the Fresno Canal and Irrigation Company and the Kings River and Fresno Canal Company systems were later incorporated into the Fresno Irrigation District. Different from the 76 Land Company and Water Company efforts, discussed below, these early systems represented private water companies owning irrigation works separate from the lands served. Irrigated lands contracted with the companies like the Fresno Canal and Irrigation Company for the delivery of water. Land owners often invested in the canal companies, but did not have controlling interests.[5]

Other early irrigation canals taking water from the Kings River include the Centerville and Kingsburg Canal, built in 1877-78, and the Fowler Switch Canal, built 1883. These private small-company canals, financed and largely built by local landowners, were mutual water companies, developed and owned by the landowners served. These two canals were later incorporated into the Consolidated Irrigation District situated west of the Alta Irrigation District. Other mutual ditches from the 1870s included the People's Ditch and Lake Side Ditch that diverted from lower down on the Kings River and served portions of Kings County to the west. Many other ditches and canals were built further downstream starting in the late nineteenth

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[5] JRP and Caltrans, *Water Conveyance Systems in California*, 13-14, 19-20; Frank Adams, *Irrigation Districts in California, Bulletin No. 29*, State of California, Department of Public Works, Reports of the Division of Engineering and Irrigation (Sacramento: California State Printing Office, 1929), 204-205; Virginia E. Thickens, "Pioneer Agricultural Colonies of Fresno County," *California Historical Society Quarterly* 25 No. 1(September 1946) 21-22, 26-33.

century in areas later incorporated into irrigation districts such as the Riverdale, Crescent, Stinson, James, Tranquility, Lucerne, and Lemoore irrigation districts (**Map 1**).[6]

Map 1. 1929 map showing the relative location of irrigation districts served by the Kings River.[7]

Irrigation was the key to developing land in the San Joaquin Valley and over the next several decades court precedent, legislation, and entrepreneurial investors created a sound model for irrigated agricultural development known as the colony system. Investors subdivided tracts from 1,000-3,000 acres into small family sized farms, and constructed an irrigation distribution system linked to one of the larger systems with diversion works on the river. The addition of irrigation increased the value of the land allowing the investors to sell at a profit. Developers did not always own shares of the supplying irrigation canal but often retained ownership of local irrigation system. Water contracts were usually included in the land sale for the early colonies. These early colonies were usually marketed to different ethnic or social groups to assist in the

[6] Frank Adams, *Irrigation Districts in California*, 209, 224, JRP and Caltrans, *Water Conveyance Systems in California*, 13-14; Virginia E. Thickens, "Pioneer Agricultural Colonies of Fresno County," *California Historical Society Quarterly* 25 No. 1(September 1946) 22.
[7] Frank Adams, *Irrigation Districts in California*, Plate XXVI.

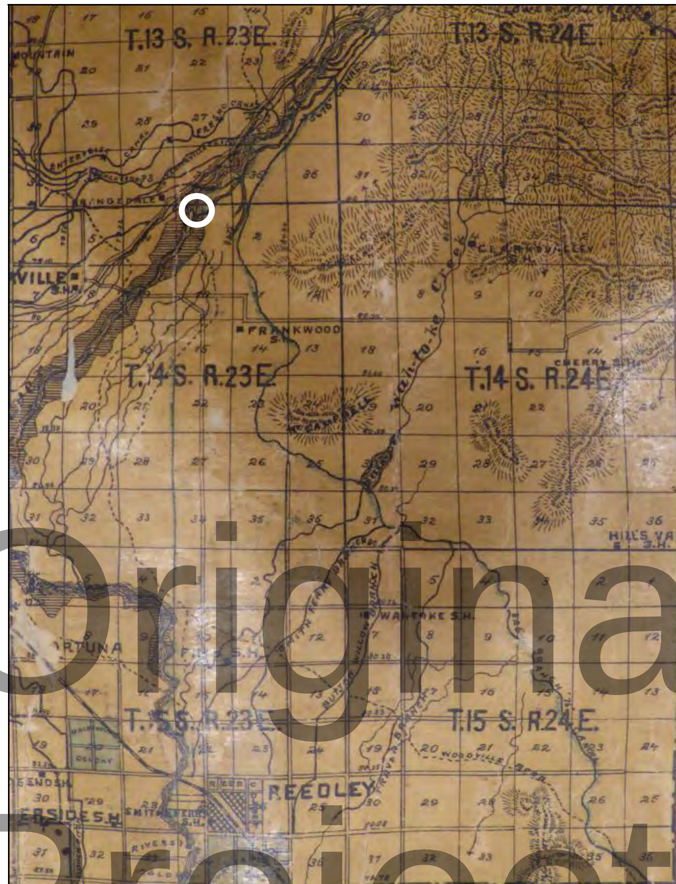
formation of communities.[8] The Kings River provided the source for multiple irrigation companies, most serving Fresno County. The 76 Land and Water Company (predecessor of AID) was the single canal system serving Tulare County originating at the Kings River. The 76 Land and Water Company was also distinct in that it owned both the diversion works, delivery canals, and 30,000 acres of land to be served.

3.2. 76 Land and Water Company and the Alta Irrigation District

The Alta Main Canal is the main canal built for the 76 Land and Water Company, the forerunner of the Alta Irrigation District (**Map 2**). While the Main Canal is located in Fresno County most of the irrigated district is located to the south in Tulare County. The company was founded in 1882 to serve the semi-arid region previously dominated by the '76' Ranch in Tulare County. The land and water company adopted its name from the ranch, which had collapsed under the combined forces of droughts, introduction of the "no fence" law, and construction of the railroad through the San Joaquin Valley. At the time the company was founded the area was sparsely populated and largely involved with cattle ranching, although large scale wheat ranches were forming. Peter Yaple Baker and D.K. Zumwalt conceived the '76' Land and Water Company as the first large-scale settlement and irrigation project in Tulare County. In order to raise capital, stock was divided among seven investors, H.P. Merritt, P.Y. Baker, Charles Traver, D.K. Zumwalt, C.F.J. Kitchener, I.H. Jacobs, Thomas Fowler, and Francis Bullard. County residents received news of the project with enthusiasm. The '76' Land and Water Company was the first in Tulare County to undertake an advertizing campaign to draw people to its newly irrigated land. They offered a total of 30,000 acres of land for sale to settlers along with ample water rights (equaling 40 miner's inches attached to each 40-acre tract). Owners and lessees served by the canal paid an annual fee for the maintenance of the canal system. The main community and shipping point in the development was to be Traver located on the Southern Pacific Railroad mainline, which had been built through the San Joaquin Valley in 1872.[9]

[8] JRP Historical Consulting Services, *Water Conveyance Systems in California,* (Sacramento, CA: Caltrans, 2000) 13; William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 20; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 13; Virginia E. Thickens, "Pioneer Agricultural Colonies of Fresno County," *California Historical Society Quarterly* 25 No. 1(March 1946) 27-35; Virginia E. Thickens, "Pioneer Agricultural Colonies of Fresno County," *California Historical Society Quarterly* 25 No. 2 (June 1946) 169-170.

[9] US Department of Agriculture, *Report of Irrigation Investigations in California* (Washington D.C.: Government Printing Office, 1901), 294; Marion Nielsen Jewell, "Agricultural Development in Tulare County 1870-1900," Master's Thesis, University of Southern California, June 1950, 26-27; Kathleen Edward Small, *Early History of Tulare County, California* (Exeter: Bear State Books, 2001), 183-184; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 19-20.



Map 2. 1892 map with the Centerville Bottoms top left. APE circled.
76 Canal / Alta Main Canal begins top center running southwest
diagonally to the APE then turning southeast.[10]

When the first sections of 76 Canal, as it was initially known (later Alta Main Canal), were opened in 1884 settlers came by the train load and began establishing new farms northwestern Tulare County. Growth was bolstered by several factors. The 76 Company founders were able to establish their main community of Traver on the new Southern Pacific Railroad line through the San Joaquin Valley. The company also offered generous initial terms. Farmers leasing land paid one quarter of their crop and could use the remaining stubble for feeding stock. The company provided the water and transportation of the crop to the railroad. The initial agreements also included a low eventual purchase price for lessees. These factors fueled the original settlement of the area as wheat farms, and Traver shipped massive quantities of wheat each year. Irrigation, however, also made it possible to introduce orchards and other specialty irrigated crops.[11]

[10] E.A. Harley, *Official Map of the County of Fresno, California* (Fresno, CA: Thomas Yost & Son, 1892). Annotated by JRP.
[11] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 25-26.

Within a few years settlement foundered, however, as the 76 Land and Water Company sought to maximize profits. Several initial founders left the company, and subsequent owners worked to change the business model. The first of the agreements between company and settlers to be abridged was the right of settlers to purchase leased lands at a reduced price. The company also began raising rents, and eliminated beneficial terms such as transporting the crop to the railroad and allowing the farmer to graze the stubble. These shifts in terms along with the Company refusal to enter into long term leases slowed the initial brisk settlement. The introduction of irrigation had also raised the water table in the vicinity of Traver resulting in alkali soil that would not support crops.[12]

In response to various conflicts over agricultural water supplies in the San Joaquin Valley and elsewhere in the state California passed the Wright Act in 1887 allowing property owners to form and operate their own irrigation districts, which became public corporations empowered to issue bonds, levy and collect taxes, and operate and maintain irrigation works. The following year the residents in the area served by the '76' Canal, and its branches, voted to form their own district, which was named the Alta Irrigation District (AID). They were joined by additional residents in northwestern Tulare County and the new district included 130,000 acres, over four times the size of the original area to be served by the 76 Land and Water Company. AID would be one of only seven districts founded under the initial Wright Act. Because the canal's diversion point was further up the Kings River than any other irrigation district, they selected "Alta," meaning "high," for the name of the district. The Board of Directors, consisting of P.Y. Baker who had left the '76' Land and Water Company, T.L. Reed, J.D. Van Noy, E.E. Giddings, and J.E. Toler, authorized $675,000 worth of bonds, of which $410,000 were used to purchase the existing '76' Canal system. Another $133,000 in bonds was used to expand the irrigation system through the construction of additional branch canals. The district hired James Sibley to design a larger system between 1888 and 1890 to serve the district, which had expanded from the 2,000 acres of the 76 Company holding to 19,000 acres. As a part of the design the district purchased the 76 Land and Water Company irrigation system in 1890. AID undertook expansion of the system under Sibley's guidance. AID used a distinct process for arranging the construction of canals. Instead of contracting the work, the district developed the plan and then paid farmers to excavate the ditches paying on a per yard basis. In this way, most of the expansion was carried out without contractors. In 1895, AID declared the system complete although construction continued through the first decade of the twentieth century.[13]

[12] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 27-29.

[13] Frank Adams, *Irrigation Districts in California*, 27-28; Small, *Early History of Tulare County*, 188; Morison, *The Alta Empire,* 22, 26-27, 29; Alta Irrigation District (AID), Board of Directors Books, Volume 1: 1888-1894, Minutes, December 6, 1892, and January 3, 1893, on file at AID Offices, Dinuba; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 51-52.

As with the construction of the 76 Land and Water Company system, the AID system was accompanied by expansion of the railroad through the region. In 1888 when the AID was formed the Southern Pacific Railroad completed its east branch line through the San Joaquin Valley leading to the new communities of Dinuba and Reedley. This created further impetus for the development of AID and construction of more ditches to serve new farms. The formation of AID reduced the control the 76 Land and Water Company had on the area. Without the limiting one year leases, crops diversified into long term crops such as vineyards and orchards suited to the newly irrigated land. The taxation system based on acreage imposed by irrigation districts such as AID also promoted the division of lands into smaller specialty farms.[14]

Despite the district's success in constructing its system and increasing settlement it faced legal difficulties associated with water rights litigation. Litigation over water rights resulted several orders and decrees preventing the district from diverting water in the 1880s and 1890s. The district simply refused to comply and altered the diversion point and the head of the canal to insure the diversion of water. Members also undertook to protect the diversion point with arms. Beginning in 1892 AID began to reach agreements with the other water users along the Kings River reducing the amount of legal entanglements. Meanwhile, the district faced litigation over the formation of the district and initial bond issue. For three years between 1897 and 1900 the district was unable to collect taxes applicable to paying the bonds. Most district residents were willing to pay for operational expenses, but it was difficult for the district to enforce collections, and it became challenging for the district to continue to operate. While the matter was settled in 1901, the district was conservative in its assessments for maintenance and operations and the system deteriorated in the first decade of the twentieth century.[15]

Drought in 1912 and 1914 renewed disagreements over water, and communities and irrigators utilizing the Kings River began looking for permanent solutions, which took two directions. First, residents and community members pushed for negotiated diversions from the Kings River, which necessitated the involvement of a third party. Between 1918 and 1921 the State Water Commission appointed Charles L. Kaupke to measure the flow of the Kings River and develop a compromise diversion schedule. Kaupke devised similar schedules through 1928 when the Kings River Water Association was formed and he became the watermaster for the river. The Kings River Water Association continues to manage water diversions from the Kings River. Second, irrigators recognized a need to control and store Kings River water. Beginning in 1914 irrigators along the river began meeting to develop plans for a flood control and storage reservoir, now

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[14] Paul E. Vandor, *History of Fresno County California* 277; John Bergman, *The Southern San Joaquin Valley* (Visalia, CA: Jostens Printing and Publishing, 2009) 9-10; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 105-108.

[15] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 30-33, 46, 59-63, 67; Frank Adams, *Irrigation Districts in California,* 217.

known as Pine Flat Dam and Reservoir. Government support and final plans were not possible until the irrigators could settle their disagreements over water distribution making irrigators more amenable to the Kings River Water Association. While the water association was formed in 1928, it took several more years for the irrigators to gain support for the construction of a dam. It was not until 1944 that the US Army Corps of Engineers signed a contract for the construction of Pine Flat Dam on the Kings River (in Fresno County) about 17 miles upstream from the APE.[16]

As AID dealt with litigation at the end of the nineteenth century and in the early twentieth century there was limited funds for district operation, maintenance, and bond repayments. Canal maintenance declined during this period and the condition of system began to deteriorate. As law suits got resolved funding for maintenance and improvements rebounded beginning in the 1910s and continuing through the 1920s. Despite the previous tensions between landholders and the district, AID demonstrated some sensitivity to the difficulties faced by farmers. The low water years beginning in 1924 placed an economic strain on farmers, and the district tended to be lax in collecting penalties on late payments. As the Depression of the 1930s deepened, the district applied surplus funds acquired in the previous years to the maintenance and operation of the district, reducing fees and taxes on farmers. The sound financial management from the 1910s also allowed the district to continue paying off the district bonds at a steady pace. During the Depression, the district also received some federal funds through the Works Progress Administration to install pipelines, but no other assistance was necessary.[17]

Following World War II, the largest change to the district was the construction of Pine Flat Dam. Irrigators sourcing their water from the Kings River had long anticipated the construction of such a dam to control the flow of the river and extend the irrigation season. The dam was constructed between 1947 and 1954, and extended the irrigation season in AID lands as anticipated.[18]

Despite the construction of Pine Flat Dam the water supply for AID and other irrigators along the Kings River was still dependent upon the total water available from the previous winter's snow pack. Drought during the 1970s resulted in severe limitations on available water. AID began replacing some open canals with pipelines in order to reduce leakage and make the best possible use of available water. The drought period of the mid-1970s also made the district more cognizant of its ground water resources and the strain placed upon them through regular

[16] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 31-32, 58-59.
[17] AID, Detailed Engineering Drawings, Sheets 39, 41, 53-54, 69-71, 86-88, 104, 1922, on file at AID office; AID, *Annual Reports* (Dinuba: Alta Irrigation District, 1944-1980); William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 50; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 69-70, 72, 74.
[18] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 49.

pumping. The district resolved that excess water would be allowed to percolate into the ground in order to replenish the ground water supply. Percolation ponds were complete by 1992.[19] In recent years AID has worked to address climate change and drought conditions by improving automation and efficiency of its water distribution system with the installation of automatic gates at laterals, increased use of water banking ponds and re-regulation basins, and improved management of groundwater supplies.[20]

3.3. Alta Main Canal

The canal now known as the Alta Main Canal was started by the 76 Land and Water Company and was initially known as the 76 Canal. Company progenitor and civil engineer Peter Yaple Baker directed the construction in his role as the "construction supervisor." Baker was an entrepreneur with many careers over his life. He came to California in 1859 and made a substantial sum mining. Following a stint in the army during the Civil War he became involved in real estate and politics in Kansas before returning to California in 1875. Using his surveying skills acquired over the years he prepared early maps of Stanislaus and Tulare counties and again became involved in real estate. Despite the lack of a formal engineering education he developed the scheme for the development of the 76 Ranch lands, and the early layout for the irrigation system.[21]

Construction of the 76 Canal, which took two years, began in August 1882. The canal diverted water from Kings River approximately thirteen miles northeast of Reedley. The first diversion point was at Dennis Slough (in the SW ¼ S25 T13S R23E) about 2 miles south of the current diversion. It was moved to its current location at "The Cobbles" (3 miles northeast of the APE) around 1886. The canal followed a path both man made and partially natural, now known as the Back Channel, for about three miles along the southeastern edge of the bottomlands.[22] About a mile above the APE builders cut through the southeastern bank of the river establishing the main canal. Just to the south, at the current location of the headgate and bridge, a weir was constructed. The wooden weir was 100 feet across and 30 feet wide and directed excess water into Patterson Slough (now known as Byrd Slough) which sent water back to the Kings River.

[19] Alta Irrigation District, *Alta Irrigation District Annual Report 1976* (Dinuba, CA: Alta Irrigation District 1976) 18; Alta Irrigation District, *Alta Irrigation District Annual Report 1977* (Dinuba, CA: Alta Irrigation District, 1977) 15; Alta Irrigation District, *Alta Irrigation District Annual Report 1992* (Dinuba, CA: Alta Irrigation District, 1992) 27.

[20] "Drought Plan Alta Irrigation District," October 29, 2015 and "Efficient Water Management Practices: Infrastructure Improvements" in *Agriculture Water Management Plan for Alta Irrigation District*, prepared for California Department of Water Resources, Volume 4 of 4, November 2015.

[21] Lewis Publishing Co., *Memorial and Biographical History of the Counties of Fresno, Tulare, and Kern California* (Chicago: Lewis Publishing Company, 1892) 404-405.

[22] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 21. J.A. Hartman, *Index Map of Alta Irrigation District* (Dinuba, CA: Alta Irrigation District, 1922) Alta Irrigation District Files, Alta Irrigation District Offices Dinuba, CA.

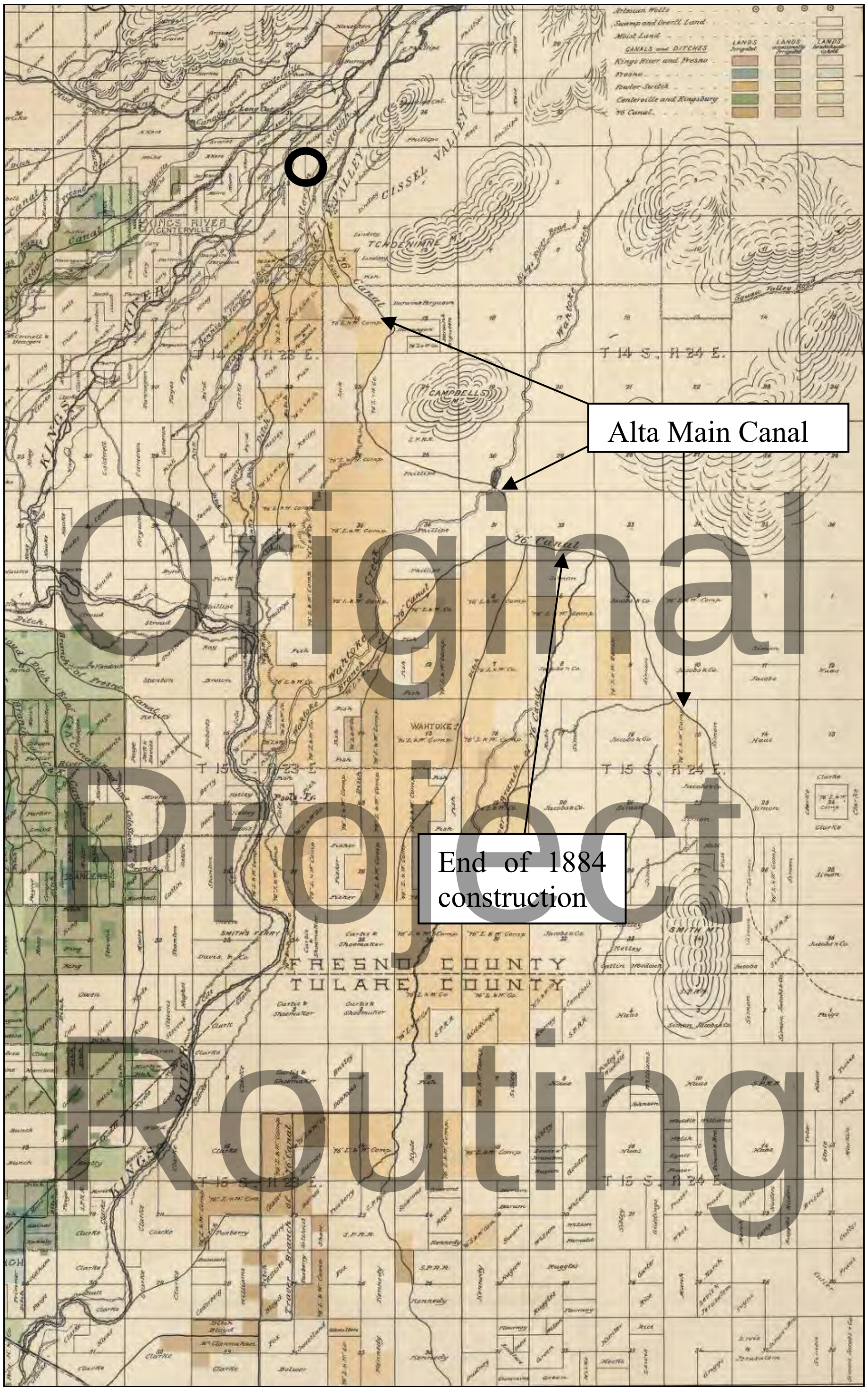
The canal followed the elevation around the foothills with a controlled 18 inches to the mile grade and a width of 100 feet for the first nine and a half miles (just south of Kennedy Creek near the intersection of American Avenue and Crawford Avenue). Three branches were built off of the Main Canal trending southwest to serve the lands of the district including Traver and Reedley (Map 3).[23] It was into this system that water was first turned on December 1, 1883. Shortly thereafter, the main canal broke opposite Dunnigan Gap (vicinity of SR 180) and the headgates were closed. Repair and construction continued until water was again turned into the system in March 1884 allowing water to flow down the canal to Traver for the promotion of land sales. The Traver Canal, serving what was intended to be the main settlement on 76 Land and Water Company lands, was considered at this time to be a part of the main canal and it incorporated a portion of the natural waterway known as Kennedy Creek. The main canal ended just southeast of this diversion.[24]

In 1884 construction was turned over to new superintendent and engineer Joseph Peacock, who was another engineer that had learned his skills on the job. Originally born in New York and came to California during the Gold Rush of the 1850s. He established several farms in northern California before coming to the San Joaquin Valley in 1874. He settled in the Mussel Slough territory around Hanford and became involved in the Lake Side Ditch Company there. After a few years he began working for the People's Ditch. His work with these pioneering ditches gained him a reputation for being able to settle difficulties between management and stock holders of such companies. He was hired by the 76 Land and Water Company in 1884. His tasks were to include the management of the canals and the sale and rental of lands. It quickly became obvious that the combined land and water management was too much for one position and John McCubbin was hired as his assistant.[25]

[23] *Memorial and Biographical History of the Counties of Fresno, Tulare and Kern,* California (Chicago: Lewis Publishing Co, 1891) 405; Carl Ewald Grunsky, *Irrigation Near Fresno, California USGS Water Supply and Irrigation Papers No. 18* (Washington, D.C.: Government Printing Office, 1898) 52; William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 21; Jewell, "Agricultural Development in Tulare County," 25-27; Small, *Early History of Tulare County*, 181; Alfred Bannister, *Map of Tulare County* (San Francisco: Lith. Britton & Rey, 1884); Thomas H. Thompson, *Historical Atlas of Tulare County* (Visalia: Thomas Thompson, 1892); William Hammond Hall, *Detail Irrigation Map Centerville* (Sacramento, CA: State Engineer's Office, 1885). US Census Bureau, MS Census 1900, Tulare County, Kaweah township, ed 61 sheet 5; US Census Bureau, MS Census 1910, Fresno County, 8th Judicial Township, ed 65, sheet 3; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 21-22.

[24] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 23.

[25] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 23-24; *Memorial and Biographical History of the Counties of Fresno, Tulare and Kern,* California (Chicago: Lewis Publishing Co, 1891) 416-417.



Map 3. 1885 Map showing extent of the 76 Land and Water Company system. Traver is located to the south off the map. APE circled.[26]

[26] William Hammond Hall, *Detail Irrigation Map, Centerville and Kingsburgh Sheet* (Sacramento: California Department of Engineering, 1885) annotated by JRP Historical Consulting.

The initial construction served much of the land owned by the 76 Land and Water Company, but plans included extending the 76 Canal further south along the foothills, and Peacock engaged in this work along with creating the necessary delivery canals in the lands being sold by the 76 Land and Water Company. By 1885 the main canal extended to Smith Mountain just north of the border between Tulare and Fresno counties.[27]

While the 76 Land and Water Company appeared to be thriving as the canal system allowed land sales, litigation over the appropriation and allocation of Kings River waters threatened its continued growth. In 1886 as a part of litigation in *A. Heilbron et. al. v the '76 Land and Water Company*, 76 Land and Water Company was ordered to close the head gate and fill the first half mile of canal. This order was never carried out, and 76 Land and Water Company hired a watchman to prevent tampering at the diversion point. Additional litigation, however, resulted in decrees to prevent the company from diverting water. To prevent the decree from being carried out a second diversion was constructed further upstream and the canal bed was improved from that intake. There do not appear to be any maps of this clandestine diversion, but the intake at Dennis Slough is consistent with the historic description of the intake whereas the current intake at The Cobbles includes portions of improved canal as described above.[28] The company managed to continue diversions until the ruling requiring filling the canal was reversed in 1889, although the amount of water allowed to be diverted remained a matter of contention and the canal would not operate legally until that matter was settled. It was during this period that the system was sold to the newly formed AID, which continued appealing the case. [29]

Despite the legal difficulties, AID assumed when it purchased the 76 Land and Water Company system in 1890 that it needed to expand the system to serve its expanded territory. James Sibley was in charge of this work. Like Peacock before him, Sibley had settled in the Mussel Slough area, but following the disruptions there over railroad lands he moved to Dinuba. Sibley had formal training as a civil engineer and developed a comprehensive plan for AID. His plans ushered in a period of rapid expansion as the district sought to provide water for all its members in a territory four times the size served by the original system. The Main Canal was extended southwards to Cottonwood Creek at the southern boundary of the district for a total of 22 miles by 1895. The canal formed the eastern boundary of the system feeding many branch canals.

[27] William Hammond Hall, *Detail Irrigation Map, Centerville and Kingsburgh Sheet* (Sacramento: California Department of Engineering, 1885)

[28] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 29-30; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 31-32, 83-84.

[29] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 82-83.

Construction of the canal south of Smith Mountain, however, resulted in a smaller canal only about 40 feet wide, which became known as the East Branch Canal.[30]

As irrigation districts along the Kings River reached compromises regarding the allocation of water in the 1890s and first decade of the twentieth century, AID continued to make improvements to the head of its canal, often incurring additional lawsuits. Improvements to the diversion resulted in two suits during this period.[31] In 1902 an agreement with the Fresno Canal and Irrigation Company allowed the construction of a legal diversion on the river at The Cobbles (S18 T13S R24E). The agreement also allowed AID to deepen the main canal at the diversion point, accounting for erosion that had deepened the riverbed since the canal was first constructed. To appease the Fresno Canal and Irrigation Company, AID was to build a headgate capable of preventing excess water from entering the system, and hire a tender for the headgate to maintain the gate and regulate the water flows at this location. Plans for the new headgate, canal improvements, and diversion were prepared by the two engineers employed by the canal systems James Sibley of AID, and Ingvart Tielman of Fresno Canal and Irrigation Company.[32]

In 1901, resolution of issues surrounding the initial bond issue for the formation of AID allowed the district to begin improving the maintenance and operation of the system. Throughout the system original wooden structures were replaced with concrete including the headgate at North Frankwood Avenue, which was replaced in 1914. Additional improvements included reconstructing diversions and gates along the main canal. The focus on operations of the system also resulted in the clarification of the extent of the Main Canal. The Main Canal was identified as the length from the headgate at North Frankwood Avenue to the head of the Traver Canal (Kennedy Creek, near the intersection of American Avenue and Crawford Avenue). This included most of the original construction from 1882 to 1884. From the head of Traver Canal the easternmost canal was identified as the East Branch Canal. As noted above, the northern portion of the East Branch Canal was constructed as the Main Canal in 1885. Below Smith Mountain the canal was narrower and built by AID between 1890 and 1895. No systematic concrete lining of the Main Canal was carried out in this period, but detailed maps of the district show small portions of lining at select locations. Periodic repairs were also needed to address breaks along the canal.[33] In addition, the headgate at the diversion (built in 1902) was largely rebuilt in 1926

[30] Ron Dial, *Dinuba* (Charleston, South Carolina: Arcadia Publishing, 2016) 22; Morison, *The Alta Empire,* 22, 26-27, 29; Carl Ewald Grunsky, *Irrigation Near Fresno, California USGS Water Supply and Irrigation Papers No. 18* (Washington, D.C.: Government Printing Office, 1898) 52.

[31] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 92.

[32] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 93; Minutes of Board of Directors Meeting October 7, 1902, Alta Irrigation District, Directors Record Volume 3, Alta Irrigation District Offices, Dinuba.

[33] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 69; J.A. Hartman, *Index Map of Alta Irrigation District* (Dinuba, CA: Alta Irrigation District, 1922) Alta Irrigation District Files, Alta Irrigation District Offices Dinuba, CA; Detailed

as a result of increased need for control of Kings River water that led to revised annual allocations starting in 1918. These allocations were formalized with the formation of the Kings River Water in 1928.[34]

The Main Canal remains a principal part of AID supplying water to numerous branch ditches and canals. Latter twentieth century construction along the canal has had little impact upon the ditch. The increased delivery season established by the construction of Pine Flat Dam resulted in no significant changes to the canal either. The canal is maintained with earth moving equipment to clear sediment and reshape the earthen walls. Concrete rip rap has been placed at points of high erosion.[35]

3.4. Alta Main Canal Headgate and Bridge

The first headgates for the Alta Main Canal were constructed in 1883 by Henry McGee as part of the canal construction. The wooden headgates followed common construction practice for irrigation structures of the time, despite their large size (100 feet across and 30 feet wide). By 1898, the structure was also in use as a county bridge along North Frankwood Avenue (**Image 1**).[36]

Prolonged litigation over the initial bond sale for AID had lead to a period of decline for the system, and by 1914 the old headgates at North Frankwood Avenue needed replacement. New headgates at the diversion point approximately five miles upstream were constructed in 1903 following an agreement with the Fresno Canal and Irrigation Company the previous year, but the old headgates at North Frankwood Avenue still operated to control flows into the Main Canal. Fresno County's use of the headgate as a bridge necessitated an agreement between the county and AID regarding the construction. AID and Fresno County signed an agreement in September 1914 that assigned responsibility for the construction of the bridge to AID based upon plans approved by both Fresno County and AID. The cost of construction was divided with the county paying 30 percent of the costs. While the agreement stipulated that the project would be bid out, the AID director's minutes do not record any bids or contract for the work. Records indicate that

Irrigation Maps Sheet 41, 1922, Alta Irrigation District Offices Dinuba; Board of Directors Minutes, September 4, 1917, Directors Record Volume 4, Alta Irrigation Files, Alta Irrigation District Offices, Dinuba; Board of Directors Minutes, July 11, 1921, Directors Record Volume 4, Alta Irrigation Files, Alta Irrigation District Offices, Dinuba .

[34] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 31-32, 58-59.

[35] Alta Irrigation District, *Alta Irrigation District Annual Report 1976* (Dinuba, CA: Alta Irrigation District 1976) 18; Alta Irrigation District, *Alta Irrigation District Annual Report 1977* (Dinuba, CA: Alta Irrigation District, 1977) 15; Alta Irrigation District, *Alta Irrigation District Annual Report 1992* (Dinuba, CA: Alta Irrigation District, 1992) 27.

[36] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 21; Scott McKay, *Official Map of the County of Fresno, California* (Fresno, CA: np, 1898); Carl Ewald Grunsky, *Irrigation Near Fresno, California USGS Water Supply and Irrigation Papers No. 18* (Washington, D.C.: Government Printing Office, 1898) Plate X, 53-54.

the irrigation district ordered parts and materials, notably the iron work for the bridge directly. Perhaps more surprisingly, rather than AID having its own engineer, James Sibley, design the bridge, the order for iron work states that the plans were drawn by I. H. Tielman, who was a Fresno civil engineer and son of noted Fresno engineer Ingvart Tielman who was the engineer for the Fresno Canal and Irrigation Company with which AID had legal disputes.[37]

Image 1. Alta Main Canal headgates in 1898, note the horse and buggy on the headgate, camera facing northeast.[38]

Construction of the combination headgate and bridge occurred during a period of rapid development for reinforced concrete construction in engineering structures. Concrete slab bridges, like the one incorporated into the AID headgate, were slowly gaining acceptance in California around the turn of the century. Between 1900 and 1914 only seven such bridges were constructed, but between 1914 and 1919 a total of 58 concrete slab bridges were constructed in

[37] Minutes of Board of Directors Meeting October 7, 1902, Alta Irrigation District, Directors Record Volume 3, Alta Irrigation District Offices, Dinuba; Minutes of Board of Directors Meeting October 6, 1914, Directors Record Volume 3, Alta Irrigation District Offices, Dinuba; Minutes of Board of Directors Meeting October 6, 1914, Directors Record Volume 3, Alta Irrigation District Offices, Dinuba.

[38] Carl Ewald Grunsky, *Irrigation Near Fresno, California USGS Water Supply and Irrigation Papers No. 18* (Washington, D.C.: Government Printing Office, 1898) Plate X.

the state. These bridges are usually small and unadorned, and those that have been found significant employ unusual construction methods or aesthetic features.[39]

Publications regarding the construction of irrigation systems in at the beginning of the twentieth century generally do not mention the use of reinforced concrete, but by 1916 authors of such publications nearly assumed the use of reinforced concrete in the construction of headgates.[40] For example, beginning in 1903 with the Carson Truckee Project (now the Newlands Project) the US Bureau of Reclamation began the construction of flood control and irrigation structures. The Carson Truckee Project made extensive use in concrete for control structures and canal lining including the Carson Diversion Dam (1904-1905). Over the next decade additional projects constructed by the US Bureau of Reclamation included reinforced concrete headgates and control structures. These included the Boise River headgates for the Boise Project (1909), the Sunnyside Project, Yakima, Washington (1907), and Prewitt Reservoir, Colorado (1910). In California, a major proponent of reinforced concrete construction was John Buck Leonard, who had worked as a consulting engineer on the Carson Truckee Project. He became known for his work on reinforced concrete bridges, and working to adjust building codes to legalize reinforced concrete building construction. In 1911, he designed the Old Headquarters Weir on Miller & Lux property near Buttonwillow, California. This water control structure also served as a bridge. At the same time Leonard was promoting reinforced concrete bridge construction, Ingvart Tielman was employing the method on head gates as early as 1904-1905 when he reconstructed the headgates several canals of the Consolidated Canal Company.[41]

Therefore, it is not surprising that in 1914 when Tielman's son I.H. Tielman, following his father in irrigation engineering, designed the AID headgate at North Frankwood Avenue using reinforced concrete. Fitting the headgate for use as a bridge was a matter of little import as the previous headgate had served the same purpose and the necessary alterations well known (**Image 2**). The new headgate had long wing walls and narrowed the operational channel to 72 feet at the headgate with the channel quickly resuming its 100 foot width above and below the headgate.[42]

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[39] Andrew Hope, *Caltrans Statewide Historic Bridge Inventory Update Survey and Evaluation of Common Bridge Types,* California Department of Transportation, 2004, 9-10.

[40] Frederick Haynes Newell, *Irrigation in the United States* (New York: Thomas Y Crowell & Co, 1902) 115-120; B. A. Etcheverry, *Irrigation Practice and Engineering Vol. 3* (New York: McGraw-Hill Book Company, 1916) 121-140.

[41] I. Tielman and W.H. Shafer, *The Historical Story of Irrigation in Fresno and Kings Counties in Central California* (Fresno, California: Williams & Son, 1943), 34; J. Randal McFarland, *Water for a Thirsty Land the Consolidated Irrigation District* (Fresno, CA: Consolidated Irrigation District, 1996) 63; John W. Snyder, "Buildings and Bridges for the 20th Century," *California History* (Fall 1984); John Snyder and Steve Mikesell, "The Consulting Engineer and Early Concrete Bridges in California," *Concrete International* (May 1994).

[42] Sibley, "Structure for Arresting Debris at Main Alta Headgate," Drawing no D-1, Roll A-51-1, Alta Irrigation District files, Dinuba.

Image 2. New AID Main Canal headgate and bridge on North Frankwood Avenue, as constructed in 1914, camera facing southwest. [43]

The headgate was modified in 1924 with the addition of a trash rack. Designed by district engineer J.A. Hartman, and signed off on by head district engineer Sibley the trash rack placed angled buttressed piers on the northern upstream side of the gate. Metal racks were attached to the buttresses to catch debris. Construction of the trash rack also added a walkway along the north side of the bridge. Originally manually operated, the gates were subsequently motorized with an operational panel at the northwest end.[44]

3.5. Ditch Tender's Residence

As experienced by other irrigation districts, operation of gates was problematic for AID. Frequently farmers would open gates to secure water for their lands over and above their allotment, which shorted farmers further down the system. AID tried several means of control with limited success in the 1890s, but the problem persisted through the 1910s.[45]

With the signing of the first agreement over the allocation of water between AID and Fresno Canal and Irrigation Company in 1902, control over the headgates and other delivery gates became more important. In 1909, the Board of Directors established a set of rules and regulations for the distribution of water through the system. The rules established a hierarchy with the board

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[43] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 13.
[44] Sibley, "Structure for Arresting Debris at Main Alta Headgate," Drawing no D-1, Roll A-51-1, Alta Irrigation District files, Dinuba.
[45] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 86-87.

in charge and the superintendent overseeing a set of ditch tenders assigned to geographic regions of the system. Water was to be delivered on a rotating basis with farmers responsible for properly utilizing the delivered water.[46]

Review of the Board of Director's minutes for the district between 1902 and 1928 did not reveal construction information for the house adjacent to the headgate at North Frankwood Avenue. A contract for the drilling of a domestic well at the site, however, is listed for 1915 shortly following the reconstruction of the headgate. This provides the estimated date of construction for the residence. AID has at least one other ditch tender's residence located at the southern end of Main Canal that was constructed in 1923.[47]

The ditch tender's residence on North Frankwood Avenue has been altered some over the years. Aerial photography indicates that an addition on the north side of the building's water tower was added between 1961 and 1965. During this same period, an outbuilding to the northwest was removed and replaced with the current small garage.[48]

The area surrounding the headgates was largely agricultural. Despite the overall California population boom following World War II the area surrounding the Alta Main head gates saw little development till the last decades of the twentieth century. An Atchison Topeka and Santa Fe (ATSF) railroad branch served the area starting in 1911. Trucking reduced the need for the rail line and the ATSF depots closed in 1942. The line, however, was used extensively for the construction of Pine Flat Dam on the Kings River from 1947 to 1954. It was closed and abandoned in 1987.[49]

Construction of the Pine Flat Dam created new recreational opportunities, and in the 1970s large tract residences, and the Sherwood Forest Golf Club developed in the vicinity.[50]

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[46] Minutes Board of Directors April 10, 1909, Directors Book Volume 3, Alta Irrigation District Office, Dinuba, California.

[47] Minutes Board of Directors Aug 3, 1915, Directors Book Volume 4, Alta Irrigation District Office, Dinuba, California; Directors Book Volume 3 and 4, passim, Alta Irrigation District Office, Dinuba, California; Minutes Board of Directors February 12, 1923, Directors Book Volume 4, Alta Irrigation District Office, Dinuba, California.

[48] US Commodity Stabilization Service, Fresno County Aerial Photograph ABI 5BB-167 (Washington, DC: Commodity Stabilization Service, 1961); US Soil Conservation Service, Fresno County Aerial Photographs FRE-11-141 (Washington, DC: Soil Conservation Service, 1967).

[49] John Bergman, *The Southern San Joaquin Valley: A Railroad History,* (Visalia, California: Jostens Printing and Publishing Company, 2009) 63-34.

[50] US Agricultural Stabilization and Conservation Service, Aerial Photographs Fresno County 2866-9-154 (Washington, D.C.: Agricultural Stabilization and Conservation Service, 1970); US Agricultural Adjustment Administration, Aerial Photographs Fresno County NAPP 473-144 (Salt Lake City, UT: Aerial Photography Field Office, 1987).

4. FINDINGS AND CONCLUSIONS

Three properties within the APE required evaluation for this project. None of the properties met the criteria for listing in the NRHP or CRHR. These properties have been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and they are not historical resources for the purposes of CEQA. A full evaluation of the properties under NRHP / CRHR criteria is provided on the DPR 523 forms in **Appendix B**. The tables below summarize the conclusions of this report.

- Historic properties listed in the NRHP: **None**
- Historic properties previously determined ineligible for the NRHP: **None**
- Resources previously determined *not* eligible for the NRHP: **None**
- Historic properties determined eligible for the NRHP as a result of current study: **None**
- Resources determined *not* eligible for the NRHP as a result of current study:

Name	Address / Location	Community	OHP Status Code	Map Reference
Alta Main Canal	Wahtoke, CA Quadrangle	Fresno County	6Z	1
Alta Main Canal Bridge (42C0289)/ Alta Main Canal Headgate	North Frankwood Avenue	Sanger (vic), CA	6Z	2
Alta Irrigation Ditch Tender's Residence	347 North Frankwood Avenue	Sanger (vic), California	6Z	3

- Resources for which further study is needed because evaluation was not possible: **None**
- Historical resources for the purposes of CEQA: **None**
- Resources that are *not* historical resources under CEQA, per CEQA guidelines §15064.5, because they do not meet the CRHR criteria outlined in PRC §5024.1:

Name	Address / Location	Community	OHP Status Code	Map Reference
Alta Main Canal	Wahtoke, CA Quadrangle	Fresno County	6Z	1
Alta Main Canal Bridge (42C0289)/ Alta Main Canal Headgate	North Frankwood Avenue	Sanger (vic), CA	6Z	2
Alta Irrigation Ditch Tender's Residence	347 North Frankwood Avenue	Sanger (vic), California	6Z	3

Cheryl Brookshear, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as an Architectural Historian or above, has determined that the only other properties present within the APE, meet the criteria for Section 106 PA Attachment 4 (Properties Exempt from Evaluation). Exempt property types within the APE include Property Type 1: Minor, ubiquitous, or fragmentary infrastructure elements, and Property Type 4: Buildings, structures, objects, district, and sites 30 to 50 years old. There are no state-owned resources in the APE.

5. PREPARERS' QUALIFICATIONS

This HRER was conducted under the general direction of Christopher D. McMorris (M.S., Historic Preservation, Columbia University, New York), a partner of JRP with 18 years of experience conducting these types of studies. Mr. McMorris provided overall project direction and guidance, and reviewed and edited this report. Based on his level of experience and education, Mr. McMorris qualifies as both an architectural historian and historian under the Secretary of the Interior's Professional Qualification Standards (as defined in 36 CFR Part 61).

JRP Staff Architectural Historian Cheryl Brookshear (M.S., Historic Preservation, University of Pennsylvania) performed fieldwork and research, and drafted this report. Ms. Brookshear qualifies as both an architectural historian and historian under the Secretary of the Interior's Professional Qualification Standards (as defined in 36 CFR Part 61).

Research Assistant Heather Miller (M.A., History / Public History, California State University Sacramento) assisted in fieldwork and research.

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APPENDIX A

Figures

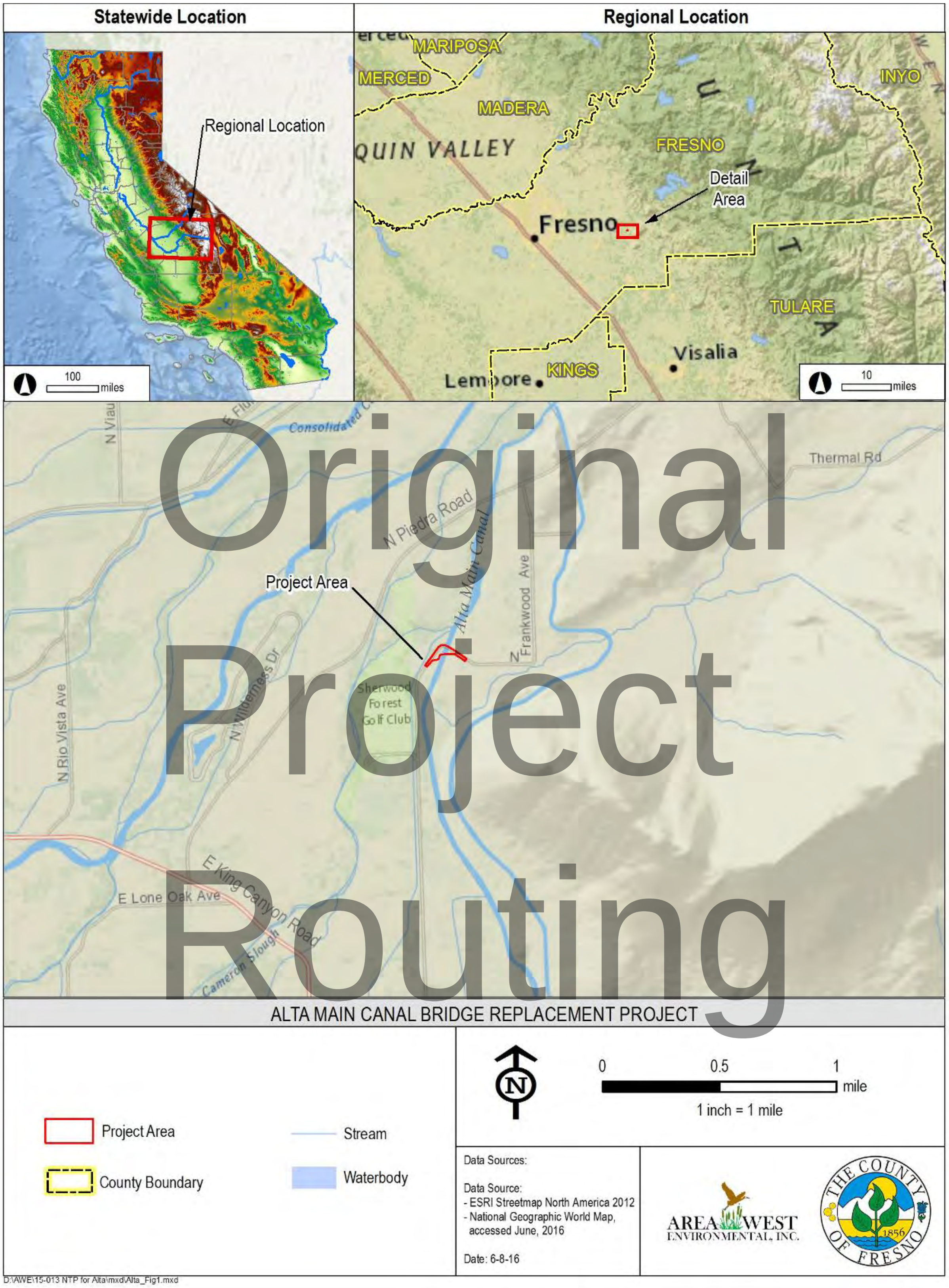


Figure 1. Project Vicinity

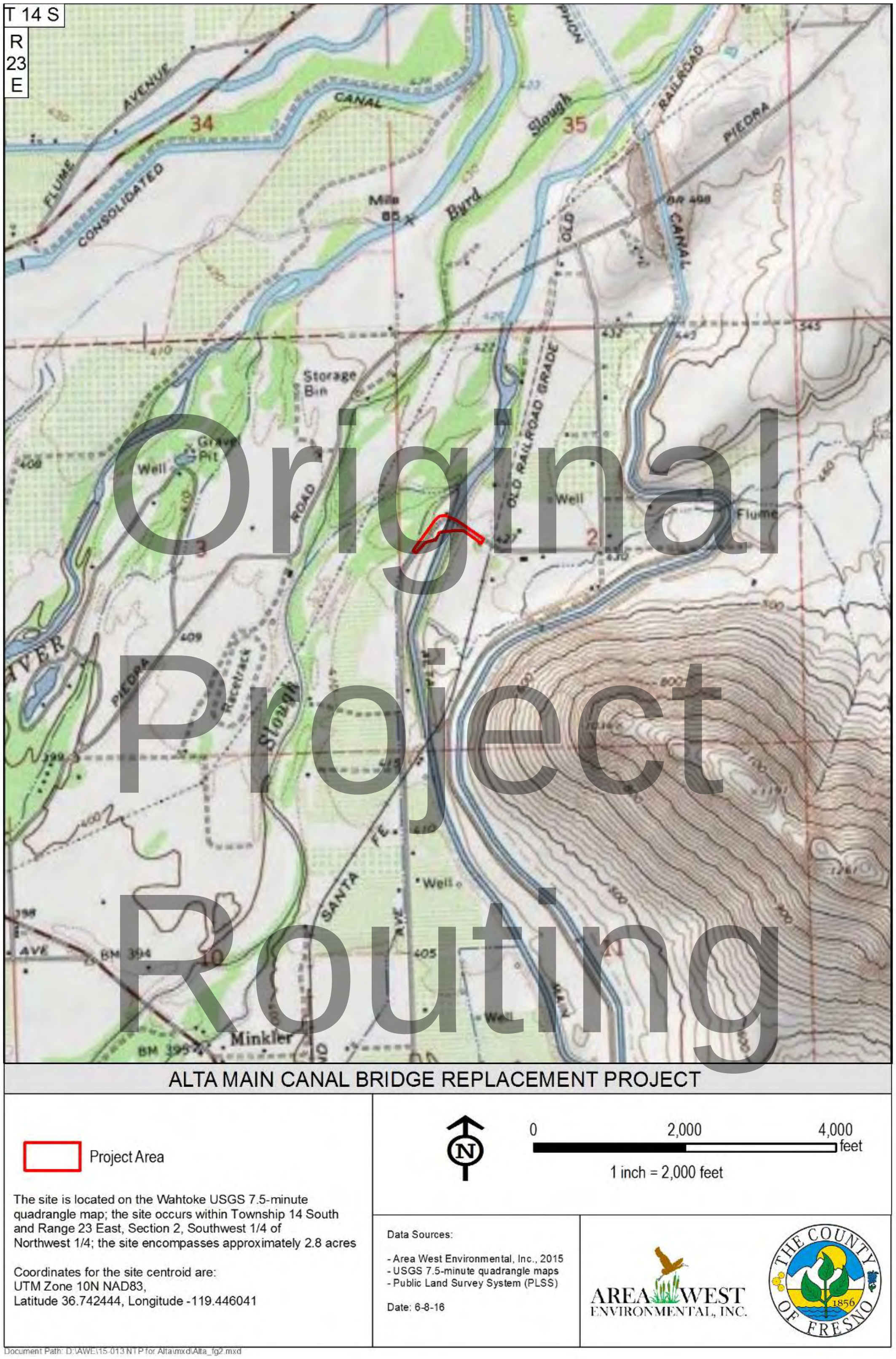


Figure 2. Project Location Map

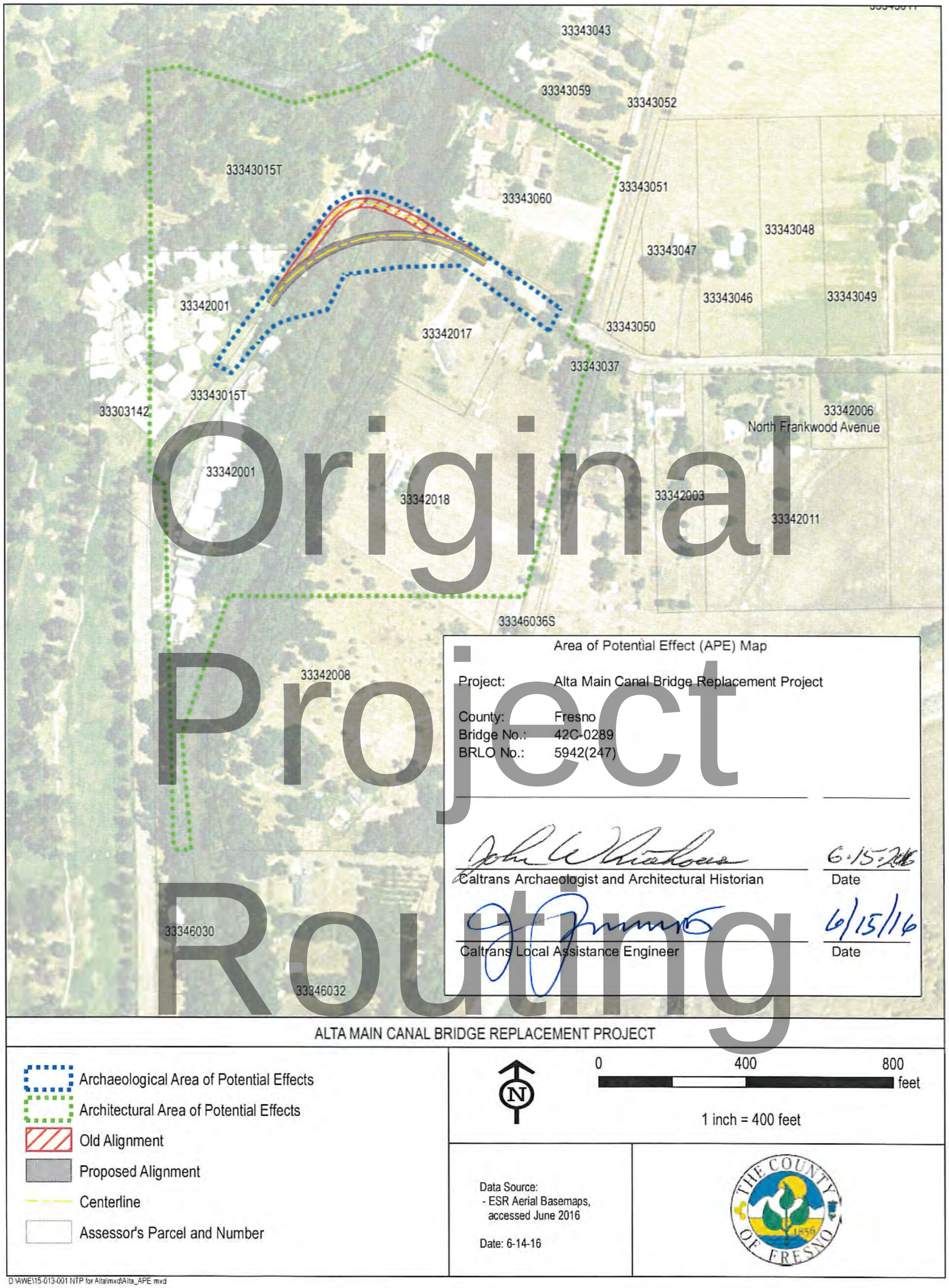


Figure 3. Area of Potential Effects (APE)

APPENDIX B

DPR 523 Forms

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # ____________
HRI # ____________
Trinomial ____________
NRHP Status Code 6Z

Other Listings ____________
Review Code ______ Reviewer ____________ Date ______

***Resource Name or #:** MR#1

P1. Other Identifier: Alta Main Canal

***P2. Location:** ☐ Not for Publication ☒ Unrestricted ***a. County:** Fresno
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Wahtoke **Date:** 1966 **T** 14S; **R** 8E; **Sec** 23E M.D. **B.M.**

c. Address: N/A City: Sanger (vicinity) Zip: 93657

d. UTM: See attached Linear Feature Records

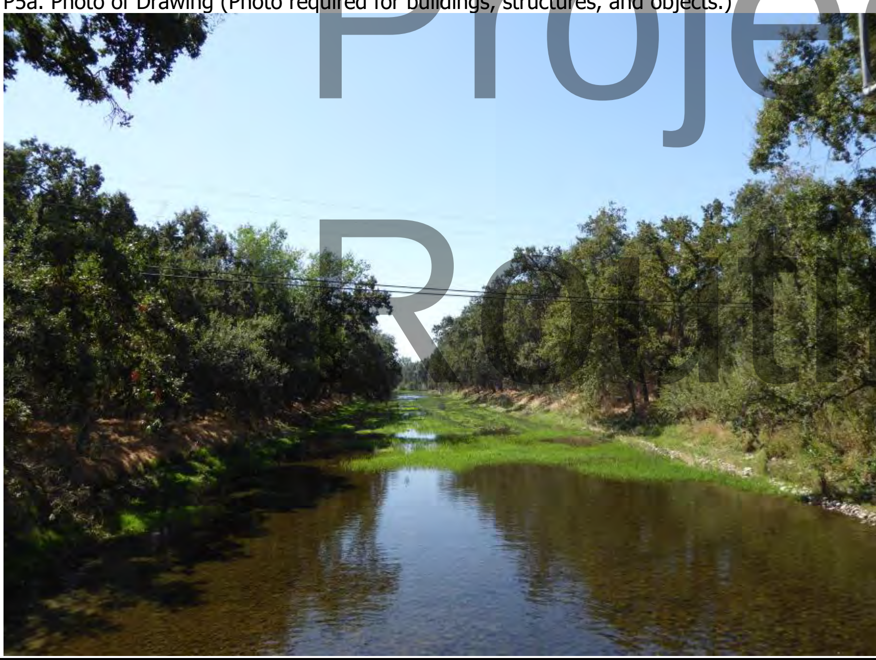
e. Other Locational Data: Alta Main Canal as defined by the Alta Irrigation District originates at North Frankwood Avenue approximately three miles east of Centerville. The canal follows the contour of the land southeast along the foothills of the Sierra Nevada Range. Just north of the intersection of American Avenue and Crawford Avenue the canal splits into the Traver Canal and the East Branch Canal. The upper portion of the East Branch Canal was considered a part of the Main canal in the 1880s.

***P3a. Description:** This form records two points along the Alta Irrigation District Main Canal. From the headgate at North Frankwood Avenue the canal travels in a southern direction toward Campbell Mountain, then along the western base of Campbell Mountain to near Wahtoke Lake. Then the canal travels in a generally southeastern direction to its southern terminus near the intersection of American Avenue and Crawford Avenue. All observed portions of the canal are unlined. For the project listed in P11, the canal was recorded at two locations: Segment AMC-1, at North Frankwood Avenue; and Segment AMC-2, parallel to Central Avenue near Whatoke Park. Only AMC-1 is located in the Study Area for the referenced project, the other segment was recorded for comparison purposes. See the attached Linear Feature Records for detailed descriptions of the individual segments.

***P3b. Resource Attributes:** HP 20 – Canal/aqueduct

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo of Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: **Photograph 1:** View of canal in Study Area at North Frankwood Road (AMC-1), camera facing south, September 15, 2016.

***P6. Date Constructed/Age and Sources:**
☒Historic ☐Prehistoric ☐Both
1882-1884 / Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development," 1967.

***P7. Owner and Address:**
Alta Irrigation District
289 North L Street
Dinuba, CA 93618

***P8. Recorded by:**
Cheryl Brookshear and Heather Miller
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

***P9. Date Recorded:** September 15, 2016

***P10. Survey Type:** Intensive

***P11. Report Citation:** JRP Historical Consulting, LLC, *Historic Resources Evaluation Report Alta Main Canal Bridge Replacement Project, Fresno County,* prepared for County of Fresno, Department of Public Works and Planning and Caltrans District 6, 2017.

***Attachments:** ☐NONE ☐Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record, ☐Archaeological Record ☐District Record ☒Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary # ____________
HRI # ____________

***NRHP Status Code** 6Z
***Resource Name or #** Alta Main Canal

B1. Historic Name: 76 Canal, Main Alta Canal
B2. Common Name: Alta Main Canal
B3. Original Use: Water conveyance B4. Present Use: Water conveyance
***B5. Architectural Style:** Utilitarian
***B6. Construction History:** Constructed 1882-1884; headgate rebuilt 1914; concrete diversion gates added 1910-1930; regular maintenance shapes the canal walls.
***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** ________ **Original Location:** ________
***B8. Related Features:**

B9a. Architect: Peter Yaple Baker b. Builder: 76 Canal and Land Company
*** B10. Significance: Theme:** irrigation/ settlement **Area:** Northwest Tulare County / South Fresno County
Period of Significance: 1882-1890 **Property Type:** Canal **Applicable Criteria:** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Alta Main Canal was recorded in 1991, but not evaluated. This form provides a full recordation and evaluation of the canal. Alta Main Canal does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR). It is not important for association with significant historical trends, events or individuals, nor is it a significant example or a type, period or method of construction, or the work of a master. The canal is not a source of important historical information. This property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA) Guidelines, using the criteria outlines in Section 5024.1 for the California Public Resources code, and is not a historical resource for the purposes of CEQA. (See Continuation Sheet.).

B11. Additional Resource Attributes: ________

***B12. References:** Adams, Frank. *Bulletin No. 21: Irrigation Districts in California.* Sacramento, California: Department of Public Works, 1929; Alta Irrigation District (AID), Board of Directors Books, Alta Irrigation District Offices, Dinuba; Alta Irrigation District, Detailed Engineering Drawings, Alta Irrigation District Offices, Dinuba; Alta Irrigation District. *Annual Report.* Dinuba: Alta Irrigation District, 1944-1980; Enns, Harold J. "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development." Master's Thesis, Fresno State College, 1967; Morison, William. *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley.* Dinuba: Alta Irrigation District, 1988; and see B10 footnotes.

B13. Remarks:

***B14. Evaluator:** Cheryl Brookshear

***Date of Evaluation:** October 2016

(This space is reserved for official comments)

(Sketch Map with north arrow required.)

See Continuation Sheet.

***Resource Name or #** MR#1

***Recorded by:** C Brookshear and H. Miller ***Date:** September 14 & 15, 2016 ☒ **Continuation** ☐ **Update**

L1. Historic and/or Common Name: Alta Main Canal

L2a. Portion Described: ☐ Entire Resource Segment ☒ Point Observation **Designation:** AMC-1

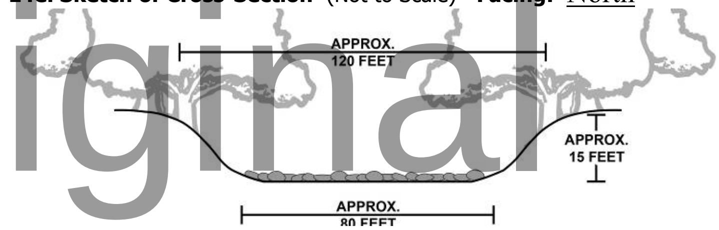
***b. Location of point or segment:** AMC-1

Segment AMC-1 crosses under North Frankwood Avenue via Alta Main Canal Bridge (42C0289) (the headgate and bridge is evaluated on a separate DPR523 form, please see that form for a complete description of the bridge/head gate)

L3. Description: Segment AMC-1 is located within the Study Area for the project listed in P11. The canal at this location is an unlined, trapezoidal earthen canal that is approximately 120-feet wide with approximately 40-degree slopes (**Photograph 1 & 3**). Mature oak trees line the crown of the canal and grasses cover the slope face (**Photograph 1**). The base of the canal and the canal slopes are lined with river rock (**Photograph 3**).

L4. Dimensions:
- **a. Top Width** approx. 120 feet
- **b. Bottom Width** approx. 80 feet
- **c. Height or Depth** approx. 15 feet
- **d. Length of Segment** 100 feet

L4e. Sketch of Cross-Section (Not to Scale) **Facing:** North



L5. Associated Resources:
Head gate

L6. Setting: The canal is located in semi-rural Fresno County and is surrounded by a golf course and mobile home park on the west side of the canal, and ranchettes on the east side of the canal.

L7. Integrity Considerations: The canal and culvert at this location appear to have undergone little change, aside from the installation of a chainlink fence on the southern parapet wall, and retains a high degree of integrity.

L8a. Photograph, Map, or Drawing.

L8b. Description of Photo, Map, or Drawing:
Photograph 3. Location: AMC-2, north side of head gate/bridge, camera facing northeast, September 15, 2016.

L9. Remarks:

L10. Form prepared by:
C. Brookshear and H. Miller
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

L11. Date: September 15, 2016

*Resource Name or # MR#1

*Recorded by: C Brookshear and H. Miller *Date: September 14 & 15, 2016 ☒ Continuation ☐ Update

L1. Historic and/or Common Name: Alta Main Canal

L2a. Portion Described: ☐ Entire Resource Segment ☒ Point Observation **Designation:** AMC-2

***b. Location of point or segment:** AMC-2

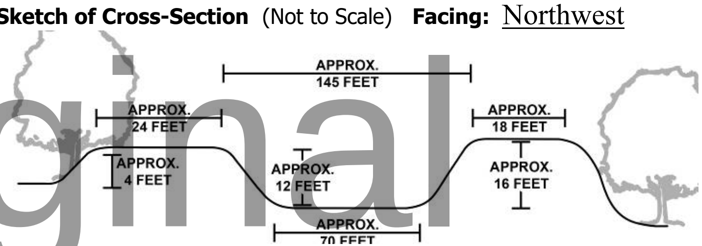
Segment AMC-2 is located parallel to Central Avenue just east of Wahtoke Park.

L3. Description: Segment AMC-2 is located southeast of the Study Area for the project listed in P11 and is recorded here for comparison purposes. The canal at this location is an unlined, trapezoidal earthen canal that is approximately 145-feet wide with approximately 50-degree slopes (**Photograph 4**). Thick grasses and vegetation are located along the slopes and the waterside edge of the crown. The segment includes a distribution gate with broken concrete pieces placed behind it for erosion protection.

L4. Dimensions:

- a. **Top Width** approx. 145
- b. **Bottom Width** approx. 70 feet
- c. **Height or Depth** approx. 12-16 feet
- d. **Length of Segment** 100 feet

L4e. Sketch of Cross-Section (Not to Scale) **Facing:** Northwest



L5. Associated Resources:

Distribution gate

L6. Setting: The canal is located near the base of Campbell Mountain in Fresno County and is surrounded by orchards.

L7. Integrity Considerations: The canal at this location appears to have undergone little change and retains a high degree of integrity.

L8a. Photograph, Map, or Drawing.

L8b. Description of Photo, Map, or Drawing:

Photograph 4. Location: ACM-2 with Campbell Mountain at far right, camera facing west, September 15, 2016.

L9. Remarks:

L10. Form prepared by:

C. Brookshear and H. Miller
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

L11. Date: September 15, 2016

B10. Significance (Continued)

Historic Context

The Alta Main Canal is the main canal built for the 76 Land and Water Company, the forerunner of the Alta Irrigation District. While the Main Canal is located in Fresno County most of the irrigated district is located to the south in Tulare County. The 76 Land and Water Company was founded in 1882 to divert water from the Kings River to serve the semi-arid region previously dominated by the '76' Ranch in Tulare County.

The 76 Land and Water Company emerged following several other companies had established irrigation systems in the region taking water from the Kings River, including the Centerville Canal and Irrigation Company in the late 1860s and the Fresno Canal and Irrigation Company in the mid-1870s. There was also the Kings River and Fresno Canal Company established in the 1870s. Different from the 76 Land Company and Water Company efforts, discussed below, these early systems represented private water companies owning irrigation works separate from the lands served. Irrigated lands contracted with the companies like the Fresno Canal and Irrigation company for the delivery of water. Land owners often invested in the canal companies, but did not have controlling interests.[1] Other early irrigation canals taking water from the Kings River include the Centerville and Kingsburg Canal, built in 1877-78, and the Fowler Switch Canal, built 1883. These private small-company canals, financed and largely built by local landowners, were mutual water companies, developed and owned by the landowners served. These irrigation systems and canals were later incorporated into the Fresno Irrigation District and Consolidated Irrigation District.[2]

The 76 Land and Water Company adopted its name from the ranch, which had collapsed under the combined forces of droughts, introduction of the "no fence" law, and construction of the railroad through the San Joaquin Valley. At the time the company was founded the area was sparsely populated and largely involved with cattle ranching, although large scale wheat ranches were forming. Peter Yaple Baker and D.K. Zumwalt conceived the '76' Land and Water Company as the first large-scale settlement and irrigation project in Tulare County. In order to raise capital, stock was divided among seven investors, H.P. Merritt, P.Y. Baker, Charles Traver, D.K. Zumwalt, C.F.J. Kitchener, I.H. Jacobs, Thomas Fowler, and Francis Bullard. County residents received news of the project with enthusiasm. The '76' Land and Water Company was the first in Tulare County to undertake an advertizing campaign to draw people to its newly irrigated land, much like other companies had been doing Fresno County. They offered a total of 30,000 acres of land for sale to settlers along with ample water rights (equaling 40 miner's inches attached to each 40-acre tract). Owners and lessees served by the canal paid an annual fee for the maintenance of the canal system. The main community and shipping point in the development was to be Traver located on the Southern Pacific Railroad mainline, which had been built through the San Joaquin Valley in 1872.[3]

When the first sections of 76 Canal, as it was initially known (later Alta Main Canal), were opened in 1884 settlers came by the train load and began establishing new farms northwestern Tulare County. Growth was bolstered by several factors. The 76 company founders were able to establish their main community of Traver on the new Southern Pacific Railroad line through the San Joaquin Valley. The company also offered generous initial terms. Farmers leasing land paid one quarter of their crop and could use the remaining stubble for feeding stock. The company provided the water and transportation of the crop to the railroad. The initial agreements also included a low eventual purchase price for lessees. These factors fueled the

[1] JRP and Caltrans, *Water Conveyance Systems in California*, 13-14, 19-20; Frank Adams, *Irrigation Districts in California, Bulletin No. 29*, State of California, Department of Public Works, Reports of the Division of Engineering and Irrigation (Sacramento: California State Printing Office, 1929), 204-205; Virginia E. Thickens, "Pioneer Agricultural Colonies of Fresno County," *California Historical Society Quarterly* 25 No. 1(September 1946) 21-22, 26-33.

[2] Frank Adams, *Irrigation Districts in California*, 209, 224, JRP and Caltrans, *Water Conveyance Systems in California*, 13-14; Virginia E. Thickens, "Pioneer Agricultural Colonies of Fresno County," *California Historical Society Quarterly* 25 No. 1(September 1946) 22.

[3] US Department of Agriculture, *Report of Irrigation Investigations in California* (Washington D.C.: Government Printing Office, 1901), 294; Marion Nielsen Jewell, "Agricultural Development in Tulare County 1870-1900," Master's Thesis, University of Southern California, June 1950, 26-27; Kathleen Edward Small, *Early History of Tulare County, California* (Exeter: Bear State Books, 2001), 183-184; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 19-20.

original settlement of the area as wheat farms, and Traver shipped massive quantities of wheat each year. Irrigation, however, also made it possible to introduce orchards and other specialty irrigated crops.[4]

Within a few years settlement foundered, however, as the 76 Land and Water Company sought to maximize profits. Several initial founders left the company, and subsequent owners worked to change the business model. The first of the agreements between company and settlers to be abridged was the right of settlers to purchase leased lands at a reduced price. The company also began raising rents, and eliminated beneficial terms such as transporting the crop to the railroad and allowing the farmer to graze the stubble. These shifts in terms along with the Company refusal to enter into long term leases slowed the initial brisk settlement. The introduction of irrigation had also raised the water table in the vicinity of Traver resulting in alkali soil that would not support crops.[5]

In response to various conflicts over agricultural water supplies in the San Joaquin Valley and elsewhere in the state California passed the Wright Act in 1887 allowing property owners to form and operate their own irrigation districts, which became public corporations empowered to issue bonds, levy and collect taxes, and operate and maintain irrigation works. The following year the residents in the area served by the '76' Canal, and its branches, voted to form their own district, which was named the Alta Irrigation District (AID). They were joined by additional residents in northwestern Tulare County and the new district included 130,000 acres, over four times the size of the original area to be served by the 76 Land and Water Company. AID would be one of only seven districts founded under the initial Wright Act. Because the canal's diversion point was further up the Kings River than any other irrigation district, they selected "Alta," meaning "high," for the name of the district. The Board of Directors, consisting of P.Y. Baker who had left the '76' Land and Water Company, T.L. Reed, J.D. Van Noy, E.E. Giddings, and J.E. Toler, authorized $675,000 worth of bonds, of which $410,000 were used to purchase the existing '76' Canal system. Another $133,000 in bonds was used to expand the irrigation system through the construction of additional branch canals. The district hired James Sibley to design a larger system between 1888 and 1890 to serve the district, which had expanded from the 2,000 acres of the 76 Company holding to 19,000 acres. As a part of the design the district purchased the 76 Land and Water Company irrigation system in 1890. AID undertook expansion of the system under Sibley's guidance. AID used a distinct process for arranging the construction of canals. Instead of contracting the work, the district developed the plan and then paid farmers to excavate the ditches paying on a per yard basis. In this way, most of the expansion was carried out without contractors. In 1895, AID declared the system complete although construction continued through the first decade of the twentieth century.[6]

As with the construction of the 76 Land and Water Company system, the AID system was accompanied by expansion of the railroad through the region. In 1888 when the AID was formed the Southern Pacific Railroad completed its east branch line through the San Joaquin Valley leading to the new communities of Dinuba and Reedley. This created further impetus for the development of AID and construction of more ditches to serve new farms. The formation of AID reduced the control the 76 Land and Water Company had on the area. Without the limiting one year leases, crops diversified into long term crops such as vineyards and orchards suited to the newly irrigated land. The taxation system based on acreage imposed by irrigation districts such as AID also promoted the division of lands into smaller specialty farms.[7]
Despite the district's success in constructing its system and increasing settlement it faced legal difficulties associated with water rights litigation. Litigation over water rights resulted several orders and decrees preventing the district from diverting

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[4] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 25-26.

[5] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 27-29.

[6] Frank Adams, *Irrigation Districts in California*, 27-28; Small, *Early History of Tulare County*, 188; Morison, *The Alta Empire,* 22, 26-27, 29; Alta Irrigation District (AID), Board of Directors Books, Volume 1: 1888-1894, Minutes, December 6, 1892, and January 3, 1893, on file at AID Offices, Dinuba; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 51-52.

[7] Paul E. Vandor, *History of Fresno County California* 277; John Bergman, *The Southern San Joaquin Valley* (Visalia, CA: Jostens Printing and Publishing, 2009) 9-10; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 105-108.

water in the 1880s and 1890s. The district simply refused to comply and altered the diversion point and the head of the canal to insure the diversion of water. Members also undertook to protect the diversion point with arms. Beginning in 1892 AID began to reach agreements with the other water users along the Kings River reducing the amount of legal entanglements. Meanwhile, the district faced litigation over the formation of the district and initial bond issue. For three years between 1897 and 1900 the district was unable to collect taxes applicable to paying the bonds. Most district residents were willing to pay for operational expenses, but it was difficult for the district to enforce collections, and it became challenging for the district to continue to operate. While the matter was settled in 1901, the district was conservative in its assessments for maintenance and operations and the system deteriorated in the first decade of the twentieth century.[8]

Drought in 1912 and 1914 renewed disagreements over water, and communities and irrigators utilizing the Kings River began looking for permanent solutions, which took two directions. First, residents and community members pushed for negotiated diversions from the Kings River, which necessitated the involvement of a third party. Between 1918 and 1921 the State Water Commission appointed Charles L. Kaupke to measure the flow of the Kings River and develop a compromise diversion schedule. Kaupke devised similar schedules through 1928 when the Kings River Water Association was formed and he became the watermaster for the river. The Kings River Water Association continues to manage water diversions from the Kings River. Second, irrigators recognized a need to control and store Kings River water. Beginning in 1914 irrigators along the river began meeting to develop plans for a flood control and storage reservoir, now known as Pine Flat Dam and Reservoir. Government support and final plans were not possible until the irrigators could settle their disagreements over water distribution making irrigators more amenable to the Kings River Water Association. While the water association was formed in 1928, it took several more years for the irrigators to gain support for the construction of a dam. It was not until 1944 that the US Army Corps of Engineers signed a contract for the construction of Pine Flat Dam on the Kings River (in Fresno County) about 17 miles upstream from the Alta Main Canal Bridge on North Frankwood Avenue.[9]

As AID dealt with litigation at the end of the nineteenth century and in the early twentieth century there was limited funds for district operation, maintenance, and bond repayments. Canal maintenance declined during this period and the condition of system began to deteriorate. As law suits got resolved funding for maintenance and improvements rebounded beginning in the 1910s and continuing through the 1920s. Despite the previous tensions between landholders and the district, AID demonstrated some sensitivity to the difficulties faced by farmers. The low water years beginning in 1924 placed an economic strain on farmers, and the district tended to be lax in collecting penalties on late payments. As the Depression of the 1930s deepened, the district applied surplus funds acquired in the previous years to the maintenance and operation of the district, reducing fees and taxes on farmers. The sound financial management from the 1910s also allowed the district to continue paying off the district bonds at a steady pace. During the Depression the district also received some federal funds through the Works Progress Administration to install pipelines, but no other assistance was necessary.[10]

Following World War II, the largest change to the district was the construction of Pine Flat Dam. Irrigators sourcing their water from the Kings River had long anticipated the construction of such a dam to control the flow of the river and extend the irrigation season. The dam was constructed between 1947 and 1954, and extended the irrigation season in AID lands as anticipated.[11]

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[8] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 30-33, 46, 59-63, 67; Frank Adams, *Irrigation Districts in California,* 217.

[9] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 31-32, 58-59.

[10] AID, Detailed Engineering Drawings, Sheets 39, 41, 53-54, 69-71, 86-88, 104, 1922, on file at AID office; AID, *Annual Reports* (Dinuba: Alta Irrigation District, 1944-1980); William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 50; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 69-70, 72, 74.

[11] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 49.

Despite the construction of Pine Flat Dam the water supply for AID and other irrigators along the Kings River was still dependent upon the total water available from the previous winter's snow pack. Drought during the 1970s resulted in severe limitations on available water. AID began replacing some open canals with pipelines in order to reduce leakage and make the best possible use of available water. The drought period of the mid-1970s also made the district more cognizant of its ground water resources and the strain placed upon them through regular pumping. The district resolved that excess water would be allowed to percolate into the ground in order to replenish the ground water supply. Percolation ponds were complete by 1992.[12] In recent years AID has worked to address climate change and drought conditions by improving automation and efficiency of its water distribution system with the installation of automatic gates at laterals, increased use of water banking ponds and re-regulation basins, and improved management of groundwater supplies.[13]

Alta Main Canal

The canal now known as the Alta Main Canal was started by the 76 Land and Water Company and was initially known as the 76 Canal. Company progenitor and civil engineer Peter Yaple Baker directed the construction in his role as the "construction supervisor." Baker was an entrepreneur with many careers over his life. He came to California in 1859 and made a substantial sum mining. Following a stint in the army during the Civil War he became involved in real estate and politics in Kansas before returning to California in 1875. Using his surveying skills acquired over the years he prepared early maps of Stanislaus and Tulare counties and again became involved in real estate. Despite the lack of a formal engineering education he developed the scheme for the development of the 76 Ranch lands, and the early layout for the irrigation system.[14]

Construction of the 76 Canal, which took two years, began in August 1882. The canal diverted water from Kings River approximately thirteen miles northeast of Reedley. The first diversion point was at Dennis Slough (in the SW ¼ S25 T13S R23E) about 2 miles south of the current diversion. It was moved to its current location at "The Cobbles" (3 miles northeast of the Alta Main Canal Bridge on North Frankwood Avenue) around 1886. The canal followed a path both man made and partially natural, now known as the Back Channel, for about three miles along the southeastern edge of the bottomlands.[15] About a mile above the Alta Main Canal Bridge on North Frankwood Avenue, builders cut through the southeastern bank of the river establishing the main canal. Just to the south, at the current location of the headgate and bridge, a weir was constructed. The wooden weir was 100 feet across and 30 feet wide, and directed excess water into Patterson Slough (now known as Byrd Slough) which sent water back to the Kings River. The canal followed the elevation around the foothills with a controlled 18 inches to the mile grade and a width of 100 feet for the first nine and a half miles (just south of Kennedy Creek near the intersection of American Avenue and Crawford Avenue). Three branches were built off of the Main Canal trending southwest to serve the lands of the district including Traver and Reedley.[16] It was into this system that

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[12] Alta Irrigation District, *Alta Irrigation District Annual Report 1976* (Dinuba, CA: Alta Irrigation District 1976) 18; Alta Irrigation District, *Alta Irrigation District Annual Report 1977* (Dinuba, CA: Alta Irrigation District, 1977) 15; Alta Irrigation District, *Alta Irrigation District Annual Report 1992* (Dinuba, CA: Alta Irrigation District, 1992) 27.

[13] "Drought Plan Alta Irrigation District," October 29, 2015 and "Efficient Water Management Practices: Infrastructure Improvements" in *Agriculture Water Management Plan for Alta Irrigation District*, prepared for California Department of Water Resources, Volume 4 of 4, November 2015.

[14] Lewis Publishing Co., *Memorial and Biographical History of the Counties of Fresno, Tulare, and Kern California* (Chicago: Lewis Publishing Company, 1892) 404-405.

[15] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 21. J.A. Hartman, *Index Map of Alta Irrigation District* (Dinuba, CA: Alta Irrigation District, 1922) Alta Irrigation District Files, Alta Irrigation District Offices Dinuba, CA.

[16] *Memorial and Biographical History of the Counties of Fresno, Tulare and Kern,* California (Chicago: Lewis Publishing Co, 1891) 405; Carl Ewald Grunsky, *Irrigation Near Fresno, California USGS Water Supply and Irrigation Papers No. 18* (Washington, D.C.: Government Printing Office, 1898) 52; William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 21; Jewell, "Agricultural Development in Tulare County," 25-27; Small, *Early History of Tulare County*, 181; Alfred Bannister, *Map of Tulare County* (San Francisco: Lith. Britton & Rey, 1884); Thomas H. Thompson, *Historical Atlas of Tulare County* (Visalia: Thomas Thompson, 1892); William Hammond Hall, *Detail Irrigation Map Centerville* (Sacramento, CA: State Engineer's Office, 1885). US Census Bureau, MS Census 1900, Tulare County, Kaweah township, ed 61 sheet

water was first turned on December 1, 1883. Shortly thereafter, the main canal broke opposite Dunnigan Gap (vicinity of SR 180) and the headgates were closed. Repair and construction continued until water was again turned into the system in March 1884 allowing water to flow down the canal to Traver for the promotion of land sales. The Traver Canal, serving what was intended to be the main settlement on 76 Land and Water Company lands, was considered at this time to be a part of the main canal and it incorporated a portion of the natural waterway known as Kennedy Creek. The main canal ended just southeast of this diversion.[17]

In 1884 construction was turned over to new superintendent and engineer Joseph Peacock, who was another engineer that had learned his skills on the job. Originally born in New York and came to California during the Gold Rush of the 1850s. He established several farms in northern California before coming to the San Joaquin Valley in 1874. He settled in the Mussel Slough territory around Hanford and became involved in the Lake Side Ditch Company there. After a few years he began working for the People's Ditch. His work with these pioneering ditches gained him a reputation for being able to settle difficulties between management and stock holders of such companies. He was hired by the 76 Land and Water Company in 1884. His tasks were to include the management of the canals and the sale and rental of lands. It quickly became obvious that the combined land and water management was too much for one position and John McCubbin was hired as his assistant.[18]

The initial construction served much of the land owned by the 76 Land and Water Company, but plans included extending the 76 Canal further south along the foothills, and Peacock engaged in this work along with creating the necessary delivery canals in the lands being sold by the 76 Land and Water Company. By 1885 the main canal extended to Smith Mountain just north of the border between Tulare and Fresno counties.[19]

While the 76 Land and Water Company appeared to be thriving as the canal system allowed land sales, litigation over the appropriation and allocation of Kings River waters threatened its continued growth. In 1886 as a part of litigation in *A. Heilbron et. al. v the '76 Land and Water Company*, 76 Land and Water Company was ordered to close the head gate and fill the first half mile of canal. This order was never carried out, and 76 Land and Water Company hired a watchman to prevent tampering at the diversion point. Additional litigation, however, resulted in decrees to prevent the company from diverting water. To prevent the decree from being carried out a second diversion was constructed further upstream and the canal bed was improved from that intake. There do not appear to be any maps of this clandestine diversion, but the intake at Dennis Slough is consistent with the historic description of the intake whereas the current intake at The Cobbles includes portions of improved canal as described above.[20] The company managed to continue diversions until the ruling requiring filling the canal was reversed in 1889, although the amount of water allowed to be diverted remained a matter of contention and the canal would not operate legally until that matter was settled. It was during this period that the system was sold to the newly formed AID, which continued appealing the case. [21]

5; US Census Bureau, MS Census 1910, Fresno County, 8th Judicial Township, ed 65, sheet 3; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 21-22.

[17] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 23.

[18] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 23-24; *Memorial and Biographical History of the Counties of Fresno, Tulare and Kern,* California (Chicago: Lewis Publishing Co, 1891) 416-417.

[19] William Hammond Hall, *Detail Irrigation Map, Centerville and Kingsburgh Sheet* (Sacramento: California Department of Engineering, 1885)

[20] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 29-30; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 31-32, 83-84.

[21] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 82-83.

Despite the legal difficulties, AID assumed when it purchased the 76 Land and Water Company system in 1890 that it needed to expand the system to serve its expanded territory. James Sibley was in charge of this work. Like Peacock before him, Sibley had settled in the Mussel Slough area, but following the disruptions there over railroad lands he moved to Dinuba. Sibley had formal training as a civil engineer and developed a comprehensive plan for AID. His plans ushered in a period of rapid expansion as the district sought to provide water for all its members in a territory four times the size served by the original system. The Main Canal was extended southwards to Cottonwood Creek at the southern boundary of the district for a total of 22 miles by 1895. The canal formed the eastern boundary of the system feeding many branch canals. Construction of the canal south of Smith Mountain, however, resulted in a smaller canal only about 40 feet wide, which became known as the East Branch Canal.[22]

As irrigation districts along the Kings River reached compromises regarding the allocation of water in the 1890s and first decade of the twentieth century, AID continued to make improvements to the head of its canal, often incurring additional lawsuits. Improvements to the diversion resulted in two suits during this period.[23] In 1902 an agreement with the Fresno Canal and Irrigation Company allowed the construction of a legal diversion on the river at The Cobbles (S18 T13S R24E). The agreement also allowed AID to deepen the main canal at the diversion point, accounting for erosion that had deepened the riverbed since the canal was first constructed. To appease the Fresno Canal and Irrigation Company, AID was to build a headgate capable of preventing excess water from entering the system, and hire a tender for the headgate to maintain the gate and regulate the water flows at this location. Plans for the new headgate, canal improvements, and diversion were prepared by the two engineers employed by the canal systems James Sibley of AID, and Ingvart Tielman of Fresno Canal and Irrigation Company.[24]

In 1901, resolution of issues surrounding the initial bond issue for the formation of AID allowed the district to begin improving the maintenance and operation of the system. Throughout the system original wooden structures were replaced with concrete including the headgate at North Frankwood Avenue, which was replaced in 1914. Additional improvements included reconstructing diversions and gates along the main canal. The focus on operations of the system also resulted in the clarification of the extent of the Main Canal. The Main Canal was identified as the length from the headgate at North Frankwood Avenue to the head of the Traver Canal (Kennedy Creek, near the intersection of American Avenue and Crawford Avenue). This included most of the original construction from 1882 to 1884. From the head of Traver Canal the easternmost canal was identified as the East Branch Canal. As noted above, the northern portion of the East Branch Canal was constructed as the Main Canal in 1885. Below Smith Mountain the canal was narrower and built by AID between 1890 and 1895. No systematic concrete lining of the Main Canal was carried out in this period, but detailed maps of the district show small portions of lining at select locations. Periodic repairs were also needed to address breaks along the canal.[25] In addition, the headgate at the diversion (built in 1902) was largely rebuilt in 1926 as a result of increased need for control of

[22] Ron Dial, *Dinuba* (Charleston, South Carolina: Arcadia Publishing, 2016) 22; Morison, *The Alta Empire,* 22, 26-27, 29; Carl Ewald Grunsky, *Irrigation Near Fresno, California USGS Water Supply and Irrigation Papers No. 18* (Washington, D.C.: Government Printing Office, 1898) 52.

[23] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 92.

[24] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 93; Minutes of Board of Directors Meeting October 7, 1902, Alta Irrigation District, Directors Record Volume 3, Alta Irrigation District Offices, Dinuba.

[25] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 69; J.A. Hartman, *Index Map of Alta Irrigation District* (Dinuba, CA: Alta Irrigation District, 1922) Alta Irrigation District Files, Alta Irrigation District Offices Dinuba, CA; Detailed Irrigation Maps Sheet 41, 1922, Alta Irrigation District Offices Dinuba; Board of Directors Minutes, September 4, 1917, Directors Record Volume 4, Alta Irrigation Files, Alta Irrigation District Offices, Dinuba; Board of Directors Minutes, July 11, 1921, Directors Record Volume 4, Alta Irrigation Files, Alta Irrigation District Offices, Dinuba .

Kings River water that led to revised annual allocations starting in 1918. These allocations were formalized with the formation of the Kings River Water in 1928.[26]

The Main Canal remains a principal part of AID supplying water to numerous branch ditches and canals. Latter twentieth century construction along the canal has had little impact upon the ditch. The increased delivery season established by the construction of Pine Flat Dam resulted in no significant changes to the canal either. The canal is maintained with earth moving equipment to clear sediment and reshape the earthen walls. Concrete rip rap has been placed at points of high erosion.[27]

Evaluation

Under NRHP Criterion A or CRHR Criterion 1, the Alta Main Canal is not significant for its associations with the settlement of Fresno or Tulare counties, or the development of irrigation in the region or state wide. This canal was built by the 76 Land and Water Company during the development of irrigation systems from waters of the Kings River that led to the settlement patterns and agricultural uses within the region. Settlement of this area of the state was as reliant upon irrigation, as well as railroad transportation and other necessary infrastructure. While essential for operations of the system for which it was built, the Alta Main Canal is like much of the vast irrigation infrastructure built in Fresno and Tulare counties during the late nineteenth century. Review of the eligibility status of previously recorded canals using Kings River water reveals that only two have been found eligible for listing in the NRHP. These are canals associated with the Washington Colony in Fresno County formed in 1878, the first successful irrigation colony, and the People's Ditch in Kings County built in 1873 serving the famous Mussel Slough country. Early pioneering canals such as the Enterprise, Fowler's Switch, and Kingsburg Branch of the Centerville-Kingsburg Canal, have been found ineligible. As these were early ditches it is assumed that these canals have lost integrity. In the early 1880s, the 76 Land and Water Company followed the precedent established by the Fresno Canal and Irrigation Company, and other land colonies built near Fresno in the late 1870s. The company attempted to profit from a larger scaled version of the land colony model, providing a full irrigation system including river diversion, main canals, laterals and delivery canals. The 76 Land and Water Company's formation and the construction of its irrigation system was different compared with others in the region, whereas other systems were built by entities different from the lands they served or were built to initially serve large landholding of small groups of property owners. This distinction was short lived, however, and produced neither significantly different irrigation systems, nor agricultural and settlement patterns. Furthermore, the 76 Land and Water Company failed to overcome its inexperience with irrigation, which led to the rising alkali salts and negative affects upon the water table that damaged the soils near Traver. Despite early success in attracting settlers to the area, the company's narrow profit-driven policies hindered continued development. While irrigation is credited with the transformation of agriculture from wheat to more diversified fruit orchards and vineyards, this did not emerge until later as the area served by the 76 Land and Water Colony remained largely wheat country until the end of the 1880s, as lease limits discouraged settlers from long term investment required for more diversified vineyards and orchards. Regularly increasing lease terms and denial of the original purchase price agreements also deterred continued settlement. Reduced farm size and resultant population increase, and greater crop diversity arrived with the subsequent formation of the AID.

Alta Irrigation District is one of the few districts established under the Wright Act, but does not have specific significance in the establishment of districts. While the legal aspects of irrigation districts and water acquisition were still developing, the benefits of irrigation and its impact on settlement were already established in the area served by the Alta Irrigation District. Subsequent activities of the district, including participation in the division of Kings River water and requests for the Pine Flat Dam, are typical of Kings River water users and similar irrigation districts. It also does not appear that the Alta

[26] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 31-32, 58-59.

[27] Alta Irrigation District, *Alta Irrigation District Annual Report 1976* (Dinuba, CA: Alta Irrigation District 1976) 18; Alta Irrigation District, *Alta Irrigation District Annual Report 1977* (Dinuba, CA: Alta Irrigation District, 1977) 15; Alta Irrigation District, *Alta Irrigation District Annual Report 1992* (Dinuba, CA: Alta Irrigation District, 1992) 27.

Irrigation District's legal battles were important for settling major issues relates to the Wright Act. The Alta Main Canal is not significant for these associations.

This property is not significant under NRHP Criterion B or CRHR Criterion 2 because it is not associated with the lives of persons important to history. The canal is a water delivery system and is not associated with individuals, but rather the collective known as the 76 Land and Water Company and later the Alta Irrigation District. This business and organization were operated by groups of prominent individuals, but no single individual within the organization is associated with the canal and no individuals were identified in research as having significance for association with the canal.

Under NRHP Criterion C or CRHR Criterion 3, this property is not an important example of a type, period, or method of construction. The canal is a simple gravity fed system like many established in California since the Gold Rush when canals were used to bring water to mining operations. The Alta Main Canal is not significant in its design, construction, or engineering. Similar canals were employed for irrigation on the Kings River beginning in the 1860s to help farmers distribute water to their farms. Large scale systems began to develop in the 1870s and several models existed when the 76 Land and Water Company began to construct the Alta Main Canal. The canal is not the work of a master. P.Y. Baker was a self-trained engineer and surveyor and he used established techniques for the development of the main canal and irrigation system for the 76 Land and Water Company. While noted for his business ventures, he is not noted as an engineer. Subsequent engineer Joseph Peacock appears to have had little impact upon the design or maintenance of the Main Canal. His work consisted of extending the canal southwards, and most of his work is now considered part of the East Branch Canal. James Sibley oversaw the final completion of the irrigation system supported by the Main Canal. This work had little impact upon the Main Canal. Under Sibley's guidance the canal headgate at North Frankwood Avenue and headgates for the secondary canals diverting from the Main Canal were converted to concrete during the period of improvements during the 1910s, but this only represented general improvements using established techniques and does not represent important engineering techniques or methods.

This canal is not significant under NRHP Criterion D or CRHR Criterion 4 as a source (or likely source) of important information regarding history. It does not appear to have any likelihood of yielding important information about historic construction materials or technologies.

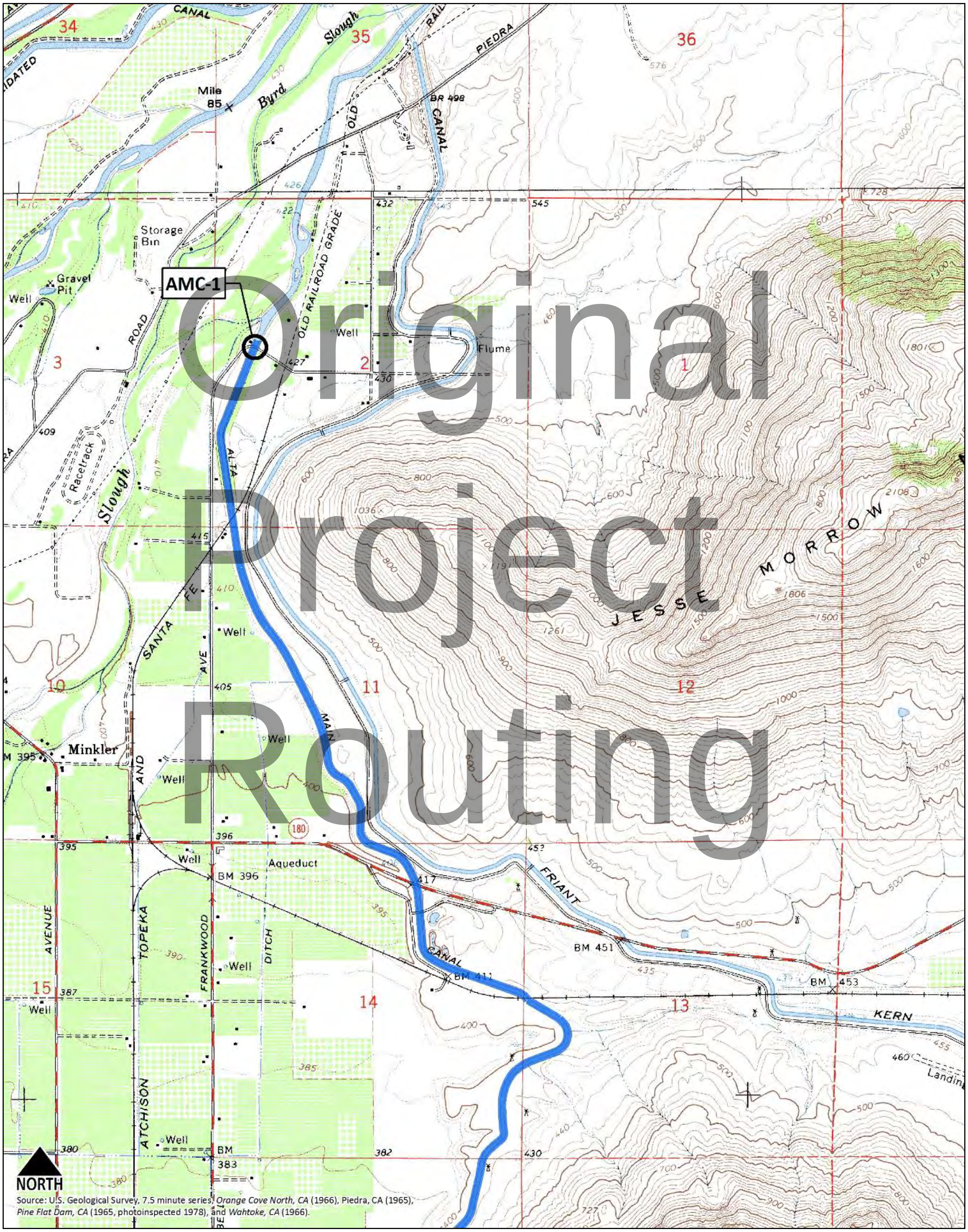
Improvements to the Alta Main Canal during the 1910s when the system underwent a series of repairs, and many wooden structures were replaced with concrete, has led to diminished integrity of materials and workmanship within the canal in relation to the structure's potential period of significance from 1882-1890. The headgates, which were constructed of redwood in 1883, are now reinforced concrete. Diversion structures along the canal area also concrete with concrete wall lining adjacent to the structures. However, the size of the earthen canal often renders these features unremarkable within the scope of the wide earthen canal. The canal retains integrity of location, setting, design, feeling, and association from 1882-1890 during the early period of its development, but is not eligible because it lacks sufficient historic significance.

Primary # ______________________
HRI # ______________________
Trinomial ______________________

***Resource Name or #** Alta Main Canal

***Recorded by:** C Brookshear and H. Miller ***Date:** September 14 & 15, 2016 ☒ **Continuation** ☐ **Update**

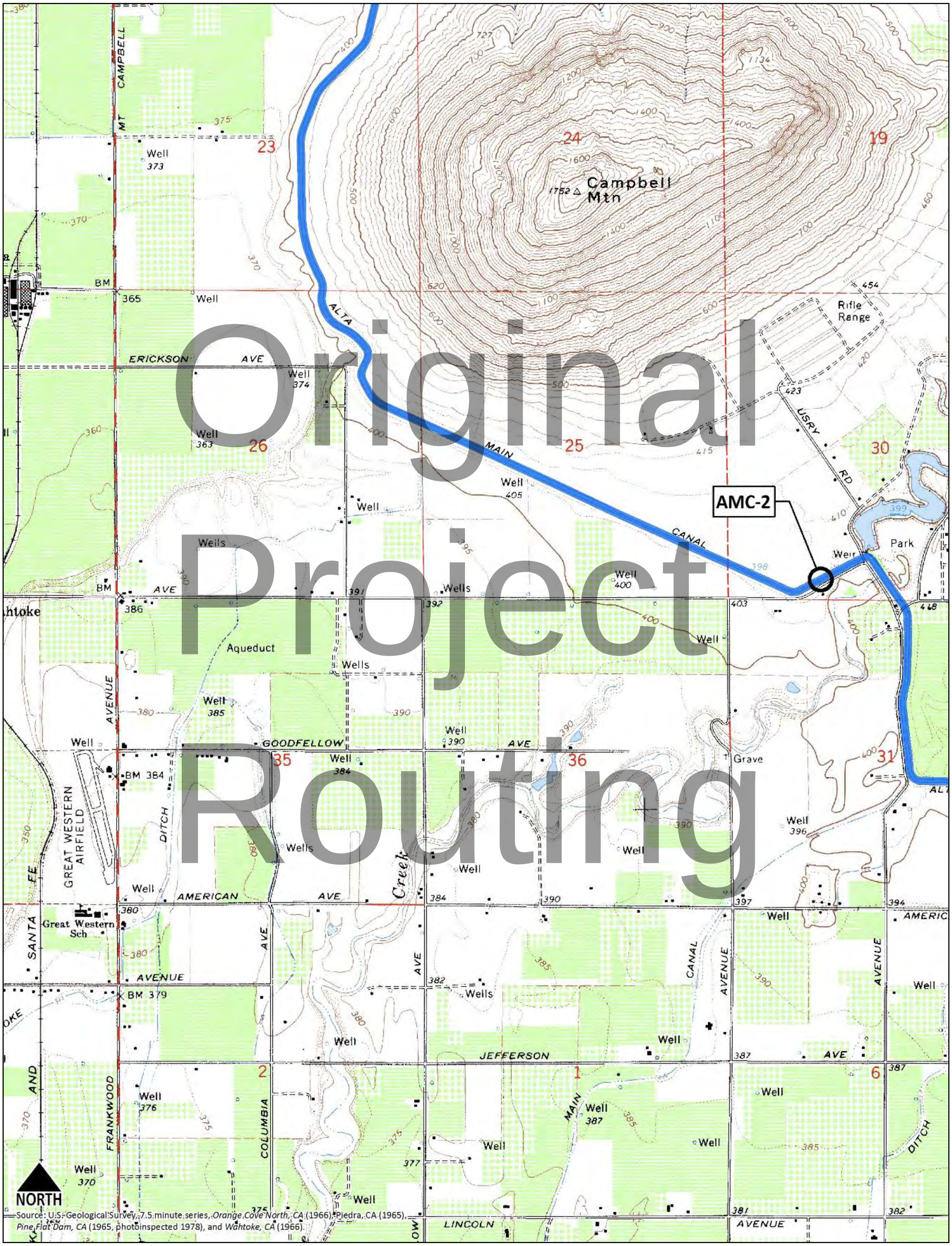
Sketch Map:



Source: U.S. Geological Survey, 7.5 minute series, *Orange Cove North, CA* (1966), Piedra, CA (1965), *Pine Flat Dam, CA* (1965, photoinspected 1978), and *Wahtoke, CA* (1966).

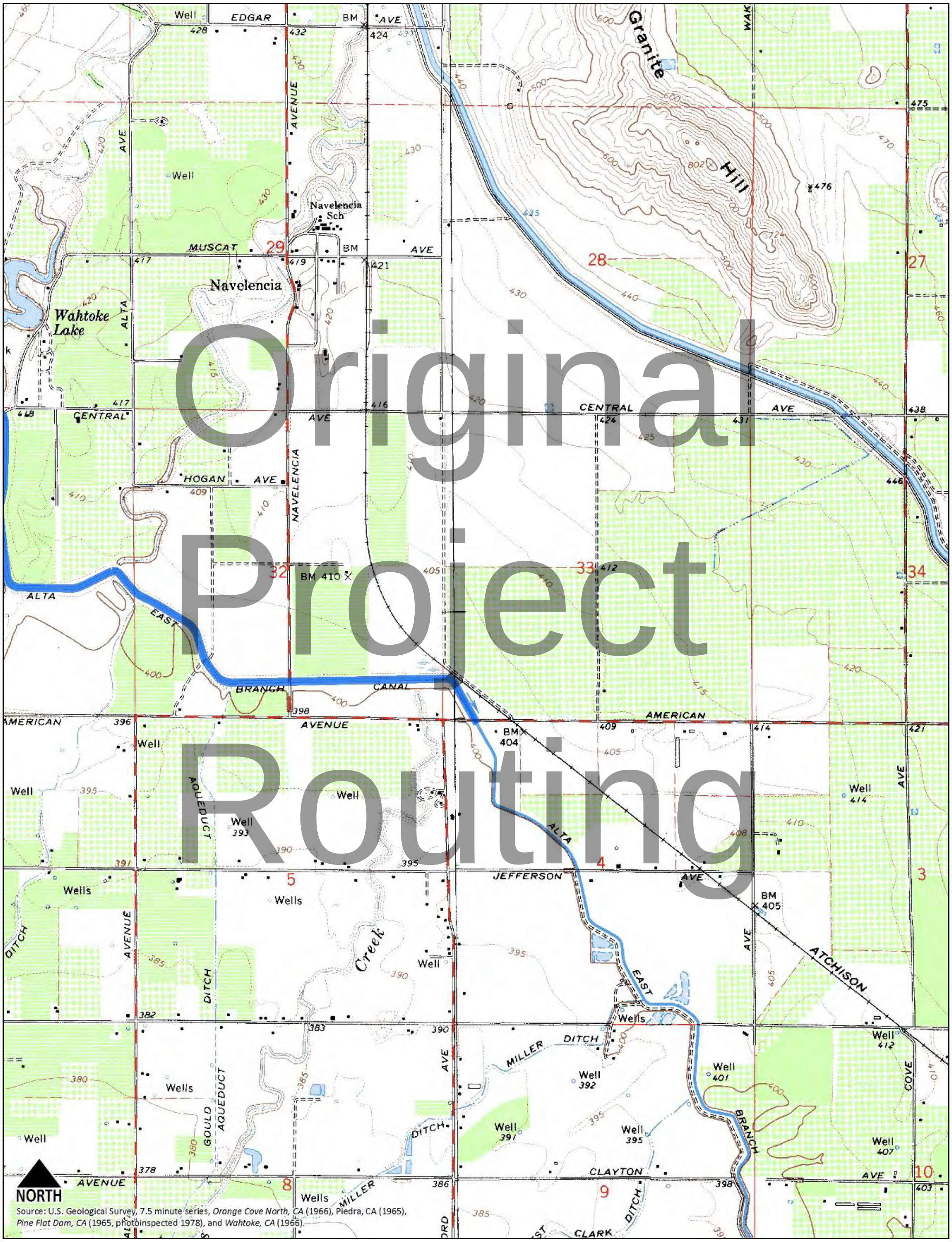
*Resource Name or # Alta Main Canal

*Recorded by: C Brookshear and H. Miller *Date: September 14 & 15, 2016 ☒ Continuation ☐ Update



*Resource Name or # Alta Main Canal

*Recorded by: C Brookshear and H. Miller *Date: September 14 & 15, 2016 ☒ Continuation ☐ Update



State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # ____
HRI # ____
Trinomial ____
NRHP Status Code 6Z

Other Listings ____
Review Code ____ Reviewer ____ Date ____

 ***Resource Name or #** (Assigned by recorder) MR#2

P1. Other Identifier: Alta Main Canal Bridge (42C0289)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County** Fresno

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Wahtoke, Calif. **Date** 1966 **T** 14S; **R** 23E; SW **¼ of Sec** 2; M.D. **B.M.**

c. Address North Frankwoood Avenue City Sanger (vic) Zip 93657

d. UTM: (give more than one for large and/or linear resources) Zone ____; ____mE/ ____mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

The Alta Main Canal Bridge is located on North Frankwood Avenue as it crosses the Alta Main Canal approximately 1.75 miles north of State Route (SR) 180.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Alta Main Canal Bridge (Caltrans Bridge No. 42C0289) carries North Frankwood Avenue and is a board-formed concrete slab bridge that is combined with a headgate on the Alta Main Canal (**Photograph 1**). The four-span single lane structure measures 72 feet and 34 inches long, with 25-foot long wing walls, and is 14 feet wide. The bridge parapets are approximately three-feet tall with inset panels and are topped with wide coping. Chainlink fencing on metal supports lines the top of the southern parapet. The north side of the structure is the location of the headgate that includes 11 gates and a trash grate that is accessed by a concrete walkway, lined with metal railing (**Photograph 2**). Located on the west side of the bridge and headgate is a small gauging station that is also accessed by a concrete walkway, lined with metal railing (**Photographs 3-4**). The wood-frame gauging station is sheathed with wide, vertical wood boards, has a shed roof, and has a wood plank door on the north side. The south side of the bridge and headgate has four open box arches with angled concrete gate walls (**Photograph 5**). A metal frame wheel with wood spokes is centrally located under the head gate/bridge (**Photograph 6**).

***P3b. Resource Attributes:** (List attributes and codes) HP19 – Bridge

***P4. Resources Present:** ☐Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #) **Photograph 1:** Camera facing west, September 15, 2016

***P6. Date Constructed/Age and Sources:** ☒ Historic ☐ Prehistoric ☐ Both
1914 / Alta Irrigation District Board of Directors Books

***P7. Owner and Address:**
Alta Irrigation District
289 North L Street
Dinuba, CA 93618

***P8. Recorded by:** (Name, affiliation, address)
Cheryl Brookshear & Heather Miller
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

***P9. Date Recorded:** September 15, 2016

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") JRP Historical Consulting, LLC, *Historical Resources Evaluation Report Alta Main Canal Bridge Replacement Project, Fresno County*, prepared for County of Fresno, Department of Public Works and Planning and Caltrans District 6, 2017.

***Attachments:** ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list)

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary # ________________
HRI # ________________

***NRHP Status Code** 6Z
***Resource Name or #** (Assigned by recorder) MR#2

B1. Historic Name: Alta Main Canal Headgate
B2. Common Name: Alta Main Canal Bridge
B3. Original Use: headgate and bridge B4. Present Use: headgate and bridge
***B5. Architectural Style:** Utilitarian with Classical details
***B6. Construction History:** (Construction date, alteration, and date of alterations) Constructed in 1914; Trash grate and pipe railing added in 1924.
***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** ________ **Original Location:** ________
***B8. Related Features:** none
B9. Architect: I. H. Tielman b. Builder: Alta Irrigation District
***B10. Significance: Theme** irrigation **Area** northeast Fresno County
Period of Significance 1914 **Property Type** headgate/bridge **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Alta Irrigation District Headgate and Bridge on North Frankwood Avenue (Caltrans Bridge No. 42C0289) does not meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) because it does not have sufficient historical significance. This property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA) Guidelines, using the criteria outlines in Section 5024.1 for the California Public Resources code, and is not a historical resource for the purposes of CEQA.

Historic Context

The Alta Main Canal bridge and headgate is owned by the Alta Irrigation District (AID) which was preceded by the 76 Land and Water Company. While the bridge and headgate is located in Fresno County most of the irrigated district is located to the south in Tulare County. The 76 Land and Water Company was founded in 1882 to serve the semi-arid region previously dominated by the '76' Ranch in Tulare County. The land and water company adopted its name from the ranch, which had collapsed under the combined forces of droughts, introduction of the "no fence" law, and construction of the railroad through the San Joaquin Valley. (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes) ________________

***B12. References:** Adams, Frank. *Bulletin No. 21: Irrigation Districts in California.* Sacramento, California: Department of Public Works, 1929; Alta Irrigation District (AID), Board of Directors Books, Alta Irrigation District Offices, Dinuba; Alta Irrigation District, Detailed Engineering Drawings, Alta Irrigation District Offices, Dinuba; Alta Irrigation District. *Annual Report.* Dinuba: Alta Irrigation District, 1944-1980; Enns, Harold J. "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development." Master's Thesis, Fresno State College, 1967; Morison, William. *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley.* Dinuba: Alta Irrigation District, 1988; and see B10 footnotes.

B13. Remarks:

***B14. Evaluator:** Cheryl Brookshear

***Date of Evaluation:** September 2016

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

B10. Significance (continued):

At the time the company was founded the area was sparsely populated and largely involved with cattle ranching, although large scale wheat ranches were forming. Peter Yaple Baker and D.K. Zumwalt conceived the '76' Land and Water Company as the first large-scale settlement and irrigation project in Tulare County. In order to raise capital, stock was divided among seven investors, H.P. Merritt, P.Y. Baker, Charles Traver, D.K. Zumwalt, C.F.J. Kitchener, I.H. Jacobs, Thomas Fowler, and Francis Bullard. County residents received news of the project with enthusiasm. The '76' Land and Water Company was the first in Tulare County to undertake an advertizing campaign to draw people to its newly irrigated land. The main community and shipping point in the development was to be Traver located on the Southern Pacific Railroad mainline, which had been built through the San Joaquin Valley in 1872.[1]

When the first sections of 76 Canal, as it was initially known (later Alta Main Canal), were opened in 1884 settlers came by the train load and began establishing new farms northwestern Tulare County. Growth was bolstered by several factors. The 76 Company founders were able to establish their main community of Traver on the new Southern Pacific Railroad line through the San Joaquin Valley. The area originally settled as wheat farms, and Traver shipped massive quantities of wheat each year. Irrigation, however, also made it possible to introduce orchards and other specialty irrigated crops.[2]

In response to various conflicts over agricultural water supplies in the San Joaquin Valley and elsewhere in the state California passed the Wright Act in 1887 allowing property owners to form and operate their own irrigation districts, which became public corporations empowered to issue bonds, levy and collect taxes, and operate and maintain irrigation works. The following year the residents in the area served by the '76' Canal, and its branches, voted to form their own district, which was named the Alta Irrigation District (AID). They were joined by additional residents in northwestern Tulare County and the new district included 130,000 acres, over four times the size of the original area to be served by the 76 Land and Water Company. AID would be one of only seven districts founded under the initial Wright Act. Because the canal's diversion point was further up the Kings River than any other irrigation district, they selected "Alta," meaning "high," for the name of the district. The Board of Directors, consisting of P.Y. Baker who had left the '76' Land and Water Company, T.L. Reed, J.D. Van Noy, E.E. Giddings, and J.E. Toler, authorized $675,000 worth of bonds, of which $410,000 were used to purchase the existing '76' Canal system. Another $133,000 in bonds was used to expand the irrigation system through the construction of additional branch canals. The district hired James Sibley to design a larger system between 1888 and 1890 to serve the district, which had expanded from the 2,000 acres of the 76 Company holding to 19,000 acres. As a part of the design the district purchased the 76 Land and Water Company irrigation system in 1890. AID undertook expansion of the system under Sibley's guidance. AID used a distinct process for arranging the construction of canals. Instead of contracting the work, the district developed the plan and then paid farmers to excavate the ditches paying on a per yard basis. In this way, most of the expansion was carried out without contractors. In 1895, AID declared the system complete although construction continued through the first decade of the twentieth century.[3]

As with the construction of the 76 Land and Water Company system, the AID system was accompanied by expansion of the railroad through the region. In 1888 when the AID was formed the Southern Pacific Railroad completed its east branch line

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[1] US Department of Agriculture, *Report of Irrigation Investigations in California* (Washington D.C.: Government Printing Office, 1901), 294; Marion Nielsen Jewell, "Agricultural Development in Tulare County 1870-1900," Master's Thesis, University of Southern California, June 1950, 26-27; Kathleen Edward Small, *Early History of Tulare County, California* (Exeter: Bear State Books, 2001), 183-184; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 19-20.

[2] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 25-26.

[3] Frank Adams, *Irrigation Districts in California*, 27-28; Small, *Early History of Tulare County*, 188; Morison, *The Alta Empire,* 22, 26-27, 29; Alta Irrigation District (AID), Board of Directors Books, Volume 1: 1888-1894, Minutes, December 6, 1892, and January 3, 1893, on file at AID Offices, Dinuba; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 51-52.

through the San Joaquin Valley leading to the new communities of Dinuba and Reedley. This created further impetus for the development of AID and construction of more ditches to serve new farms. The formation of AID reduced the control the 76 Land and Water Company had on the area. Crops diversified into long term crops such as vineyards and orchards suited to the newly irrigated land. The taxation system based on acreage imposed by irrigation districts such as AID also promoted the division of lands into smaller specialty farms.[4]

Despite the district's success in constructing its system and increasing settlement it faced legal difficulties associated with water rights litigation. Litigation over water rights resulted several orders and decrees preventing the district from diverting water in the 1880s and 1890s. The district simply refused to comply and altered the diversion point and the head of the canal to insure the diversion of water. Members also undertook to protect the diversion point with arms. Beginning in 1892 AID began to reach agreements with the other water users along the Kings River reducing the amount of legal entanglements. Meanwhile, the district faced litigation over the formation of the district and initial bond issue. For three years between 1897 and 1900 the district was unable to collect taxes applicable to paying the bonds. Most district residents were willing to pay for operational expenses, but it was difficult for the district to enforce collections, and it became challenging for the district to continue to operate. While the matter was settled in 1901, the district was conservative in its assessments for maintenance and operations and the system deteriorated in the first decade of the twentieth century.[5]

Drought in 1912 and 1914 renewed disagreements over water, and communities and irrigators utilizing the Kings River began looking for permanent solutions, which took two directions. First, residents and community members pushed for negotiated diversions from the Kings River, which necessitated the involvement of a third party. Between 1918 and 1921 the State Water Commission appointed Charles L. Kaupke to measure the flow of the Kings River and develop a compromise diversion schedule. Kaupke devised similar schedules through 1928 when the Kings River Water Association was formed and he became the watermaster for the river. The Kings River Water Association continues to manage water diversions from the Kings River. Second, irrigators recognized a need to control and store Kings River water. Beginning in 1914 irrigators along the river began meeting to develop plans for a flood control and storage reservoir, now known as Pine Flat Dam and Reservoir. Government support and final plans were not possible until the irrigators could settle their disagreements over water distribution making irrigators more amenable to the Kings River Water Association. While the water association was formed in 1928, it took several more years for the irrigators to gain support for the construction of a dam. It was not until 1944 that the US Army Corps of Engineers signed a contract for the construction of Pine Flat Dam on the Kings River (in Fresno County) about 17 miles upstream from the Alta Main Canal Bridge on North Frankwood Avenue.[6]

As AID dealt with litigation at the end of the nineteenth century and in the early twentieth century there was limited funds for district operation, maintenance, and bond repayments. Canal maintenance declined during this period and the condition of system began to deteriorate. As law suits got resolved funding for maintenance and improvements rebounded beginning in the 1910s and continuing through the 1920s. Despite the previous tensions between landholders and the district, AID demonstrated some sensitivity to the difficulties faced by farmers. The low water years beginning in 1924 placed an economic strain on farmers, and the district tended to be lax in collecting penalties on late payments. As the Depression of the 1930s deepened, the district applied surplus funds acquired in the previous years to the maintenance and operation of the district, reducing fees and taxes on farmers. The sound financial management from the 1910s also allowed the district to

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[4] Paul E. Vandor, *History of Fresno County California* 277; John Bergman, *The Southern San Joaquin Valley* (Visalia, CA: Jostens Printing and Publishing, 2009) 9-10; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 105-108.

[5] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 30-33, 46, 59-63, 67; Frank Adams, *Irrigation Districts in California,* 217.

[6] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 31-32, 58-59.

continue paying off the district bonds at a steady pace. During the Depression the district also received some federal funds through the Works Progress Administration to install pipelines, but no other assistance was necessary.[7]

Following World War II, the largest change to the district was the construction of Pine Flat Dam. Irrigators sourcing their water from the Kings River had long anticipated the construction of such a dam to control the flow of the river and extend the irrigation season. The dam was constructed between 1947 and 1954, and extended the irrigation season in AID lands as anticipated.[8]

Despite the construction of Pine Flat Dam the water supply for AID and other irrigators along the Kings River was still dependent upon the total water available from the previous winter's snow pack. Drought during the 1970s resulted in severe limitations on available water. AID began replacing some open canals with pipelines in order to reduce leakage and make the best possible use of available water. The drought period of the mid-1970s also made the district more cognizant of its ground water resources and the strain placed upon them through regular pumping. The district resolved that excess water would be allowed to percolate into the ground in order to replenish the ground water supply. Percolation ponds were complete by 1992.[9] In recent years AID has worked to address climate change and drought conditions by improving automation and efficiency of its water distribution system with the installation of automatic gates at laterals, increased use of water banking ponds and re-regulation basins, and improved management of groundwater supplies.[10]

Alta Main Canal Headgate and Bridge

The first headgates for the Alta Main Canal were constructed in 1883 by Henry McGee as part of the canal construction. The wooden headgates followed common construction practice for irrigation structures of the time, despite their large size (100 feet across and 30 feet wide). By 1898, the structure was also in use as a county bridge along North Frankwood Avenue.[11]

Prolonged litigation over the initial bond sale for AID had lead to a period of decline for the system, and by 1914 the old headgates at North Frankwood Avenue needed replacement. New headgates at the diversion point approximately five miles upstream were constructed in 1903 following an agreement with the Fresno Canal and Irrigation Company the previous year, but the old headgates at North Frankwood Avenue still operated to control flows into the Main Canal. Fresno County's use of the headgate as a bridge necessitated an agreement between the county and AID regarding the construction. AID and Fresno County signed an agreement in September 1914 that assigned responsibility for the construction of the bridge to AID based upon plans approved by both Fresno County and AID. The cost of construction was divided with the county paying 30 percent of the costs. While the agreement stipulated that the project would be bid out, the AID director's minutes do not record any bids or contract for the work. Records indicate that the irrigation district ordered parts and materials, notably the iron work for the bridge directly. Perhaps more surprisingly, rather than AID having its own engineer, James Sibley, design

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[7] AID, Detailed Engineering Drawings, Sheets 39, 41, 53-54, 69-71, 86-88, 104, 1922, on file at AID office; AID, *Annual Reports* (Dinuba: Alta Irrigation District, 1944-1980); William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 50; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 69-70, 72, 74.

[8] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 49.

[9] Alta Irrigation District, *Alta Irrigation District Annual Report 1976* (Dinuba, CA: Alta Irrigation District 1976) 18; Alta Irrigation District, *Alta Irrigation District Annual Report 1977* (Dinuba, CA: Alta Irrigation District, 1977) 15; Alta Irrigation District, *Alta Irrigation District Annual Report 1992* (Dinuba, CA: Alta Irrigation District, 1992) 27.

[10] "Drought Plan Alta Irrigation District," October 29, 2015 and "Efficient Water Management Practices: Infrastructure Improvements" in *Agriculture Water Management Plan for Alta Irrigation District*, prepared for California Department of Water Resources, Volume 4 of 4, November 2015.

[11] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 21; Scott McKay, *Official Map of the County of Fresno, California* (Fresno, CA: np, 1898); Carl Ewald Grunsky, *Irrigation Near Fresno, California USGS Water Supply and Irrigation Papers No. 18* (Washington, D.C.: Government Printing Office, 1898) Plate X, 53-54.

the bridge, the order for iron work states that the plans were drawn by I. H. Tielman, who was a Fresno civil engineer and son of noted Fresno engineer Ingvart Tielman who was the engineer for the Fresno Canal and Irrigation Company with which AID had legal disputes.[12]

Construction of the combination headgate and bridge occurred during a period of rapid development for reinforced concrete construction in engineering structures. Concrete slab bridges, like the one incorporated into the AID headgate, were slowly gaining acceptance in California around the turn of the century. Between 1900 and 1914 only seven such bridges were constructed, but between 1914 and 1919 a total of 58 concrete slab bridges were constructed in the state. These bridges are usually small and unadorned, and those that have been found significant employ unusual construction methods or aesthetic features.[13]

Publications regarding the construction of irrigation systems in at the beginning of the twentieth century generally do not mention the use of reinforced concrete, but by 1916 authors of such publications nearly assumed the use of reinforced concrete in the construction of headgates.[14] For example, beginning in 1903 with the Carson Truckee Project (now the Newlands Project) the US Bureau of Reclamation began the construction of flood control and irrigation structures. The Carson Truckee Project made extensive use in concrete for control structures and canal lining including the Carson Diversion Dam (1904-1905). Over the next decade additional projects constructed by the US Bureau of Reclamation included reinforced concrete headgates and control structures. These included the Boise River headgates for the Boise Project (1909), the Sunnyside Project, Yakima, Washington (1907), and Prewitt Reservoir, Colorado (1910). In California a major proponent of reinforced concrete construction was John Buck Leonard, who had worked as a consulting engineer on the Carson Truckee Project. He became known for his work on reinforced concrete bridges, and working to adjust building codes to legalize reinforced concrete building construction. In 1911 he designed the Old Headquarters Wier on Miller & Lux property near Buttonwillow, California. This water control structure also served as a bridge. At the same time Leonard was promoting reinforced concrete bridge construction, Ingvart Tielman was employing the method on head gates as early as 1904-1905 when he reconstructed the headgates several canals of the Consolidated Canal Company.[15]

Therefore, it is not surprising that in 1914 when Tielman's son I.H. Tielman, following his father in irrigation engineering, designed the AID headgate at North Frankwood Avenue using reinforced concrete. Fitting the headgate for use as a bridge was a matter of little import as the previous headgate had served the same purpose and the necessary alterations well known (Image 1). The new headgate had long wing walls and narrowed the operational channel to 72 feet at the headgate with the channel quickly resuming its 100 foot width above and below the headgate.[16]

[12] Minutes of Board of Directors Meeting October 7, 1902, Alta Irrigation District, Directors Record Volume 3, Alta Irrigation District Offices, Dinuba; Minutes of Board of Directors Meeting October 6, 1914, Directors Record Volume 3, Alta Irrigation District Offices, Dinuba; Minutes of Board of Directors Meeting October 6, 1914, Directors Record Volume 3, Alta Irrigation District Offices, Dinuba.
[13] Andrew Hope, *Caltrans Statewide Historic Bridge Inventory Update Survey and Evaluation of Common Bridge Types,* California Department of Transportation, 2004, 9-10.
[14] Frederick Haynes Newell, *Irrigation in the United States* (New York: Thomas Y Crowell & Co, 1902) 115-120; B. A. Etcheverry, *Irrigation Practice and Engineering Vol. 3* (New York: McGraw-Hill Book Company, 1916) 121-140.
[15] I. Tielman and W.H. Shafer, *The Historical Story of Irrigation in Fresno and Kings Counties in Central California* (Fresno, California: Williams & Son, 1943), 34; J. Randal McFarland, *Water for a Thirsty Land the Consolidated Irrigation District* (Fresno, CA: Consolidated Irrigation District, 1996) 63; John W. Snyder, "Buildings and Bridges for the 20th Century," *California History* (Fall 1984); John Snyder and Steve Mikesell, "The Consulting Engineer and Early Concrete Bridges in California," *Concrete International* (May 1994).
[16] Sibley, "Structure for Arresting Debris at Main Alta Headgate," Drawing no D-1, Roll A-51-1, Alta Irrigation District files, Dinuba.

Image 1. New AID Main Canal headgate and bridge on North Frankwood Avenue, as constructed in 1914, camera facing southwest. [17]

The headgate was modified in 1924 with the addition of a trash rack. Designed by district engineer J.A. Hartman, and signed off on by head district engineer Sibley the trash rack placed angled buttressed piers on the northern upstream side of the gate. Metal racks were attached to the buttresses to catch debris. Construction of the trash rack also added a walkway along the north side of the bridge. Originally manually operated, the gates were subsequently motorized with an operational panel at the northwest end.[18]

<u>Evaluation</u>

The combination headgate and bridge on North Frankwood Avenue over the Alta Main Canal is included in the California Transportation Department's historic bridge inventory as a "Category 5" bridge, i.e. not eligible for the NRHP. This determination was made using the bridge statistics available in the bridge log. That information included an erroneous construction date of 1925 and likely did not take into account the possible historic significance of this structure relates to the headgate integrated into the structure. This form addresses this component of the structure's history.

Under NRHP Criterion A or CRHR Criterion 1, this property is not significant because it does not have strong associations with important historic events. This combination headgate and bridge replaced the original headgate constructed in the vicinity of the current structure in 1883. That headgate had also been used as a bridge since 1898 or before. Replacement of the headgate was a part of general system-wide repairs that AID conducted in the 1910s necessitated by neglect over the previous two decades as the irrigation district addressed legal matters. While the 1910s saw a variety of improvements to the system including the replacement of the headgate it had little significant impact upon the irrigation district's relationship with the community or its development. The bridge itself does not appear to have been an important addition to the region's roadway system and it is not linked with the development of specific areas within Fresno County.

This property is not significant under NRHP Criterion B or CRHR Criterion 2 because it is not associated with the lives of persons important to history. The headgate regulates water within the Alta Main Canal and is not associated with

[17] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 13.
[18] Sibley, "Structure for Arresting Debris at Main Alta Headgate," Drawing no D-1, Roll A-51-1, Alta Irrigation District files, Dinuba.

individuals, but rather the collective known as the Alta Irrigation District. As such, research did not identify that the bridge is associated with any individual.

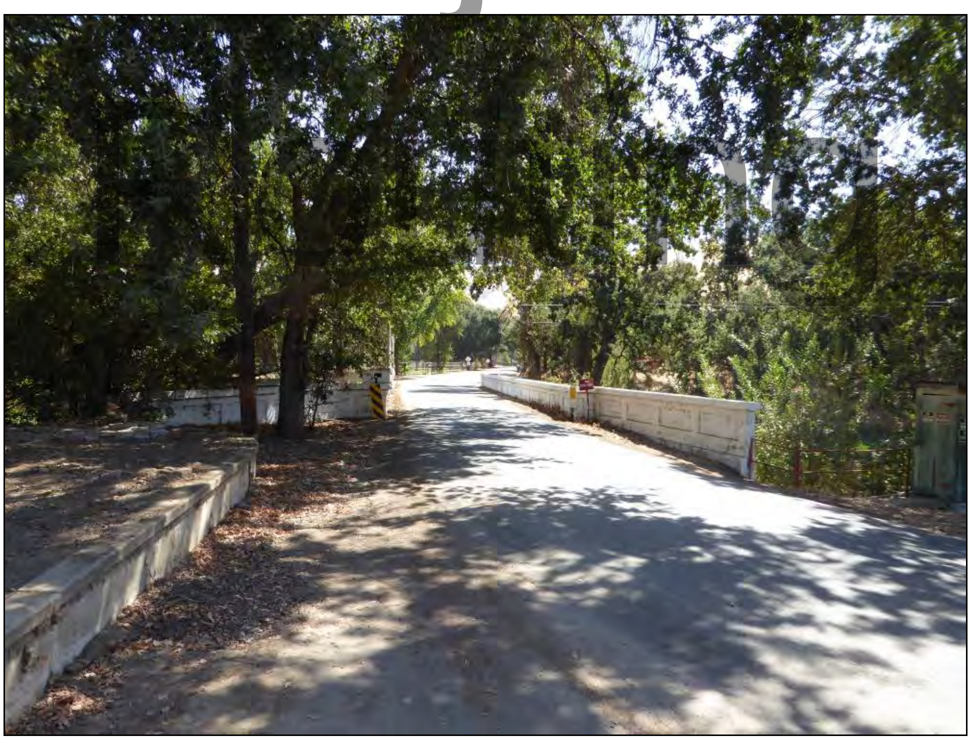
Under NRHP Criterion C or CRHR Criterion 3, this property is not an important example of a type, period, or method of construction. Reinforced concrete headgates and bridges were developed in the first decade of the twentieth century. Seven reinforced concrete slab bridges were constructed in California between 1900 and 1914. Between 1914 and 1919, 58 such bridges were constructed. The four span single lane structure is modest in scale and does not illustrate a bold engineering achievement. Significant examples of this bridge type involve ornament in distinctive architectural styles or distinctive engineering techniques or methods. The Alta Main Canal Bridge uses little ornament, just recessed panels and is undistinctive in its engineering, even including the headgate component. Reinforced concrete headgates were introduced concurrently with the development of reinforced concrete bridges. The US Bureau of Reclamation made use of the technique and constructed several large examples as a part of reclamation projects in the American West. California engineers notably I. Tielman and John Buck Leonard began constructing reinforced concrete weirs and headgates in the first decade of the century. When I.H. Tielman, son of I. Tielman, designed the headgate and bridge structure in 1914 reinforced concrete construction of such structures was becoming standard. As a result, the headgate and bridge does not represent any innovations in design. Further, it does not appear to be the work of a master designer, nor does it embody high artistic value, factors that might imbue it with significance under these criteria.

This headgate and bridge is not significant under NRHP Criterion D or CRHR Criterion 4 as a source (or likely source) of important information regarding history. It does not appear to have any likelihood of yielding important information about historic construction materials or technologies.

The operation of the headgate has been altered over the years with the addition of a trash gate in 1924 and electrification of the gate mechanism following World War II. These alterations have reduced the integrity of design. The bridge deck has also been resurfaced obscuring the concrete deck. Overall, this combination headgate and bridge retains integrity of location, setting, materials, workmanship, feeling, and association to its original construction; however, it does not meet any of the significance criteria necessary for listing in either the NRHP or CRHR.

Photographs (continued):

Photograph 2: North wall of headgate/bridge showing gates, camera facing southwest, September 15, 2016.



Photograph 3: West end of headgate/bridge with gauging station on far right, camera facing east, September 15, 2016.

***Resource Name or #** (Assigned by recorder) MR#2

***Recorded by** C. Brookshear & H. Miller *Date September 15, 2016 ☒ Continuation ☐ Update

Photograph 4: Gauging station, camera facing south, September 15, 2016.

Photograph 5: South wall of headgate/bridge, camera facing northeast, September 15, 2016.

Photograph 6: Detail of wheel under south wall of headgate/bridge, camera facing northeast, September 15, 2016.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # ____
HRI # ____
Trinomial ____
NRHP Status Code 6Z

Other Listings ____
Review Code ____ Reviewer ____ Date ____

***Resource Name or #** (Assigned by recorder) MR# 3

P1. Other Identifier: Alta Irrigation District Ditch Tender's Cottage

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County** Fresno
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** Wahtoke, Calif. **Date** 1966 **T** 14S; **R** 23E; SW ¼ **of Sec** 2; M.D. **B.M.**
c. Address 347 North Frankwood Avenue City Sanger (vicinity) Zip 93657
d. UTM: (give more than one for large and/or linear resources) Zone ____; ____mE/ ____mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor Parcel Number (APN): 333-430-15T

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This Alta Irrigation District Ditch Tender's Cottage is located on North Frankwood Avenue, on the west side of the Main Alta Canal. The lot has been graded and the south end is lined with a low concrete retaining wall (**Photograph 1**). The single-story, Bungalow with Craftsman elements rests on a raised concrete foundation and is sheathed in clapboard wood siding with wood corner boards. A front-gable roof with moderate overhang, knee brackets, and vertical gable vents tops the residence. The gable ends are lined with fascia boards with exposed raftertails along the eaves. A shorter, nearly full-width, screened porch with the same architectural details lines the façade and is accessed by centrally located concrete stairs that are flanked by a low, river rock planter. The centrally located porch screen door provides access to the off-center metal security door on the façade of the house. It appears that the northwest corner of the house had an inset porch that has been infilled with a narrow replacement window and wood siding (**Photograph 2**). The remaining windows in the residence are single and paired, one-over-one, wood windows with wide wood surrounds. (See Continuation Sheet.)

***P3b. Resource Attributes:** (List attributes and codes) HP2 – Single Family Property
***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #) **Photograph 1:** Camera facing north, September 15, 2016.

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1914c. / Alta Irrigation District Board Minutes

***P7. Owner and Address:**
Alta Irrigation District
289 North L Street
Dinuba, CA 93618

***P8. Recorded by:** (Name, affiliation, address)
Cheryl Brookshear & Heather Miller
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

***P9. Date Recorded:** September 15, 2016

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") JRP Historical Consulting, LLC, *Historical Resources Evaluation Report Alta Main Canal Bridge Replacement Project, Fresno County, California*, prepared for County of Fresno, Department of Public Works and Planning and Caltrans District 6, 2017.

***Attachments:** ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list) ____

***NRHP Status Code** 6Z
***Resource Name or #** (Assigned by recorder) MR# 3

B1. Historic Name: Alta Irrigation District Ditch Tender's Residence
B2. Common Name: ____________
B3. Original Use: ditch tender's residence B4. Present Use: residence
***B5. Architectural Style:** Bungalow with Craftsman elements
***B6. Construction History:** (Construction date, alteration, and date of alterations) Estimated Construction Date of 1914; small rear addition constructed 1961-1965; old out-building replaced with current "garage" 1961-1965.
***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown Date:** ____________ **Original Location:** ____________
***B8. Related Features:** none
B9. Architect: Unknown b. Builder: Unknown
***B10. Significance: Theme** Irrigation **Area** South central Fresno County, northeastern Tulare County
Period of Significance c.1914 **Property Type** Residential **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Alta Irrigation District Ditch Tender's residence at 347 North Frankwood Avenue does not meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) because it does not have sufficient historical significance. This property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA) Guidelines, using the criteria outlines in Section 5024.1 for the California Public Resources code, and is not a historical resource for the purposes of CEQA.

Historic Context

The Ditch Tender's Residence is owned and occupied by the Alta Irrigation District (AID) which was preceded by the 76 Land and Water Company. While the ditch tender's residence is located in Fresno County most of the irrigated district is located to the south in Tulare County. The 76 Land and Water Company was founded in 1882 to serve the semi-arid region previously dominated by the '76' Ranch in Tulare County. The land and water company adopted its name from the ranch, which had collapsed under the combined forces of droughts, introduction of the "no fence" law, and construction of the railroad through the San Joaquin Valley. (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes) ____________

***B12. References:** Adams, Frank. *Bulletin No. 21: Irrigation Districts in California.* Sacramento, California: Department of Public Works, 1929; Alta Irrigation District (AID), Board of Directors Books, Alta Irrigation District Offices, Dinuba; Alta Irrigation District, Detailed Engineering Drawings, Alta Irrigation District Offices, Dinuba; Alta Irrigation District. *Annual Report.* Dinuba: Alta Irrigation District, 1944-1980; Enns, Harold J. "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development." Master's Thesis, Fresno State College, 1967; Morison, William. *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley.* Dinuba: Alta Irrigation District, 1988; and see B10 footnotes.

B13. Remarks:

***B14. Evaluator:** Cheryl Brookshear

***Date of Evaluation:** September 2016

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

P3a. Description (continued):

A tall, shed roof tank tower with board-and-batten siding is located on the north side of the residence (**Photographs 2 & 3**). Aerial photography reveals that the tank tower is attached to the north side the residence. Aerial photography also reveals that a gable-roof outbuilding that is partially visible from the right-of-way is integrated into the north side of the tank tower (**Photograph 3**). This outbuilding is rectangular in plan, has moderate eaves with fascia board, and is sheathed in flush wood siding. A wood panel door is located on the south side and a window opening on the east side has been boarded over.

Sited northwest of the residence is a detached garage (**Photograph 4**). The building is rectangular in plan, is topped with an end-gable roof with vertical gable vents and fascia board. The exterior is sheathed in board-and-batten siding and is accessed by double, x-braced wood doors on the south side.

B10. Significance (continued):

At the time the company was founded the area was sparsely populated and largely involved with cattle ranching, although large scale wheat ranches were forming. Peter Yaple Baker and D.K. Zumwalt conceived the ‘76’ Land and Water Company as the first large-scale settlement and irrigation project in Tulare County. In order to raise capital, stock was divided among seven investors, H.P. Merritt, P.Y. Baker, Charles Traver, D.K. Zumwalt, C.F.J. Kitchener, I.H. Jacobs, Thomas Fowler, and Francis Bullard. County residents received news of the project with enthusiasm. The ‘76’ Land and Water Company was the first in Tulare County to undertake an advertizing campaign to draw people to its newly irrigated land, like what companies had previously been doing in Fresno County. The main community and shipping point in the development was to be Traver located on the Southern Pacific Railroad mainline, which had been built through the San Joaquin Valley in 1872.[1]

When the first sections of 76 Canal, as it was initially known (later Alta Main Canal), were opened in 1884 settlers came by the train load and began establishing new farms northwestern Tulare County. Growth was bolstered by several factors. The 76 Company founders were able to establish their main community of Traver on the new Southern Pacific Railroad line through the San Joaquin Valley. The area originally settled as wheat farms, and Traver shipped massive quantities of wheat each year. Irrigation, however, also made it possible to introduce orchards and other specialty irrigated crops.[2]

In response to various conflicts over agricultural water supplies in the San Joaquin Valley and elsewhere in the state California passed the Wright Act in 1887 allowing property owners to form and operate their own irrigation districts, which became public corporations empowered to issue bonds, levy and collect taxes, and operate and maintain irrigation works. The following year the residents in the area served by the ‘76’ Canal, and its branches, voted to form their own district, which was named the Alta Irrigation District (AID). They were joined by additional residents in northwestern Tulare County and the new district included 130,000 acres, over four times the size of the original area to be served by the 76 Land and Water Company. AID would be one of only seven districts founded under the initial Wright Act. Because the canal’s diversion point was further up the Kings River than any other irrigation district, they selected “Alta,” meaning “high,” for the name of the district. The Board of Directors, consisting of P.Y. Baker who had left the ‘76’ Land and Water Company, T.L. Reed, J.D. Van Noy, E.E. Giddings, and J.E. Toler, authorized $675,000 worth of bonds, of which $410,000 were used to purchase the existing ‘76’ Canal system. Another $133,000 in bonds was used to expand the irrigation system through the construction of additional branch canals. The district hired James Sibley to design a larger system between 1888 and 1890 to serve the district, which had expanded from the 2,000 acres of the 76 Company holding to 19,000 acres. As a part of the

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[1] US Department of Agriculture, *Report of Irrigation Investigations in California* (Washington D.C.: Government Printing Office, 1901), 294; Marion Nielsen Jewell, “Agricultural Development in Tulare County 1870-1900,” Master’s Thesis, University of Southern California, June 1950, 26-27; Kathleen Edward Small, *Early History of Tulare County, California* (Exeter: Bear State Books, 2001), 183-184; Harold J. Enns, “The Alta Irrigation District: A Prototype of Individual Initiative in Water Development” Master’s Thesis, Fresno State College, 1967, 19-20.

[2] Harold J. Enns, “The Alta Irrigation District: A Prototype of Individual Initiative in Water Development” Master’s Thesis, Fresno State College, 1967, 25-26.

design the district purchased the 76 Land and Water Company irrigation system in 1890. AID undertook expansion of the system under Sibley's guidance. AID used a distinct process for arranging the construction of canals. Instead of contracting the work, the district developed the plan and then paid farmers to excavate the ditches paying on a per yard basis. In this way, most of the expansion was carried out without contractors. In 1895, AID declared the system complete although construction continued through the first decade of the twentieth century.[3]

As with the construction of the 76 Land and Water Company system, the AID system was accompanied by expansion of the railroad through the region. In 1888 when the AID was formed the Southern Pacific Railroad completed its east branch line through the San Joaquin Valley leading to the new communities of Dinuba and Reedley. This created further impetus for the development of AID and construction of more ditches to serve new farms. The formation of AID reduced the control the 76 Land and Water Company had on the area. Crops diversified into long term crops such as vineyards and orchards suited to the newly irrigated land. The taxation system based on acreage imposed by irrigation districts such as AID also promoted the division of lands into smaller specialty farms.[4]

Despite the district's success in constructing its system and increasing settlement it faced legal difficulties associated with water rights litigation. Litigation over water rights resulted several orders and decrees preventing the district from diverting water in the 1880s and 1890s. The district simply refused to comply and altered the diversion point and the head of the canal to insure the diversion of water. Members also undertook to protect the diversion point with arms. Beginning in 1892 AID began to reach agreements with the other water users along the Kings River reducing the amount of legal entanglements. Meanwhile, the district faced litigation over the formation of the district and initial bond issue. For three years between 1897 and 1900 the district was unable to collect taxes applicable to paying the bonds. Most district residents were willing to pay for operational expenses, but it was difficult for the district to enforce collections, and it became challenging for the district to continue to operate. While the matter was settled in 1901, the district was conservative in its assessments for maintenance and operations and the system deteriorated in the first decade of the twentieth century.[5]

Drought in 1912 and 1914 renewed disagreements over water, and communities and irrigators utilizing the Kings River began looking for permanent solutions, which took two directions. First, residents and community members pushed for negotiated diversions from the Kings River, which necessitated the involvement of a third party. Between 1918 and 1921 the State Water Commission appointed Charles L. Kaupke to measure the flow of the Kings River and develop a compromise diversion schedule. Kaupke devised similar schedules through 1928 when the Kings River Water Association was formed and he became the watermaster for the river. The Kings River Water Association continues to manage water diversions from the Kings River. Second, irrigators recognized a need to control and store Kings River water. Beginning in 1914 irrigators along the river began meeting to develop plans for a flood control and storage reservoir, now known as Pine Flat Dam and Reservoir. Government support and final plans were not possible until the irrigators could settle their disagreements over water distribution making irrigators more amenable to the Kings River Water Association. While the water association was formed in 1928, it took several more years for the irrigators to gain support for the construction of a dam. It was not until 1944 that the US Army Corps of Engineers signed a contract for the construction of Pine Flat Dam on the Kings River (in Fresno County) about 17 miles upstream from the Alta Main Canal Bridge on North Frankwood Avenue.[6]

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[3] Frank Adams, *Irrigation Districts in California*, 27-28; Small, *Early History of Tulare County*, 188; Morison, *The Alta Empire,* 22, 26-27, 29; Alta Irrigation District (AID), Board of Directors Books, Volume 1: 1888-1894, Minutes, December 6, 1892, and January 3, 1893, on file at AID Offices, Dinuba; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 51-52.
[4] Paul E. Vandor, *History of Fresno County California* 277; John Bergman, *The Southern San Joaquin Valley* (Visalia, CA: Jostens Printing and Publishing, 2009) 9-10; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 105-108.
[5] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 30-33, 46, 59-63, 67; Frank Adams, *Irrigation Districts in California,* 217.
[6] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 31-32, 58-59.

As AID dealt with litigation at the end of the nineteenth century and in the early twentieth century there was limited funds for district operation, maintenance, and bond repayments. Canal maintenance declined during this period and the condition of system began to deteriorate. As law suits got resolved funding for maintenance and improvements rebounded beginning in the 1910s and continuing through the 1920s. Despite the previous tensions between landholders and the district, AID demonstrated some sensitivity to the difficulties faced by farmers. The low water years beginning in 1924 placed an economic strain on farmers, and the district tended to be lax in collecting penalties on late payments. As the Depression of the 1930s deepened, the district applied surplus funds acquired in the previous years to the maintenance and operation of the district, reducing fees and taxes on farmers. The sound financial management from the 1910s also allowed the district to continue paying off the district bonds at a steady pace. During the Depression, the district also received some federal funds through the Works Progress Administration to install pipelines, but no other assistance was necessary.[7]

Following World War II, the largest change to the district was the construction of Pine Flat Dam. Irrigators sourcing their water from the Kings River had long anticipated the construction of such a dam to control the flow of the river and extend the irrigation season. The dam was constructed between 1947 and 1954, and extended the irrigation season in AID lands as anticipated.[8]

Despite the construction of Pine Flat Dam the water supply for AID and other irrigators along the Kings River was still dependent upon the total water available from the previous winter's snow pack. Drought during the 1970s resulted in severe limitations on available water. AID began replacing some open canals with pipelines in order to reduce leakage and make the best possible use of available water. The drought period of the mid-1970s also made the district more cognizant of its ground water resources and the strain placed upon them through regular pumping. The district resolved that excess water would be allowed to percolate into the ground in order to replenish the ground water supply. Percolation ponds were complete by 1992.[9] In recent years AID has worked to address climate change and drought conditions by improving automation and efficiency of its water distribution system with the installation of automatic gates at laterals, increased use of water banking ponds and re-regulation basins, and improved management of groundwater supplies.[10]

Ditch Tender's Residence

As experienced by other irrigation districts, operation of gates was problematic for AID. Frequently farmers would open gates to secure water for their lands over and above their allotment, which shorted farmers further down the system. AID tried several means of control with limited success in the 1890s, but the problem persisted through the 1910s.[11]

With the signing of the first agreement over the allocation of water between AID and Fresno Canal and Irrigation Company in 1902, control over the headgates and other delivery gates became more important. In 1909, the Board of Directors established a set of rules and regulations for the distribution of water through the system. The rules established a hierarchy

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[7] AID, Detailed Engineering Drawings, Sheets 39, 41, 53-54, 69-71, 86-88, 104, 1922, on file at AID office; AID, *Annual Reports* (Dinuba: Alta Irrigation District, 1944-1980); William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 50; Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 69-70, 72, 74.

[8] William Morison, *The Alta Empire: The Story of Conquest and Development in the San Joaquin Valley* (Dinuba: Alta Irrigation District, 1988), 49.

[9] Alta Irrigation District, *Alta Irrigation District Annual Report 1976* (Dinuba, CA: Alta Irrigation District 1976) 18; Alta Irrigation District, *Alta Irrigation District Annual Report 1977* (Dinuba, CA: Alta Irrigation District, 1977) 15; Alta Irrigation District, *Alta Irrigation District Annual Report 1992* (Dinuba, CA: Alta Irrigation District, 1992) 27.

[10] "Drought Plan Alta Irrigation District," October 29, 2015 and "Efficient Water Management Practices: Infrastructure Improvements" in *Agriculture Water Management Plan for Alta Irrigation District*, prepared for California Department of Water Resources, Volume 4 of 4, November 2015.

[11] Harold J. Enns, "The Alta Irrigation District: A Prototype of Individual Initiative in Water Development" Master's Thesis, Fresno State College, 1967, 86-87.

with the board in charge and the superintendent overseeing a set of ditch tenders assigned to geographic regions of the system. Water was to be delivered on a rotating basis with farmers responsible for properly utilizing the delivered water.[12]

Review of the Board of Director's minutes for the district between 1902 and 1928 did not reveal construction information for the house adjacent to the headgate at North Frankwood Avenue. A contract for the drilling of a domestic well at the site, however, is listed for 1915 shortly following the reconstruction of the headgate. This provides the estimated date of construction for the residence. AID has at least one other ditch tender's residence located at the southern end of Main Canal that was constructed in 1923.[13]

The ditch tender's residence on North Frankwood Avenue has been altered some over the years. Aerial photography indicates that an addition on the north side of the building's water tower was added between 1961 and 1965. During this same period, an outbuilding to the northwest was removed and replaced with the current small garage.[14]

The area surrounding the headgates was largely agricultural. Despite the overall California population boom following World War II the area surrounding the Alta Main head gates saw little development till the last decades of the twentieth century. An Atchison Topeka and Santa Fe (ATSF) railroad branch served the area starting in 1911. Trucking reduced the need for the rail line and the ATSF depots closed in 1942. The line, however, was used extensively for the construction of Pine Flat Dam on the Kings River from 1947 to 1954. It was closed and abandoned in 1987.[15] Construction of the Pine Flat Dam created new recreational opportunities, and in the 1970s large tract residences, and the Sherwood Forest Golf Club developed in the vicinity.[16]

Evaluation

Under NRHP Criterion A or CRHR Criterion 1, this property is not significant because it does not have strong associations with important historic events. This residence was constructed for the Alta Irrigation District for use by a ditch tender monitoring and regulating the flow in the Alta Main Canal. The residence was constructed during a period of improvement and increasingly regularized operation of the irrigation district. This period was well after the initial period of construction and development that aided the settlement of the region. The complex legal milieu in which the irrigation district operated had slowed physical development from the late 1890s through the early 1900s. While the 1910s saw a variety of improvements to the system including increased monitoring of water distribution, it had little significant impact upon the irrigation district's relationship with the community or its development.

This property is not significant under NRHP Criterion B or CRHR Criterion 2 because it is not associated with the lives of persons important to history. Research did not reveal that any of the ditch tenders and their families related to the development and use of this property made demonstrably important contributions to history at the local, state, or national level that rises to the threshold of significance required under these criteria. Ditch tenders served a useful role in the operation of the irrigation district, but only carried out irrigation district policy established by others.

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[12] Minutes Board of Directors April 10, 1909, Directors Book Volume 3, Alta Irrigation District Office, Dinuba, California.

[13] Minutes Board of Directors Aug 3, 1915, Directors Book Volume 4, Alta Irrigation District Office, Dinuba, California; Directors Book Volume 3 and 4, passim, Alta Irrigation District Office, Dinuba, California; Minutes Board of Directors February 12, 1923, Directors Book Volume 4, Alta Irrigation District Office, Dinuba, California.

[14] US Commodity Stabilization Service, Fresno County Aerial Photograph ABI 5BB-167 (Washington, DC: Commodity Stabilization Service, 1961); US Soil Conservation Service, Fresno County Aerial Photographs FRE-11-141 (Washington, DC: Soil Conservation Service, 1967).

[15] John Bergman, *The Southern San Joaquin Valley: A Railroad History,* (Visalia, California: Jostens Printing and Publishing Company, 2009) 63-34.

[16] US Agricultural Stabilization and Conservation Service, Aerial Photographs Fresno County 2866-9-154 (Washington, D.C.: Agricultural Stabilization and Conservation Service, 1970); US Agricultural Adjustment Administration, Aerial Photographs Fresno County NAPP 473-144 (Salt Lake City, UT: Aerial Photography Field Office, 1987).

Under NRHP Criterion C or CRHR Criterion 3, this property is not an important example of a type, period, or method of construction. This modest Bungalow with Craftsman elements is a typical and unimportant example of its style that lacks architectural distinction. The bungalow became popular in the beginning of the twentieth century and remained a common and popular form until World War II. The homes were usually single story with full length porches. Superior examples of the type are often constructed in the Craftsman style which incorporated structural elements into the ornament and excellent examples often include tapered porch supports, decorative knee brackets, and multi light or stained glass windows. This example was built according to common practices and does not represent any innovations in design. Further, it does not appear to be the work of a master designer, nor does it embody high artistic value, factors that might imbue it with significance under these criteria.

This residence is not significant under NRHP Criterion D or CRHR Criterion 4 as a source (or likely source) of important information regarding history. It does not appear to have any likelihood of yielding important information about historic construction materials or technologies.

The small rear addition to this residence makes a small change to the house's design. Overall, this residence retains integrity of location, setting, materials, workmanship, feeling, and association to its original construction; however, it does not meet any of the significance criteria necessary for listing in either the NRHP or CRHR.

Photographs (continued):

Photograph 2: West side of residence showing enclosed porch and portion of attached tank tower on north side, camera facing northeast, September 15, 2016.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # ______
HRI # ______
Trinomial ______

***Resource Name or #** (Assigned by recorder) MR# 3

***Recorded by** C. Brookshear & H. Miller *Date September 15, 2016 ☒ Continuation ☐ Update

Photograph 3: East side of residence showing portion of attached outbuilding, and section of tank tower on north side, camera facing northwest, September 15, 2016.

Photograph 4: South side of detached garage, camera facing north, September 15, 2016.

APPENDIX C

Correspondence

Communication Log

2850 Spafford Street, Davis, CA 95618
Phone (530) 757.2521 / Fax (530) 757-2566

Project Alta Main Canal Bridge Replacement Project

Project No. BRLO 5942(247)

Subject Contacting interested parties re: historic resources

Client Caltrans

Notes Prepared By Cheryl Brookshear, Staff Architectural Historian, JRP Historical Consulting, LLC

Notes:

Participants	**Contact Time**	**Notes**
Ruth Lang Fresno Historical Society 7160 West Kearney Boulevard Fresno, CA 93706 Planning Commission, City of Reedley Attn: Alberto Custodio, Chair 1733 Ninth Street Reedley, CA 93654 Cindy Freeland, Secretary Fresno County Historical Landmarks & Records Advisory Commission Fresno Public Library 2420 Mariposa Street Fresno, CA 93721 Ann Johnson, Corresponding Secretary Tulare County Historical Society PO Box 295 Visalia, CA 93279 Tulare County Museum 5953 S. Mooney Blvd. Visalia, CA 93277	Letter – September 7, 2016	Initial letter soliciting input regarding historic resources.
Penny Raven Fresno County Historical Landmarks & Records Advisory Commission	Telephone – October 10, 2016	Left message on voice mail of Cheryl Bookshear stating that the commission had no comment, but she had some questions about the project.
Penny Raven	Telephone	Cheryl Brookshear returned Ms. Raven's

2850 Spafford Street, Davis, CA 95618
Phone (530) 757.2521 / Fax (530) 757-2566

	– October 14, 2016	phone call. Ms. Raven inquired about the date of construction for the bridge, what would happen to the existing bridge, the location of the new bridge, and indicated that she and her husband owned land in the area southeast of the bridge. The commission will be sending a note shortly indicating that they have no issues with the project. JRP apologized that a follow up e-mail was sent simultaneously.
Ruth Lang Fresno Historical Society info@valleyhistory.org Planning Commission, City of Reedley ellen.moore@reedley.com Cindy Freeland, Secretary Fresno County Historical Landmarks & Records Advisory Commission cindy.freeland@fresnolibrary.org Tulare County Museum aking1@co.tulare.ca.us	E-mail – October 14, 2016	E-mail following up with recipients of the initial letter who had not responded.
Planning Commission, City of Reedley ellen.moore@reedley.com	E-Mail October 14, 2016	E-mail returned as undeliverable.
Tulare County Historical Society "Contact Us" feature on website	Web portal – October 14, 2016	Used "Contact us" feature on historical society's web page as no e-mail address was provided.
Penny Raven Fresno County Historical Landmarks & Records Advisory Commission	E-mail – October 17, 2016	E-mail response received with attached letter from Fresno County Historical Landmarks & Records Advisory Commission stating they have no information on resources in the area.

JRP HISTORICAL CONSULTING, LLC

2850 Spafford Street • Davis, CA 95618 • (530) 757-2521 • (530) 757-2566 Fax • www.jrphistorical.com

Stephen R. Wee, Principal / President
Rand F. Herbert, Principal / Vice President
Meta Bunse, Partner
Christopher D. McMorris, Partner
Bryan T. Larson, Partner

September 7, 2016

To Whom It May Concern:

The County of Fresno is planning to replace the Alta Main Canal Bridge (Bridge No. 42C0289) on North Frankwood Avenue northeast of Reedley. A map of the general study area is enclosed.

The County's project is funded, in part, through the Federal Highway Bridge Program (HBP), which is administered by the California Department of Transportation (Caltrans). The project is required to comply with Section 106 of the National Historic Preservation Act of 1966 (regulations Title 36 Code of Federal Regulations, Part 800) and the California Environmental Quality Act (CEQA), both which mandate public agencies to consider the effects of projects on historic properties (i.e., properties listed in or eligible for listing in the National Register of Historic Places).

JRP Historical Consulting, LLC has been retained to assist the County with project Section 106 / CEQA compliance. If you or your organization has any information, concerns, or comments about historic resources that may be affected by the project, please respond in writing to me at the address below citing your concerns within the next thirty days. You may also respond to me via email at: cbrookshear@jrphistorical.com. Please note this is not a request for research, just for information. A list of organizations and individuals receiving this letter is enclosed for your information. Thank you.

Sincerely,

Cheryl Brookshear

Cheryl Brookshear
Architectural Historian

Enclosures: List of Recipients
Project Area Map

County of Fresno
Alta Main Canal Bridge Replacement Project

Organizations / Individuals Receiving Letter Soliciting Input Regarding Historic Resources

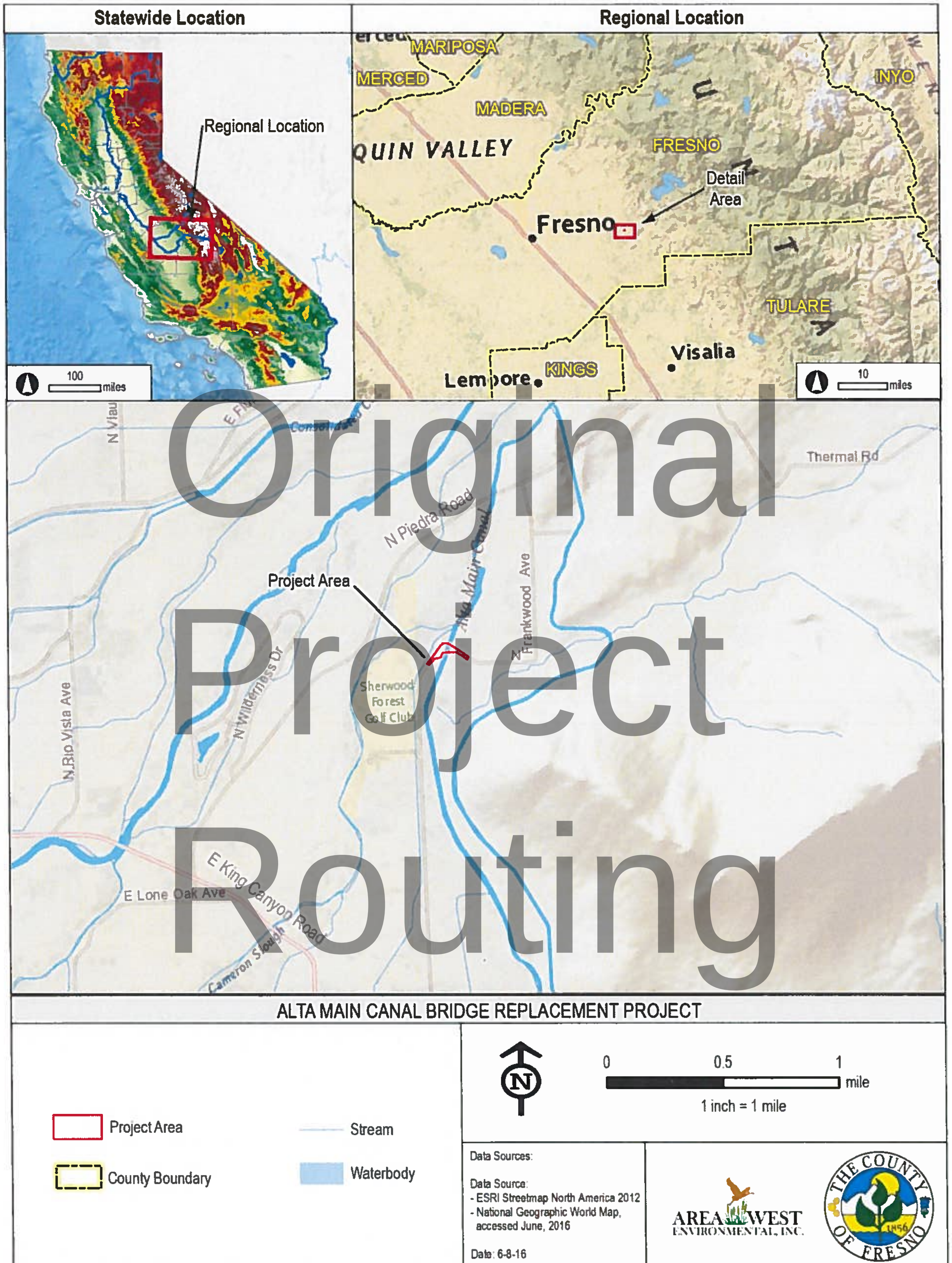
Ruth Lang
Fresno Historical Society
7160 West Kearney Boulevard
Fresno, CA 93706

Cindy Freeland, Secretary
Fresno County Historical Landmarks & Records Advisory Commission
Fresno Public Library
2420 Mariposa Street
Fresno, CA 93721

Tulare County Museum
5953 S. Mooney Blvd.
Visalia, CA 93277

Planning Commission, City of Reedley
Attn: Alberto Custodio, Chair
1733 Ninth Street
Reedley, CA 93654

Ann Johnson, Corresponding Secretary
Tulare County Historical Society
PO Box 295
Visalia, CA 93279



D:\AWE\15-013 NTP for Alta.mxd\Alta_Fig1.mxd

Cheryl Brookshear

From: Cheryl Brookshear
Sent: Friday, October 14, 2016 2:00 PM
To: 'info@valleyhistory.org'; 'ellen.moore@reedley.com'; 'cindy.freeland@fresnolibrary.org'; 'aking1@co.tulare.ca.us'
Subject: Alta Main Canal Bridge Replacement

Greetings,

On September 7, 2016, I sent your organization a letter on behalf of JRP Historical Consulting, LLC regarding the replacement of the Alta Main Canal Bridge (Bridge No. 42C0289) on North Frankwood Avenue northeast of Reedley. The letter was soliciting any concerns or comments you might have regarding historic resources that could be affected by this project. I'm following up with this email to ensure that said letter was received and to ask if you have any concerns of comments at this time. We will be submitting the Historic Resources Evaluation Report to Caltrans shortly.

Thank you,
Cheryl

CHERYL BROOKSHEAR, HISTORIAN
JRP HISTORICAL CONSULTING, LLC
2850 Spafford Street, Davis, CA 95618
530.757.2521 ext. 13 (v)
530.757.2566 (f)
EMAIL: CBROOKSHEAR@JRPHISTORICAL.COM

File Edit View History Bookmarks Tools Help

Contact Us – Tulare County His...

www.tularecountyhistoricalsociety.org/contact-us/

Comments or questions are welcome.

* indicates required field

Name:*

Cheryl Brookshear

Email:*

okshear@jrphistorical.com

Subject:

Alta Main Canal Bridge

Message:*

received and to ask if you have any concerns of comments at this time.

sUE7

CAPTCHA Code:*

UE7

SUBMIT

Cheryl Brookshear

From:	Mail Delivery System [MAILER-DAEMON@p02c11o143.mxlogic.net]
Sent:	Friday, October 14, 2016 2:00 PM
To:	Cheryl Brookshear
Subject:	Mail delivery failed
Attachments:	ATT00001.txt

This message was created automatically by mail delivery software.

A message that you have sent could not be delivered to one or more recipients. This is a permanent error. The following address(es) failed:

<ellen.moore@reedley.com>: 550 5.1.1 <ellen.moore@reedley.com>... User unknown

Cheryl Brookshear

From: Larry & Penny Raven [corvino@pacbell.net]
Sent: Monday, October 17, 2016 3:19 AM
To: Cheryl Brookshear
Cc: Nick Yovino; Cindy Freeland
Subject: Alta Main Canal Bridge
Attachments: Ltr. to JRP - Bridge 10-17-16.Signed.pdf

Dear Ms. Brookshear,

I enjoyed our telephone conversation on Friday. Thank you for all of the information on the bridge. I will report it to the HLRAC at our next meeting.
Attached is our letter of reply to your request.

Sincerely,

Penny Raven, Chairman

THE COUNTY OF FRESNO 1856

County of Fresno

HISTORICAL LANDMARKS AND RECORDS ADVISORY COMMISSION
PENNY RAVEN, CHAIRMAN
NICK YOVINO, VICE-CHAIRMAN

October 17, 2016

Ms. Cheryl Brookshear,
Architectural Historian
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

Re: Alta Main Canal Bridge

Dear Ms. Brookshear:

It was good to talk with you last Friday. It was interesting to learn details about the origin of the old bridge on Frankwood Avenue.

Your letter concerning the bridge was circulated by Cindy Freeland to the members of the Fresno County Historical Landmarks and Records Advisory Commission and no historical information was submitted by them. As you know, the Commission is dedicated to recognizing sites and structures with historical significance in Fresno County.

Interestingly enough, my husband, Larry Raven, and I, have for several years, owned the property at 400 N. Frankwood Ave. that adjoins the bridge as shown outlined in red on the attached map.

Thank you for your efforts in helping to preserve the history of Fresno County.

Sincerely,

Penny Raven

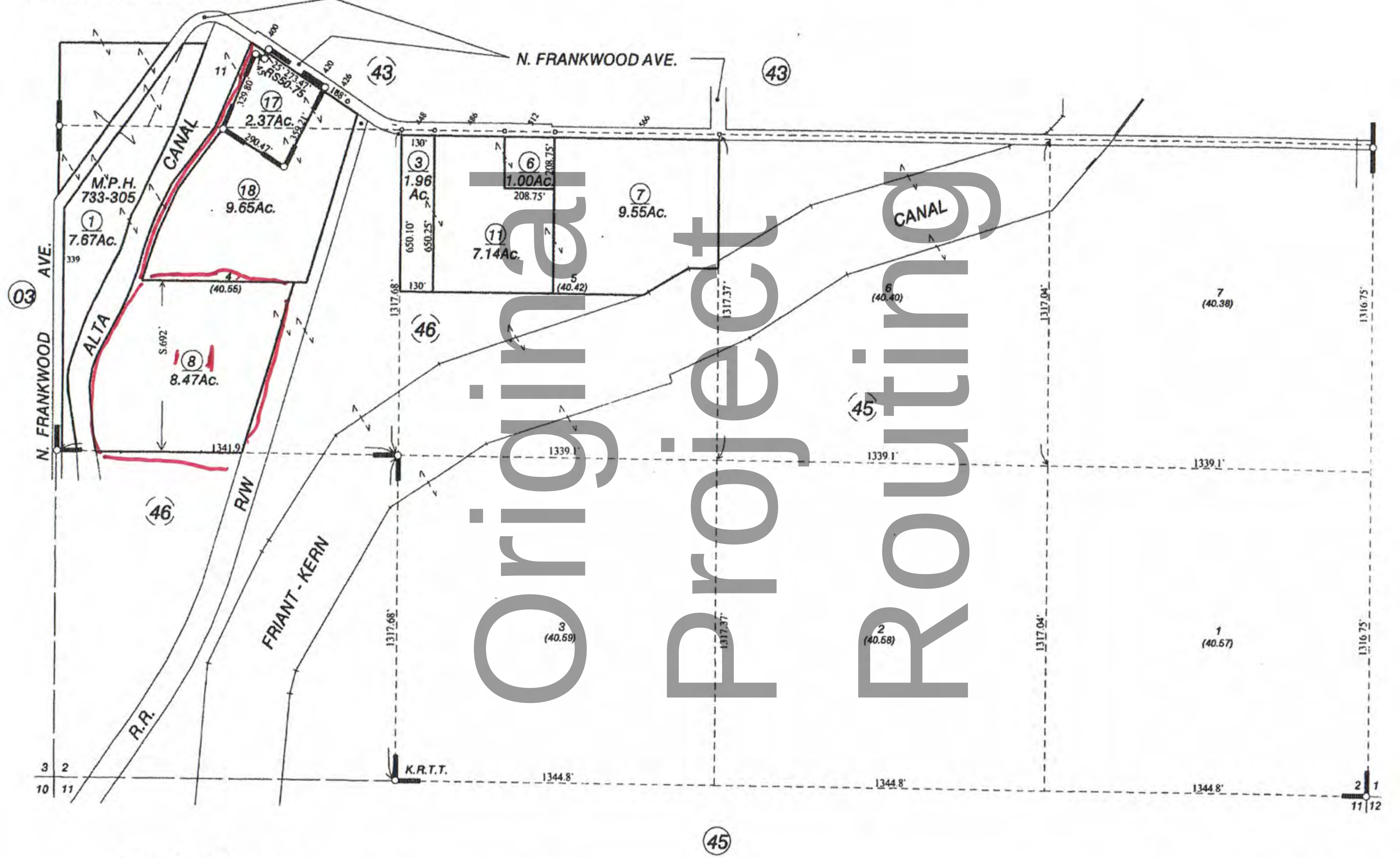
Penny Raven, Chairman

Contact: Cindy Freeland, Secretary
2420 Mariposa Street / Fresno, California 93721-2285 / (559) 600-6233 / Fax (559)-600-7628
E-mail: cindy.freeland@fresnolibrary.org

SUBDIVIDED LAND IN POR. SEC. 2, T.14S., R.23E. M.D.B. & M.

Tax Rate Area
71-004
71-006

··· NOTE ···
This map is for Assessment purposes only. It is not to be construed as portraying legal ownership or divisions of land for purposes of zoning or subdivision law.



Agricultural Preserve
Kings River Thermal Tract No. 1 - R.S. Bk. 5, Pg. 30
Record of Survey - Bk. 50, Pg. 75

NOTE - Assessor's Block Numbers Shown in Ellipses.
Assessor's Parcel Numbers Shown in Circles.

Assessor's Map Bk. 333 - Pg
County of Fresno, Calif.

02-25-2013 RKV

JUL 1

ATTACHMENT B

ARCHAEOLOGICAL SURVEY REPORT
(WISELY 2017)

Original Project Routing

Archaeological Survey Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno, California

BRLO 5942(247)

By:
Justin Wisely, M.A.

April 2017 FINAL

USGS Topographic Quadrangle
Piedra 1978 7.5-minute

Submitted to:
Aimee Dour-Smith
Area West Environmental, Inc.
6248 Main Avenue, Suite C
Orangevale, CA 95662

FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
http://www.farwestern.com 530-756-3941

Archaeological Survey Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno County, California

BRLO 5942(247)

By:

Justin Wisely, M.A.

With Contributions by:
Adrian Whitaker, Ph.D.
Jeffrey S. Rosenthal, M.A.
Jack Meyer, M.A.

April 2017 FINAL

Prepared for and Approved by:

John Whitehouse, Principal Investigator, Archaeology and Architectural History
California Department of Transportation, District 6
855 M Street, Suite 200
Fresno, CA 93721

G. William Norris, III, Environmental Branch Chief
California Department of Transportation, District 6
855 M Street, Suite 200
Fresno, CA 93721

Submitted to:
Aimee Dour-Smith
Area West Environmental, Inc.
6248 Main Avenue, Suite C
Orangevale, CA 95662

SUMMARY OF FINDINGS

Fresno County (County) proposes to replace the existing Alta Main Canal Bridge on North Frankwood Avenue. The existing bridge has been deemed "functionally obsolete" and needs to be replaced. The project will receive federal funding and therefore requires compliance with Section 106 of the National Historic Preservation Act, as revised (36 CFR 800). The California Department of Transportation is acting as the lead agency for Section 106 compliance. On behalf of the County, Area West Environmental, Inc., contracted with Far Western Anthropological Research Group, Inc., (Far Western) to conduct a cultural resources study of the project area in compliance with Section 106. The project area encompasses the bridge crossing, the new bridge alignment and adjacent approaches, with staging areas likely located within open areas south of North Frankwood Avenue within the project boundary. The route is primarily on County land, but the existing bridge is maintained by the Alta Irrigation District.

Far Western completed archival records searches at the Southern San Joaquin Information Center and the Native American Heritage Commission, and contacted 10 potentially interested Native American individuals or parties. These searches revealed that there is one previously recorded resource in the Area of Potential Effects (APE), the Alta Main Canal built in 1882. A buried site sensitivity study indicates that there is a high to highest sensitivity for identifying buried archaeological sites in the project area.

A pedestrian survey of the entire APE failed to identify previously unrecorded surface resources. Based on the findings of the pedestrian survey, archival research, and buried site sensitivity, it appears that the project has the potential to affect cultural resources. Sub-surface testing within areas of deep and extensive impacts are recommended prior to construction. In the unlikely event that previously unidentified resources are encountered during construction, it is recommended that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. Additional survey will be required if the project changes to include areas not previously surveyed.

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INTRODUCTION

Fresno County (County) proposes to replace the existing Alta Main Canal Bridge on North Frankwood Avenue (Figures 1 and 2). The existing bridge has been deemed "functionally obsolete" and needs to be replaced. On behalf of the County, Area West Environmental, Inc., (Area West) contracted with Far Western Anthropological Research Group, Inc., (Far Western) to conduct a cultural resources study of the project area in compliance with Section 106 of the National Historic Preservation Act 1966, as revised (36 CFR Part 800). The project area encompasses the bridge crossing, the new bridge alignment and adjacent approaches, with staging areas likely located within open areas south of North Frankwood Avenue within the project boundary (Figure 3). The route is primarily within County right-of-way, but the bridge is maintained by the Alta Irrigation District. The existing bridge will remain in use by the Alta Irrigation District for the maintenance of their weir and canal access.

This report presents findings and recommendations for the project. This study was directed by Justin Wisely, M.A., who has six years of experience in cultural resources management projects in California. A historic-era built environment study was conducted by JRP Historical Consulting, LLC, and built environment resources are not discussed here.

PROJECT DESCRIPTION AND LOCATION

The County of Fresno is proposing the Alta Main Canal Bridge Project, which would replace the existing four-span, integrated controlled weir concrete edge girder bridge (Bridge No. 24C0289) over the Alta Main Canal with a new four-span, cast-in-place, concrete slab bridge. The new bridge construction would include widening North Frankwood Avenue as part of the new approach. The project is located on North Frankwood Avenue, approximately nine miles northeast of the City of Sanger, California.

The original bridge crossing the Alta Main Canal was constructed in 1925 as a four-span structure consisting of one integrated weir, concrete edge-girder bridge. According to the California Department of Transportation's *Historical Significance-Local Agency Bridges* list, the bridge is ineligible for listing on the National Register of Historic Places (National Register).

The existing bridge is functionally obsolete with a sufficiency rating of 50.6. It cannot be widened to current standards; thus, a replacement bridge is required. To avoid lengthy road closures, the existing bridge will remain open until the new bridge and approaches are finished, and will then be used solely by the Alta Irrigation District for the maintenance of the weir and canal.

Proposed Bridge

The new bridge alignment to the south of the existing bridge is necessary to allow for the improved west bridge approach and the eastern bridge approach realignment of North Frankwood Avenue while maintaining access to the current bridge to traffic. The new bridge would be approximately 145 feet long and would span the Alta Main Canal to the south of the existing bridge. Foundation construction would consist of either spread footings (which would result in 10–20 feet of excavation) or cast-in-drilled hole piles not more than 50–70 feet deep. Curb-to-curb bridge width will be no less than 22 feet, following American Association of State Highway Transportation Officials requirements.

Figure 1. Project Vicinity.

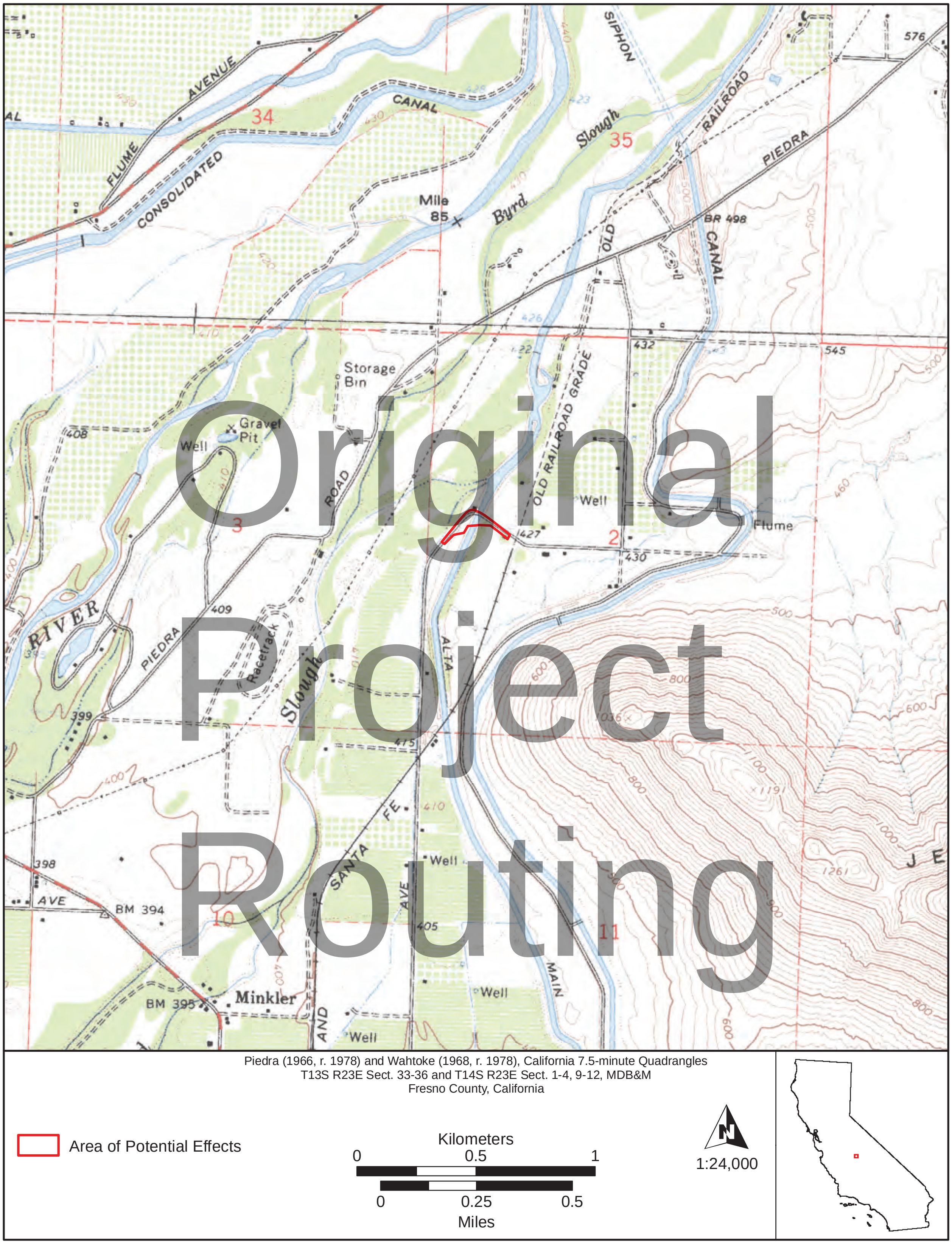
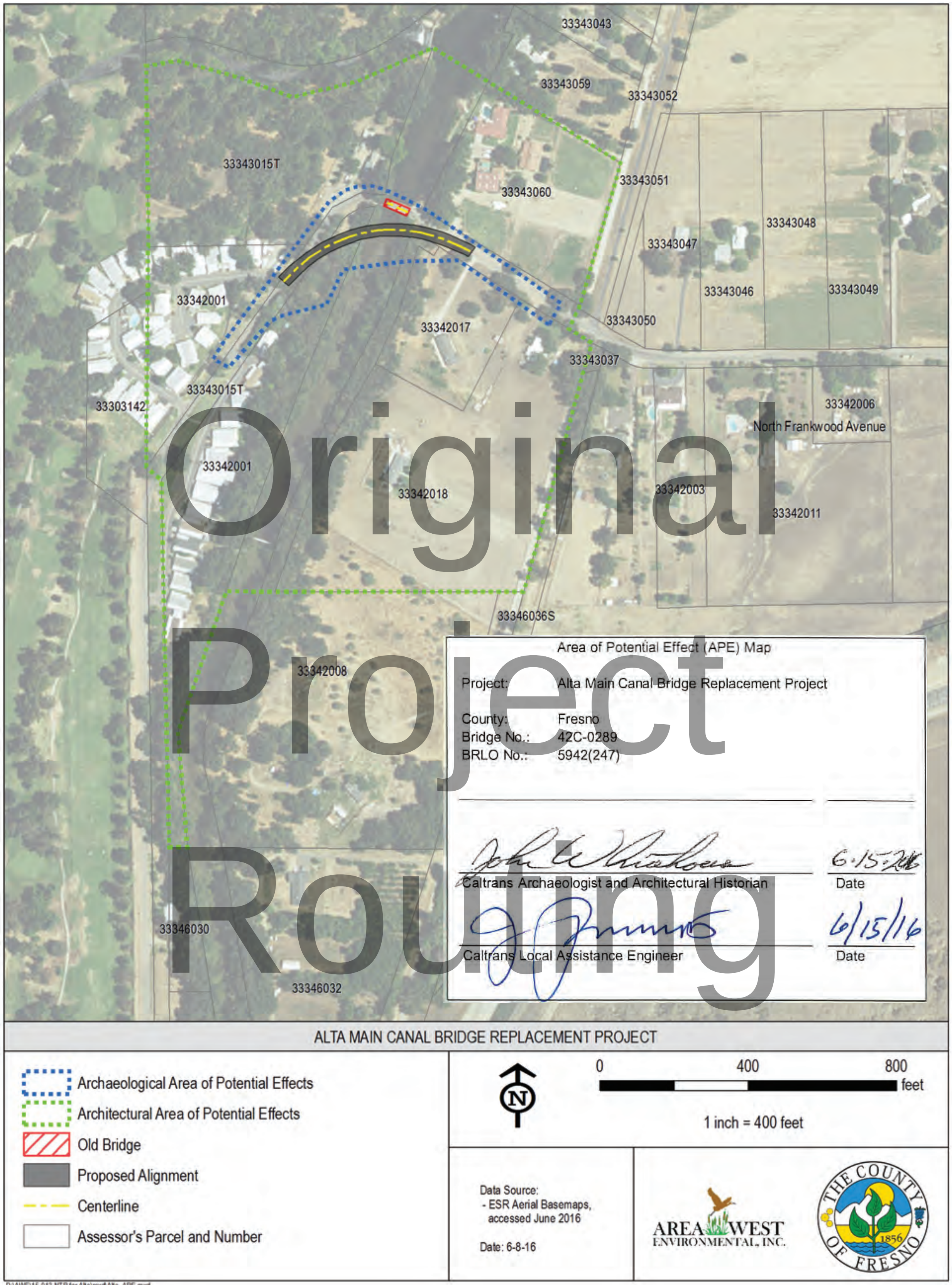


Figure 2. Project Location.



D:\AWE\15-013 NTP for Alta\mxd\Alta_APE.mxd

Figure 3. Area of Potential Effects.

Additional right-of-way will be required for the eastern and western roadway approaches, and existing overhead utility lines may need to be relocated. The potential staging areas would be located within the project boundary, likely within open areas south of North Frankwood Avenue (see Figure 3).

AREA OF POTENTIAL EFFECTS

The Area of Potential Effects (APE) is shown in Figure 3. It includes both eastern and western approaches to the bridge with a sufficient buffer to include both the current and proposed alignments. The potential staging areas are also included (see Figure 3). The vertical APE is assumed to be no greater than five feet six inches below current ground surface in all areas except the footprint of the new bridge, where piles and footings may be installed at a depth of 10 to 70 feet.

SOURCES CONSULTED

Prefield identification efforts for the project included archival research and an assessment of the potential for buried prehistoric sites.

RECORDS SEARCH RESULTS

Far Western requested a cultural resources search by the California Historical Resource Information System's Southern San Joaquin Information Center in Bakersfield on June 16, 2016. The records search consisted of a 0.25-mile- (0.8-kilometer-) radius buffer around the proposed bridge alignment, including the potential staging areas. Base maps were examined for archaeological sites and surveys within the records search area, and the following sources were reviewed:

- National Register of Historic Places (National Register)
- California Register of Historical Resources (California Register)
- California Inventory of Historic Resources (1976 and updates)
- California State Historical Landmarks (1996 and updates)
- California State Points of Historical Interest (1992 and updates)
- Office of Historic Preservation's Historical Property Data File

Available historical topographic maps (USGS Wahtoke 15-minute map [1923] and 7.5-minute map [1950]) and General Land Office maps (1854, 1893 GLO Plat Map for T14S, R23E [Mount Diablo Base Meridian]) were also reviewed to locate potential unrecorded resources within the records search area.

The records search identified two previously recorded built environmental resources within the records search area (Appendix A). The Alta Main Canal (FRE-PRO-002) is within the bridge construction APE, as the proposed bridge will be built on either side of the canal with pilings driven into the canal floor. The Friant-Kern Canal (P-10-005801) passes through the southeastern edge of the records search area but is outside of the APE. The records search did not identify any previous studies within the APE as the Alta Main Canal was only informally recorded. One additional study was undertaken within one-quarter mile of the project area, a survey by Leach-Palm et al. in 2010.

NATIVE AMERICAN CONSULTATION

No sacred Native American sites were identified in a search of the Sacred Lands file by the Native American Heritage Commission (Commission) on July 1, 2016 (Appendix B). The Commission has provided us with a list of 10 Native American individuals who are listed as interested parties. Letters describing the project were sent to these individuals on July 7, 2016. Shana Brum, a cultural specialist II with the Santa Rosa Rancheria Tachi Yokut Tribe, responded via email that the project area is highly sensitive to the Yokuts and recommended Native American monitoring of all ground disturbances. Justin Wisely followed-up with phone calls and emails on July 28, 2016 to seek further Native American comments on the project (Table 1). The Picayune Rancheria of Chukchansi could not be followed up with as the Commission did not provide phone numbers or email addresses for Claudia Gonzalez or Mary Matola. A follow-up voicemail was left for Bob Purnell of Table Mountain Rancheria and a message left for Leanne Walker-Grant. Mr. Wisely was informed by a representative of Table Mountain Rancheria that Michael Taylor is no longer with the tribe. Kerri Vera, to whom Mr. Wisely was directed, responded on behalf of the Tule River Indian Tribe and requested that the original letter be submitted to her. No comments have been received from any of these individuals to date.

Table 1. Native American Consultation.

NAME	AFFILIATION	LETTER SENT	PHONE CALL	EMAIL SENT	RESULTS
Claudia Gonzalez	Picayune Rancheria of Chukchansi	7/7/2016	-	-	No phone number or email provided by Commission
Mary Matola	Picayune Rancheria of Chukchansi	7/7/2016	-	-	No phone number or email provided by Commission
Michael Russell	Table Mountain Rancheria	7/7/2016	7/28/2016	-	Michael Russell no longer there per Kiri; transferred to Bob Pennell and left a message. No email available.
Bob Pennell	Table Mountain Rancheria	7/7/2016	-	-	See previous comment (Michael Russell).
Leanne Walker-Grant	Table Mountain Rancheria	7/7/2016	7/28/2016	-	Left a message with Roxanne 7/28/2016
Neil Peyron	Tule River Indian Tribe	7/7/2016	7/28/2016	7/28/2016	Left a message
Kerri Vera	Tule River Indian Tribe	7/7/2016	7/28/2016	7/28/2016	I emailed a copy of the letter as requested by Kerri.
Joey Garfield	Tule River Indian Tribe	7/7/2016	-	-	Was informed by Kerri Vera that this person on the council now and not part of her office (no other contact info available)
Rueben Barrios Sr.	Santa Rosa Rancheria Tachi Yokut Tribe	7/7/2016	-	-	Shana Brum emailed that the project is in a highly sensitive area and recommended full time Native American monitoring on 7/14/16
Lalo Franco	Santa Rosa Rancheria Tachi Yokut Tribe	7/7/2016	-	-	Shana Brum emailed that the project is in a highly sensitive area and recommended full time Native American monitoring on 7/14/17

BURIED ARCHAEOLOGICAL SITE ASSESSMENT (with Jack Meyer)

The potential for buried archaeological sites is a practical problem for resource managers who must make a reasonable effort to identify archaeological deposits in a three-dimensional project area, ensuring that potentially important resources are not affected by project activities. Early detection of buried archaeological deposits also avoids the potential for costly delays that may occur when unknown resources are discovered after project-related, earth-moving activities have begun and late discovery protocols are necessary.

Before buried sites can be avoided, sampled, or otherwise "managed," they must first be identified. Most buried sites are not found by conventional pedestrian surface surveys because they typically lack visible or obtrusive features that would indicate their presence to an observer in the field (Bettis 1992:120). Thus, locating sites that may be buried by natural deposition can be one of the most difficult issues faced by archaeologists and cultural resource managers.

To help ensure that project schedules (critical path) and budgets are not inadvertently affected by late archaeological discoveries, a buried site sensitivity study was conducted to determine where buried sites are most likely to be located in the proposed corridor. When designed and conducted in an informed fashion, this type of geoarchaeological approach can help satisfy the requirements of Section 106 that "a reasonable and good faith effort to carry out appropriate identification efforts" (800.4(b)(1)) is made for undertakings that receive federal funds.

Buried Site Sensitivity Factors

Simply stated, there is generally an inverse relationship between landform age and the potential for buried archaeological deposits. For example, archaeological deposits cannot be buried within landforms that developed prior to human colonization of North America (Rosenthal and Meyer 2004). Therefore, as a first step, landforms with the potential to contain buried sites must be distinguished from those that are too old to contain them, allowing older portions of the landscape to be confidently excluded from further consideration. While this basic distinction addresses the potential for buried sites, the relative probability of locating a buried site depends largely on a more fine-grained distinction between the ages of different Holocene landforms.

Furthermore, archaeological deposits are not distributed randomly throughout the landscape, but tend to occur in specific environmental settings (Foster and Sandelin 2003:4; Hansen et al. 2004:5; Pilgram 1987; Rosenthal and Meyer 2004). While the complexities of human decision-making are beyond the scope of this study, it is well known that most prehistoric occupation sites are associated with level or nearly level landforms that occur near stream confluences, especially where at least one stream is perennial (Pilgram 1987:44–47). This means that many sites are located in settings that were subject to periodic flooding and sediment deposition due to the combination of low-lying topography and active water sources.

For the purposes of the project, buried site potential was determined using three main assumptions: (1) archaeological sites tend to be located near perennial or reliable water sources; (2) archaeological deposits from later time periods are more common because the density of human populations increased over time; and (3) the longer a landform remained at the surface, the greater the probability that any one spot on that landform was occupied. Thus, the potential for buried archaeological deposits is elevated when once-stable landforms are buried late in time, particularly near active water sources.

Buried Site Assessment

The soils within the APE are primarily Hesperia fine sandy loam with the eastern portion of the APE crossing into Hanford fine sandy loam. The Hesperia soil series dates to the latest Holocene (2200–1150 cal BP) and the Hanford soil series dates to the recent Holocene (600–100 cal BP). As soils within the APE were recently deposited, and in conjunction with the proximity of the project to the Kings River, the entire project area has a high to highest sensitivity for buried archaeological sites. Subsurface testing prior to construction is recommended.

BACKGROUND
(by Jeffrey Rosenthal and Adrian Whitaker)

This background section is excerpted from *Data Recovery Excavations at CA-FRE-61 for Wahtoke Creek Bridge Replacement Project, State Route 180, Fresno County, California* by Jeffrey Rosenthal and Adrian Whitaker (2012). The project area lies within the lower foothills near the Kings River along the eastern margin of the San Joaquin Valley. The project is within the deltaic fan of the Kings River before it feeds into the Tulare Basin.

GEOLOGY

On the eastern side of the San Joaquin Valley, in the vicinity of the project area, bedrock eminences at the base of the Sierra Nevada inter-finger with younger alluvial landforms, marking the transition from valley to mountain geomorphic provinces. The Sierra Nevada is an asymmetric, westward-tilting fault block, composed mainly of Mesozoic granodiorite and quartz monzonite batholith, which has intruded into Paleozoic and Mesozoic metamorphic rock (Unruh 1991). The entire southern Sierra Nevada is dominated by granodiorite, extending almost uniformly from the alluvial apron on the eastern edge of the San Joaquin Valley to the eastern slope of the mountain range. Few other rocks are widely exposed south of the Chowchilla drainage. The most prominent are isolated and discontinuous outcrops of pre-Cenozoic metavolcanic and metasedimentary rocks (e.g., latite, dacite, tuff, greenstone, schistose, slate, quartzite, hornfels, chert, phyllite, gneiss, and marble), Mesozoic ultramafic rocks (serpentine, diabase), as well as gabbro and other dark dioritic rocks exposed mainly in the lower Kings River watershed (Jennings 1977). In the vicinity of the Alta Main Canal Bridge, Tivy Mountain and Jesse Morrow Mountain are composed mainly of gabbro and other dioritic rocks, whereas the site itself is underlain by granodiorite (Jennings 1977).

NATURAL ENVIRONMENT

California's climate is Mediterranean with hot-dry summers and cool-wet winters and is controlled by the interaction between atmospheric circulation and topography. This circulation is driven by variations between the Pacific high pressure cell in the summer and the Aleutian low pressure cell in the winter (Anderson 1990; Hornbeck 1983; Major 1977). Summer days in the southern San Joaquin Valley often exceed 100 °F, whereas during December to January, maximum average temperatures range between 54 and 58 °F. Approximately 90% of annual rainfall occurs, between November and April; more than 50% occurs in January, February, and March. June, July, and August are the driest months of the year, during which time only about 1% of the average annual rainfall originates from periodic thunderstorms.

Plants and Animals of the West-Central Sierra Nevada

The varied relief and physiography of the eastern San Joaquin Valley and nearby foothills produce a diverse array of habitats that correspond to differences in elevation, precipitation, soils, and temperature, creating a series of distinctive ecological zones inhabited by diverse plant and animal communities. The project area is at approximately 400 feet above mean sea level (amsl), just above the California Prairie. However, because communities above and below this elevation were part of the seasonal round of the area's prehistoric occupants, they have been included in this discussion. Furthermore, the Sierra Nevada rises steeply to the north and east, with elevations of more than 2,000 feet amsl 15 miles northeast following the Kings River upstream.

Plant Distribution

Historically, the open woodland and grassland of the California Prairie stretched across the lowest rolling foothills of the San Joaquin Valley (i.e., less than 300 feet [90 meters] amsl). Riparian communities formed lush forests along most of the major waterways that drain the western Sierra foothills. An overstory of California sycamore and Fremont cottonwood was typical in these communities, with big-leaf maple, arroyo willow, narrowleaf willow, Pacific willow, red willow, and white alder making up common elements of the subcanopy. Grape, blackberry, and poison oak were also frequently associated with this community.

At elevations of about 300–3,000 feet (90–915 meters), the prairie transitions to a Gray Pine-Blue Oak Woodland, which is dominated by California endemics such as buckeye, gray pine, blue oak, valley oak, and interior live oak. Near the prairie, the canopy opens to a savanna with pure stands of blue oak and a ground cover of forbs and perennial and seasonal grasses (Griffin and Critchfield 1972). Chaparral species such as chamise, manzanita, deerbrush, mountain mahogany, and wedgeleaf ceanothus are often intermixed throughout the drier portions of the foothills, with pure stands commonly found in canyons and on rocky or infertile slopes. Plant resources were available within the Gray Pine-Blue Oak Woodland during the spring, summer, and fall, but large crops of acorns and pine nuts, which ripen in the late fall, were by far the most important resource to prehistoric residents of the foothills. At higher elevations, the foothill woodland-chaparral community interfingers with the montane conifer forest. Along this boundary, pure stands of conifer are found on cool, north-facing slopes and canyons, while woodland and chaparral species occur in more-arid, south-facing settings.

The Lower Montane Forest of the Sierra Nevada currently forms a continuous belt running along the western slope from about 3,000 to 7,000 feet (915 to 2,135 meters) in elevation. Ponderosa pine is dominant throughout this community in xeric settings, along with incense cedar, while white fir is the primary species found in mesic localities, frequently accompanied by sugar pine. Black oaks commonly grow in dry open areas of the forest or along the fringes of dry meadows, primarily associated with stands of ponderosa pine and incense cedar. Big-leaf maple, dogwood, manzanita, ceanothus, and bear clover are regular constituents of the understory. The Mixed Conifer Forest interfingers with Foothill Woodland and Chaparral communities at its lower limits, and with conifers associated with the Upper Montane Forest at its upper limit.

Above about 7,000 feet (2,135 meters) amsl, the Upper Montane Forest is dominated by red fir, often found in pure stands. At lower elevations of the forest, a common associate is white fir, and at higher elevations lodgepole pine is frequently intermixed. Other associates include white pine, sugar pine, Jeffrey pine, and mountain hemlock. In exposed areas with rocky substrates, Sierra juniper and ponderosa pine may be found. Just above the red-fir zone, the dense forest canopy opens and lodgepole pine becomes dominant. Meadows are most common in the Upper Montane Forest, although they do occur throughout the Lower Montane and Sub-alpine forests, as well as in the alpine zone. These environments range in size from a few square meters to several hundred hectares. In the wet meadows of the western slope, perennial grasses, sedges, and rushes dominate. Dryer woodland meadows frequently include a ground cover of grasses and forbs with scattered lodgepole pine and stands of willow, aspen, and black cottonwood (Rundel et al. 1977).

At elevations of 9,500 feet (2,900 meters) amsl or more, the Sub-alpine Forest is distinguished by a spare overstory of widely scattered conifers, including mountain hemlock, whitebark pine, and western white pine. Although shrubby vegetation is scattered in the Sub-alpine zone, wax currant, bush oceanspray, and sagebrush occasionally occur, while willow, dwarf bilberry, and mountain laurel can be found on moist sites and around meadows (Rundel et al. 1977). Beginning at about 10,000 feet (3,050 meters) amsl, scattered trees of the Sub-alpine Forest give way to the open Alpine zone characterized by low, scattered shrubs, grasses, and cushion-plant communities. Trees cannot grow in this zone due to the short, cool summers and long, cold, and snowy winters. Bedrock outcrops, talus slopes, and boulder fields that occur throughout the

Alpine zone limit soil formation and thus vegetation growth. Common elements of the Alpine zone include bottlebrush squirreltail, pussytoes, clover, gentian, as well as sedges, rushes, and a variety of grasses.

Animal Distribution

Prominent among the many mammals native to the San Joaquin Valley and adjacent foothills were three species of ungulate: tule elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*), and black-tailed deer (*Odocoileus hemionus columbianus*). Early historical accounts suggest that elk were common in all habitats on the valley floor (Schulz 1981). Although dubbed "tule" elk, their association with the expansive marshes of the Central Valley is thought to be a consequence of hunting pressure (Schulz 1981). Marshes may have served as a refuge from commercial interests that quickly eliminated these animals from much of their former range during and after the gold rush. Based on observations of modern animals, it is likely that tule elk in the San Joaquin Valley lived in small, fluid herds throughout much of the year. Residing primarily within the grassland prairie and oak woodlands, these animals would have moved in response to changes in local conditions and available forage (McCullough 1969).

Like the tule elk, pronghorn were extirpated from throughout the Central Valley shortly after the gold rush (California Department of Fish and Game 1990:19; Popowski 1959:25). Historically, the San Joaquin Valley is estimated to have had one of the largest populations of pronghorn in North America (Burcham 1982:96; California Department of Fish and Game 1990:19; Yoakum 1978:114).

Unlike transitory elk and pronghorn, black-tailed deer in the San Joaquin Valley were likely tied to a relatively small home range, covering no more than about 360 acres (Dassman and Taber 1956). These animals would have been most common in the riparian forests and oak woodland, but reached highest densities in the chaparral and woodlands of the surrounding foothills. Deer, unlike other ungulates of the San Joaquin Valley, tend to be more solitary, residing individually or in groups of just a few animals (Dassman and Taber 1956).

Grizzly bear (*Ursus arctos*) were once common throughout the San Joaquin Valley, as were black bears (*Ursus americanus*). Mountain lion (*Felis concolor*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), and coyote (*Canis latrans*) were the principle carnivores, along with badger (*Taxidea taxus*), spotted skunk (*Spilogale gracilis*), and striped skunk (*Mephitis mephitis*), all of which could have been found in a variety of valley habitats. A host of other smaller mammals were common in the riparian and woodland communities including beaver (*Castor canadensis*), weasel (*Mustela frenata*), mink (*Mustela vison*), and river otter (*Lutra canadensis*), as well as raccoon (*Procyon lotor*), ringtail (*Bassaricus astutus*), gray squirrel (*Sciurus griseus*), ground squirrel (*Spermophilus beecheyi*), woodrat (*Neotoma* spp.), cottontail (*Sylvilagus audoboni*), and brush rabbit (*Sylvilagus bachmani*).

Marsh-grassland and riparian habitats, once common near the Kings River, were home to resident waterfowl such as duck (*Aythya* spp.), coot (*Fulica americana*), cormorant (*Phalacrocorax auritus*), grebe (*Aechmophorus occidentalis*), herons (*Ardeidae*), cranes (*Grus* spp.), egrets (*Ardea* spp.), and gulls (*Larus* spp.). These species were joined between November and February by enormous flocks of waterfowl migrating along the Pacific Flyway, including several species of ducks (Anatidae), geese (*Anser* spp. and *Chen* spp.), brants (*Branta* spp.), and swans (*Cygnus* spp.). Diverse terrestrial avifauna were also present in the valley, composed primarily of hawks (*Buteo* spp.), eagles (*Aquila* spp.), doves (Columbidae), quail (*Callipepla californica*), flicker (*Colaptes cafer*), woodpeckers (Picidae), owls (Tytonidae and Strigidae), and turkey vulture (*Cathartes aura*).

Open channels and lentic habitats of the river system each supported different types of fish. In the open, fast-moving waters of rivers and larger streams were found Chinook salmon (*Oncorhynchus tshawytscha*), sturgeon (*Acipenser* spp.), steelhead (*Oncorhynchus mykiss*), and lampreys (*Lampetra lethophaga*), as well as resident hardhead (*Mylopharodon conocephalus*), and sculpins (*Cottus* spp.). In the project area, these would only have been available when high flows of the Kings River overflowed into the San Joaquin River. Sacramento sucker (*Catostomus occidentalis*), and western pike-minnow (*Ptychocheilus grandis*) were common in both fast- and slow-water habitats, while the calmer waters of the rivers and creeks in the King River deltaic area were home to splittail (*Pogonichthys macrolepidotus*), hitch (*Lavinia exilicauda*), thicktail chub (*Gila crassicauda*), Sacramento blackfish (*Orthodon microlepidotus*), Sacramento perch (*Archoplites interruptus*), and tule perch (*Hysterocarpus traskii*). Aquatic environments also supported pond turtle (*Clemmys marmorata*) and populations of freshwater mussel including *Gonidea angulata* and *Anodonata californiensis*.

ETHNOGRAPHY (by Helen McCarthy)

Choinumni Geography

The Choinumni is a Yokuts tribe located along the Kings River in the foothills and plains on the eastern edge of San Joaquin Valley. They are one of a populous group of approximately 40 linguistically related Yokuts tribes who together inhabited the entire San Joaquin Valley. The Choinumni enjoyed a rich and varied territory which stretched along the Kings River from Trimmer Springs downstream to Centerville. Although precise boundaries have not been identified for tribal groups in this area, on the north bank of the river they held from Trimmer Springs west to the valley at Piedra. Their neighbors in this area were two Mono groups, the Holkoma to the northeast on Sycamore Creek and the Tuhukwaj on the southeast along the Kings River, and the Yokuts-speaking Gashowu to the north on Dry Creek. South of the river the Choinumni held the Lefever and Zebe creek drainages, the lush Wonder Valley along Mill Creek, as well as Tivy and Clark valleys. Neighbors to both the south and west were Yokuts peoples, including the Chukiamina and Michahai on the south in Squaw Valley, and on west along the river were the Wechikit and Aiticha.

Sociopolitical Organization

The Choinumni sociopolitical organization was defined by a moiety system which located individuals within the political and social order, determining political roles, marriage choices, and funerary relationships. Choinumni society was comprised of patrilineages, and accordingly each Choinumni individual inherited a patrilineal totem, usually an animal or bird, which belonged to one of the "sides," *Tokelyuwich* (eagle, west) or *Nutuwich* (east). This system thus intimately connected people to the natural world of animals through their totem, and these lineages were divided into two complementary and necessary parts. For instance, one's spouse always came from the other "side." Another essential function the system performed was to define the reciprocal roles enacted by members of one moiety for the grieving members of the opposite moiety for funerals and mourning ceremonies (Gayton 1948). Since this moiety system operated across Yokuts, Miwok, and some Mono groups, it created strong links beyond tribal boundaries to the degree that "social life in the San Joaquin valley was largely intertribal" (Gayton 1930:363).

The moiety/lineage system also defined the political structure. Each moiety had a chief which for the *Tokelyuwich* side was always of the *toxil* or Eagle lineage, and the *Nutuwich* chief for the Choinumni was Prairie Falcon, *limik* (Driver 1937:131). The *Tokelyuwich* chief was given some precedence, but both chiefs were known as *tiya*, as were their paternal male kin (Kroeber 1925:91). The chief's power, based on his patrilineal relationship to the mythical creator-chief Eagle, was a general, paternal jurisdiction over tribal matters (Gayton 1930:408). He advised on many matters, decided when to hold ceremonies, when to undertake various subsistence activities, settled disputes, and could pronounce death punishments for poison doctors (evil shamans; Driver 1937; Gayton 1930). He also had to be a wealthy man as he had to entertain all visitors at his home, feed the poor and elderly, and provide food and money for ceremonies. *Watoki*, whose name has been given to Wahtoke Creek and other local places, was the well-known *Tokelyuwich* chief from the Choinumni village of *Kulashao* (on Mill Creek) who signed the Treaty of 1851

(Gayton 1948:148; Kroeber 1925:483; Powers 1976:371). *Ahach* was the *Nutuwich* chief during this early contact period. *Watoki* was succeeded by Charley Hughes (Noren n.d.) and his son, *Gujam* (John Hughes), and *Tokuyan* succeeded *Ahach* (Hammond Bill; Gayton 1948:148).

A number of other officials performed vital tribal roles and, like the chiefs, held these positions on the basis of totemic lineage membership. For instance, the messenger or *winatum* who carried messages for the chief was of the Dove or sometimes the Roadrunner lineage. This official carried a tall cane, painted red, as a badge of his position when he travelled to other villages or tribes. Pony Dick Watun was the *winatum* (*Nutuwich*) in the early decades of the twentieth century (Gayton 1948:148). There was also an orator or official speaker, *tiele*, from the Magpie or Raven lineage, and a clown whose totem was Coyote (Driver 1937:94; Gayton 1948:148).

In addition to their political roles these officials had important ceremonial responsibilities to see that the proper rituals were performed at the appropriate times throughout the year. The chief decided the time, the *winatum* invited the guests and built the required fires, the female *winatum* oversaw preparation of the food, and the orator and clown both performed ceremonial duties (Driver 1937:92–93; Gayton 1948:148–149). The largest and most important of these events was the Mourning Ceremony, *lakana*, which was given every year or two in the fall for those tribal members who had died. Many relatives and neighbors from other villages and groups were invited for the ceremonies which lasted for six days. The chief and the families in mourning provided the food for everyone, and thus extensive advance planning and food preparation were required. A number of ritual dance performances preceded the cry, *ahana*, held on the fifth night during which images of the departed were burned as a final farewell. On the following morning the bereaved were ceremonially washed by members of their reciprocal moiety, thus marking the end to their mourning period (Gayton 1948:150–152; Noren n.d.). Other rites such as the bear dance and rattlesnake ritual were also held by the Choinumni. Members of the corresponding lineages performed these. The rattlesnake ceremony was especially important because it protected tribal members from being bitten by the snakes in the approaching season (Gayton 1948:152; Noren n.d.).

The shaman also played a vital role in Yokuts society. The shaman's roles included curing the sick, participating in power contests with other shamans, and collaborating with the chief to affect social control. Essentially a man who became too rich or any person who stepped out of line was threatened with the shaman's poison power, and thus the fear of sorcery was pervasive throughout the society (Gayton 1930; McCarthy 1995; Noren n.d.). People had recourse, however, with the chief's permission to kill an evil shaman who lost too many (three) patients or was suspected of poisoning people. Shamans kept their paraphernalia concealed from others, and sometimes placed them in large rocks which they split open with their powers. After hiding their valuables inside, the shaman closed the rock and painted it, thus warning others that it was a dangerous place for only that shaman could safely open the rock again. These painted rocks are called *patcki* (Gayton 1948:113; Hudson n.d.; McCarthy n.d.; Noren n.d.). In the early decades of this century mothers warned their children to stay away from these places (McCarthy 1995).

Settlement and Subsistence

The Choinumni lived in permanently established, named villages which they occupied for seven to eight months of the year, from October and extending into May (Gayton 1930:365). These villages, comprised of a number of houses and other structures, were usually located on flats along the main Kings River or tributary streams. The houses, *tomo'hish*, were constructed of a dome shaped frame of willow poles covered with an effectively water repellent brush thatch (Gayton 1948:145) or tule bundles covered with dirt (Mayfield 1929:22). The floors were sometimes excavated approximately two feet and covered with tule mats, rabbitskin blankets, and bear skins (Mayfield 1929:22). These houses were used mainly for sleeping except in bad weather. Cooking, food preparation and eating all took place outside near the fire, and "all the refuse was thrown in the fire" (Mayfield 1929:22).

Near the house small, thatched storehouses held seeds and other dried foods as well as dance regalia and materials for manufacture of tools. Additionally, there were acorn granaries for the year's store of this critical resource (Gayton 1948:145–146; Mayfield 1929:23; McCarthy n.d.). The community sweat house was an elliptical single ridgepole frame covered with earth and built near the stream so that participants could exit and plunge directly into the water (Driver 1937:66–67; Noren n.d.). Traditionally, sweating was only a men's activity (Driver 1937:67). The village may have been arranged with the houses in rows (Driver 1937:67), and each village had "a gaming court at or near its center" which was tamped solid and covered with fine sand for the many games the Choinumni played (Mayfield 1929:19).

Subsistence activities were embedded in seasonal rhythms so that the people moved across their territory in response to the availability and ripening of plant resources and the location of game and fish. In the spring they moved out of their main winter villages to locations like Wahtoke Creek (FRE-61) to gather seeds such as the red maids (*Calandrinia ciliata)*, which are known to have grown in the site area, and other of the many vegetal resources which they enjoyed. The strategy for gathering red maids involved picking the plant whole, and laying masses of collected plants out on rocks to dry. The dried plants were then threshed into a nearby mortar for immediate processing or into a basket and carried to the main village for storage (McCarthy 1995). Accordingly, a milling station was an essential component of a gathering site both for processing the immediate target resource as well as for preparation of other foods brought from village supplies, e.g., acorns and manzanita, which might be needed or desired during a stay. Dome-shaped temporary brush dwellings were built for shelter if the work groups camped for a while at these locations.

In early summer some Choinumni families floated in tule boats down the Kings River to Tulare Lake where they stayed for the season, gathering and fishing in the resource-rich wetlands environment (Mayfield 1929:29–35). The lake shore was excellent hunting grounds for both antelope and elk which not only grazed in the vicinity but were easily taken when they came to the water (Mayfield 1929:34, 37). The return trip was more arduous as the rafts had to be poled upstream, and when they were abandoned, the women carried the equipment and supplies in burden baskets on their backs (Mayfield 1929:37).

In the fall after the summer resources were exhausted, acorns became the focus of gathering activities. Black oak and blue oak (known locally as white oak) were respectively the two most preferred species by the Choinumni (McCarthy n.d., 1992) and the single most essential vegetal food resource. They were gathered in large amounts in the nearby hills and mountains as they ripened. These, like the other food supplies gathered in seasonal camps, were taken back to the main village and stored for winter use. Latta (1949) states that a woman had to collect and transport 1,000 pounds of acorn to supply herself and her family for the winter. Acorns were processed in the main villages on a regular basis at nearby bedrock mortars and leached in sand basins. The mush, cooked in baskets with hot rocks, was eaten on a daily basis and was also a major contribution to ceremonies and festivities.

Game was plentiful in the Choinumni area and included deer, rabbits, quail, band-tailed pigeons, water fowl, and squirrels, in addition to antelope and elk (*supra;* Driver 1937:61–63; Gayton 1948:146; Mayfield 1929:27). Squirrels were particularly important because they were always available (Mayfield 1929:27). Small game was roasted whole with the skin on in the ashes, and larger game was broiled on a wythe over the fire (Mayfield 1929:24; McCarthy 1995). The Choinumni obtained their hunting bows through trade with the Mono whose specialist bow makers produced a superior weapon to the Choinumni's (Mayfield 1929:16–17).

Fish provided another essential resource. While Gayton (1948:143) cites a spring salmon run on the Kings River, locals report that salmon did not run up this river on a regular basis because it was not connected to the San Joaquin system (Winchell n.d.) except possibly in years of heavy rainfall when Tulare Lake overflowed (McCarthy n.d.). There were, no doubt, heavy runs of fish from Tulare Lake which, at least until 1870, contained large trout/steelhead-type fish (Latta 1990:2–3). They were taken with harpoons and spears from fishing platforms constructed out over the water, and with nets (Driver 1937:63–64; Gayton 1948:146; Mayfield 1929:26). These larger fish could be dried and stored for future use.

Numerous other smaller fish were also exploited such as the tasty anchovy-size fish found in the arroyos and small pools as described in 1819 by Estudillo for the nearby Kawaeah region. These too could be dried and large quantities stored (Gayton 1936:73). Jeff Mayfield recounted using a conical openwork basket with an open apex for small fish. The basket was thrust down into the stream over the fish, which were then taken out by hand through the opening (Mayfield 1929:27). This fishing strategy was likely to have been employed at Wahtoke Creek. Small fish were of sufficient importance to people in this region that a nearby Chukiamina woman transplanted some from Mill Creek into her tributary in Squaw Valley. She instructed others not to fish there for two years so the fish would become established, and the report is that she was successful (Noren n.d.). In sum, the Choinumni enjoyed a rich and varied diet which contained a number of components which could be stored for winter or other times of potential scarcity.

ARCHAEOLOGICAL BACKGROUND

Archaeological work in the southern Sierra Nevada over the last several decades has documented prehistoric changes in land use, mobility patterns, technological organization, and trade relationships at various times during the Holocene (Garfinkel et al. 1979; Goldberg et al. 1986; Goldberg and Skinner 1990; Jackson and Dietz 1984; McGuire 1981; McGuire and Garfinkel 1980; Moratto 1972, 1988; Moratto et al. 1988; Morgan 2006, 2010; Roper Wickstrom 1992, 1993; Stevens 2002, 2005).

Bennyhoff's (1956) cultural sequence for Yosemite National Park represented the initial step toward understanding prehistoric culture change in the central Sierra Nevada. Subsequent work at reservoir sites in the lower foothills (e.g., Moratto 1972; Moratto et al. 1988) has documented a series of occupational periods broadly similar to those in Yosemite, but all three chronological schemes are ultimately based on Great Basin and Central California sequences (e.g., Beardsley 1954; Bettinger and Taylor 1974). Archaeological work at higher elevations in the southern Sierra Nevada has augmented data from the foothills (e.g., Goldberg and Skinner 1990; Goldberg et al. 1986; Jackson and Dietz 1984; Morgan 2006, 2010; Roper Wickstrom 1992, 1993; Stevens 2002, 2005), but lack of depositional integrity and chronological control remain problems to be resolved over much of the region (Goldberg and Skinner 1990; Jackson and Dietz 1984:179).

More recently, a chronological scheme was developed for the watersheds of the Mokelumne, Calaveras, Stanislaus, and Tuolumne Rivers based on a synthesis of chronological information from more than 100 excavated sites (Rosenthal 2011). Five major time periods were defined. These include the Early Archaic, Middle Archaic, Late Archaic, Recent Prehistoric I, and Recent Prehistoric II. While the applicability of this chronology in the southern Sierra is unknown, it is used here as a convenient organizing framework to facilitate the discussion of local prehistory within a larger regional context.

Early Archaic (11,500–7000 cal BP)

Although well-preserved early Holocene archaeological deposits are rare in interior central California, we know considerably more about human lifeways during this period than during the Late Pleistocene. In the southern San Joaquin Valley, early Holocene deposits were identified in the basal cultural stratum at KER-116 at Buena Vista Lake which Fredrickson and Grossman (1977; Hartzell 1992; Wedel 1941) ascribe to the San Dieguito Complex. The assemblage, radiocarbon dated to over 9000 cal BP, includes crescents, projectile points, and scrapers, but evidently no milling equipment.

In the foothills of the Sierra Nevada, north of the study area, deeply buried and stratified sites of early Holocene age are known from Clarks Flat (CAL-342; Moratto et al. 1988; Peak and Crew 1990) and the Skyrocket site (CAL-629/630; Pryor and Weisman 1991; Rosenthal 2011). An early Holocene deposit was also discovered at CCO-696, in the Los Vaqueros Reservoir area in the eastern Diablo Range (Meyer and

Rosenthal 1997). Near the crest of the south central Sierra, Peak and Neuenschwander (1991) reported three >10,000-year-old radiocarbon dates from a buried hearth and occupation surface at Gabbott Meadow. In combination with several large projectile points reminiscent of the western stemmed tradition, and suggestively large obsidian hydration rim values, the Gabbott Meadow sites provide compelling evidence that high elevation localities were commonly used during the early Holocene (Martin 1998).

The degree to which Late Pleistocene inhabitants relied on large game hunting is unknown, but evidence from early Holocene sites throughout California seems to indicate that small, not large, mammals were important during the latter time interval (Delacorte 1999; Hildebrandt and McGuire 2002; McGuire and Hildebrandt 1994; Meyer and Rosenthal 1997; Taite 1999). Perhaps the most significant characteristic of post-Pleistocene economies in California west of the Sierran crest is a clear reliance on plant foods. Milling tools are one of the most commonly reported artifact classes from early Holocene sites in Sierra Nevada and Coast Ranges (La Jeunesse and Pryor 1996; Meyer and Rosenthal 1997; Peak and Crew 1990), but as noted above, are not known from KER-116 in the Buena Vista Lake basin and are rare along the fossil shoreline of Tulare Lake (Fenenga 1992).

At foothill sites, exclusive use of handstones and millingslabs along with a number of other cobble-based pounding, chopping, and scraping tools are widespread. Beginning as early as 10,500 cal BP, this assemblage of expedient (i.e., unshaped) tools becomes the predominant extractive and processing technology employed from coastal California to the uplands of Humboldt County, and throughout the Sierra Nevada and Coast Ranges (Fitzgerald and Hildebrandt 2001; Fitzgerald and Jones 1999; Hildebrandt 1983; Jones et al. 2002; La Jeunesse and Pryor 1996; Meyer and Rosenthal 1997; White et al. 2002). Often characterized by dense accumulations of milling tools (i.e., handstones and millingslabs), these sites appear to represent frequently re-used encampments, part of a highly mobile settlement system (Basgall and True 1985; McGuire and Hildebrandt 1994; Moratto 2002). In central California, nut crops associated with expanding woodlands may have been the primary focus of plant exploitation and not simply small seeds as is commonly portrayed (e.g., Basgall 1987; McGuire and Hildebrandt 1994). The charred remains of acorn from CCO-696 at Los Vaqueros, and acorn and gray pine from CAL-629/630 (Skyrocket site), provide direct evidence for use of these nut crops (Meyer and Rosenthal 1997; Rosenthal and McGuire 2004). The absence of small seeds in both the Los Vaqueros and Skyrocket assemblages may simply reflect late fall occupation (as opposed to spring when most small seeds ripen) rather than an economic preference for these species.

The widespread assemblage of expedient, cobble-based chopping, scraping, pounding, and grinding tools is first established during the early Holocene and continued as the core technology employed throughout the middle and much of the late Holocene in the foothill woodlands surrounding the Central Valley (Basgall and Hildebrandt 1989; Kowta 1988; Moratto et al. 1988; Meyer and Rosenthal 1997). The continuity of this assemblage is striking in the Sierra Nevada, where portable mortars and pestles never became important milling tools (e.g., Moratto et al. 1988), but gray pine and acorn were important seasonal foods for most, if not all, of the Holocene.

Despite a dearth of large mammal remains in early Holocene sites from central California, these assemblages are often found to contain large broad-stemmed projectile or spear points. These points tend to be moderately to heavily re-worked, with flat to indented bases and broad-stems, resembling Borax Lake points from the North Coast Ranges (La Jeunesse and Pryor 1996; Meyer and Rosenthal 1997; Peak and Crew 1990). A significant number of points from the Sierra Nevada resemble Lake Mojave, Silver Lake, and perhaps Pinto points, characteristic of early Holocene assemblages found in the Great Basin. This may not be surprising, as we know the crest of the Sierra was regularly crossed during the early Holocene by people who presumably lived both east and west of this imposing topographic divide. Shell beads from coastal California are found in early Holocene deposits in the western and central Great Basin (Bennyhoff and Hughes 1987), and obsidian from eastern Sierra quarries make up a large portion of the non-local flaked stone tools and tool-making debris found in early Holocene sites in central California, such as Clarks Flat, Skyrocket, Los Vaqueros, and at Tulare Lake (Gold et al. 2008; La Jeunesse and Pryor 1996; Meyer and Rosenthal 1997; Peak and Crew 1990). Another striking characteristic of early Holocene assemblages in the Sierra foothills is the regular occurrence of large, percussion-thinned bifaces, including numerous examples from the Skyrocket site (La Jeunesse and Pryor 1996).

Middle Archaic (7000–3000 cal BP)

Middle Holocene-age components have been documented from a number of localities in upland areas of the Sierra Nevada, and in lower elevation zones in the Sierra Foothills and San Joaquin Valley. At FRE-534, in the Wishon region of the upper Kings River drainage, Wren (1976) recovered a substantial number of handstones (n=105) and millingslabs (n=36) in apparent association with Pinto (n=12) and Humboldt (n=16) series projectile points. Radiocarbon dates of 5220 ± 105, 5085 ± 100, and 4160 ± 90 radiocarbon years before present were returned from the site. A similar accumulation of milling equipment and early projectile point variants has been documented at FRE-805 near Balsam Meadow (Jackson and Dietz 1984). The assemblage includes Pinto, Humboldt, and Elko points, as well as a number of stratigraphically inferior millingslabs (n=16) and handstones (n=25). The deposits are mixed to some extent, and there is no corroborating radiocarbon information. Source-specific obsidian hydration data, however, put the initial occupation of FRE-805 at about 5250 cal BP. At Dinkey Creek, in the upper Kings River drainage, Kipps (1982) identifies a ground stone component (four millingstones, four handstones, and three hammerstones) within the lower stratigraphic levels of FRE-1023. Time-sensitive materials include two Pinto series projectile points, as well as a suite of source-specific obsidian hydration rim values which she infers to have broad contemporaneity with FRE-534.

Excavations conducted in the 1930s at Buena Vista Lake by the Smithsonian Institution (Wedel 1941) succeeded in identifying an early complex clearly discontinuous with later periods (or the earlier San Dieguito materials reported by Fredrickson and Grossman [1977]). The assemblage, referred to as the Buena Vista Complex, is characterized by handstones, millingslabs, and extended burials, but with no asphaltum, obsidian, or baked clay generally ascribed to later occupations. In the absence of radiocarbon data, the Buena Vista Complex was originally dated between 7,000 and 2,000 years (Fredrickson and Grossman 1977:173), based primarily on comparability with other southern California Millingstone manifestations. A re-analysis of the Buena Vista Lake materials (Hartzell 1992) suggests evidence of an occupation hiatus between 7000 and 4000 cal BP, necessarily placing the Buena Vista Complex at some time after 4,000 years ago (Moratto 1984:188). Support for this inference, however, includes only a limited sample of obsidian hydration readings.

In the foothills of the central Sierra Nevada, Clarks Flat (CAL-342) and the Black Creek site (CAL-789) have produced comparatively robust middle Holocene deposits, as well as does the Edgemont site (TUO-4559) near Sonora. Other sites found at various places on the western slope of the Sierra may have witnessed use during this time interval, but unequivocal evidence is generally lacking. Obsidian hydration readings from numerous sites likely evince middle Holocene occupation, but this interpretation is clouded by poorly resolved hydration rate conversions, and temporally mixed site components (e.g., Milliken et al. 1997; Peak and Crew 1990). Compounding the problem may be a pervasive misreading of projectile point sequences, with too much weight given to stylistic-temporal assignments borrowed from the Great Basin (Rosenthal 2002, 2011).

A growing body of recent evidence from Calaveras and Tuolumne counties and elsewhere in the Sierra seems to indicate that certain notched and stemmed dart point types may have been in common use through the middle and late Holocene. Small corner-notched and straight to contracting stemmed dart points recovered from a black clay stratum at the Skyrocket site indicate that these point styles were in use before 7,000 years ago. Their predominance in archaeological assemblages for the next 6,000 years seems clear (e.g., Hull and Moratto 1999; Moratto 2002; Rosenthal 2002, 2011). Middle Holocene components at the

Edgemont site and at the Black Creek site (CAL-789) near Copperopolis are dominated by corner-to side-notched dart points in contexts radiocarbon dated to between 6200 and 4200 cal BP. These points are also present at the Texas Charley site and at Clarks Flat, associated with the deepest early to middle Holocene strata (cf., Peak and Crew 1990). Large hydration values are commonly reported for side- to corner-notched points at Yosemite (Hull and Moratto 1999) and elsewhere on the western slope (Jackson and Ballard 1999), confirming that these point styles have a longevity that exceeds their common temporal range on the east side of the Sierra. Corner- to side-notched points are also associated with middle Holocene components at Los Vaqueros on the west side of the Central Valley, and are found at other contemporaneous sites in the Sacramento Valley (White 2003), the Bay Area (e.g., Fredrickson 1966; Gerow 1991), and on the central California coast (e.g., Jones 2003; Levulett et al. 2002).

Handstones and millingslabs remained the primary plant processing tools used by native groups living in the Sierra Nevada foothills. Evidence is increasing that gray pine nuts and acorns made up a significant part of the diet in the foothills, continuing a pattern seen in the early Holocene. Radiocarbon dates ranging between 6200 and 4200 cal BP have recently been obtained on gray pine nutshell from several sites in the upper foothill zone, including the Edgemont and Hess (TUO-4513) sites in Sonora and at the Black Creek site near Copperopolis. This latter site also produced three dates on acorn nutshell ranging between 5390 and 5150 cal BP. Gray pine and manzanita nutlets are also reported from middle Holocene contexts at the Skyrocket site (Moore 1996). On the western side of the Central Valley, in the Diablo Ranges, pine and acorn nutshell and manzanita nutlets are the dominant plant remains found in middle Holocene assemblages at Los Vaqueros (Meyer and Rosenthal 1997, 1998) and in the southern north Coast Ranges at sites in the Clear Lake Basin (White et al. 2002), indicating that xerophitic nut and berry crops were an important part of the prehistoric economy throughout the foothill woodlands of interior central California during the warm-dry middle Holocene.

In the central Sierra, lifeways appear to have remained quite similar to that of the preceding period (Moratto 2002), although there is some indication that residential mobility may have decreased. At the Edgemont site in Sonora, a semi-subterranean house and several large pit features have been dated to the middle Holocene, the latter perhaps used to store gray pine cones or acorns. The Edgemont site sits on a knoll adjacent to a natural spring that may have remained a reliable water source through the middle Holocene. Other sites of this age in the foothills are found along major water courses, such as Clarks Flat on the Stanislaus River, and Skyrocket located near the confluence of Littlejohns and Underwood creeks.

As early as 5500 cal BP, there appears to have been significant changes in plant processing technology and residential mobility at sites in and adjacent to the San Joaquin Valley, mirroring similar changes in favorable environments throughout the state (e.g., Jones 1991; Levulett et al. 2002; O'Connell 1971). Use of the mortar and pestle is first recorded in lowland sites during the middle Holocene, particularly in marsh-side, riparian, and estuarine settings (Jones 1991, 1997; Levulett et al. 2002; Meyer and Rosenthal 1997). In the lowland valleys of Contra Costa and Alameda counties, mortars and pestles replaced handstones and millingslabs as early as 6000 cal BP, and remained the predominant or exclusive milling technology used throughout the middle and late Holocene (Fredrickson 1966; Meyer and Rosenthal 1997). The adoption of this new technology accompanied an increasing residential focus in central California, but does not appear to coincide with a shift to new plant foods, as has commonly been assumed (Basgall 1987). As noted above, gray pine and manzanita, as well as acorn, are dominant in plant macrofossil assemblages on both sides of the valley, yet milling equipment clearly contrasts between the two regions.

In the lowlands of the San Joaquin Valley and adjacent foothills, evidence for increasing residential stability is further indicated by the first appearance of comparatively large cemetery populations toward the end of the middle Holocene (ca. 4000 cal BP; Heizer 1949; Meyer and Rosenthal 1998; Moratto 1984; Ragir 1972; Wedel 1941), as well as a diverse suite of non-utilitarian items, including large numbers of well made "charmstones," the earliest *Olivella* wall-beads, *Haliotis* ornaments, and regular use of non-local obsidian from the eastern Sierra and Coast Ranges (Hartzell 1992; Jackson et al. 1998; Meyer and Rosenthal 1997, 1998; Milliken et al. 1997; Peak and Crew 1990). Settlements with these characteristics are found adjacent to the emerging freshwater marshes and well-watered riparian ecosystems found in the lowlands during the middle Holocene (Hartzell 1992; Jones 1991; Moratto 1984:113). These habitats probably facilitated extended residential occupation through the aggregation of economically important plants, animals, and fish concentrated spatially, but dispersed seasonally (Jones 1991, 1997). Both characteristics alleviated some of the scheduling conflicts prevailing in environments such as the Sierra Nevada, where resources are distributed more homogenously into distinct environmental zones and require residential moves to accommodate changing resource productivity. Fishing may have taken on new importance in the Central Valley during the middle Holocene, as fishing gear and fish remains are first represented in assemblages dating to this time period (Broughton 1988; Meyer and Rosenthal 1997; Ragir 1972; White 2003). Heavy reliance on the emerging mosaic of marshes, riparian forests, and adjacent grasslands is further indicated by the composition of faunal assemblages attributed to the late middle Holocene. Tule elk, mule deer, and pronghorn are all represented, as are smaller rabbits and hares, cranes, geese, swans, ducks, cormorant, turtle, river otter, beaver, coyote, and several other terrestrial carnivores, raptors, and rodents (e.g., Hartzell 1992; Ragir 1972:159).

By the end of the middle Holocene (5000–4000 cal BP), regionally specific cultural traditions are evident in the lowlands of the northern San Joaquin Valley, reflecting the co-existence of distinct sociocultural groups and further implying that territorial circumscription may have been well established in the northern valley by this time. The distinctive Windmiller culture is primarily recognized from a handful of sites located at the confluence of the Mokelumne and Cosumnes rivers. Windmiller sites are unique in their abundance of westerly oriented, ventrally extended burials and elaborate material culture found as burial offerings (Heizer 1949; Ragir 1972). On the northern and western sides of the Delta, separate cultural groups who used flexed burial postures are known from several sites (Meyer and Rosenthal 1997; White 2003; Wiberg 1992). However, extended burial postures recognized at sites near Buena Vista Lake Basin and elsewhere in the southern San Joaquin Valley and adjacent foothills are quite similar to Windmiller and other cultural traditions (e.g., Meganos [Bennyhoff 1994]) in the northern San Joaquin Valley. Extended burial posture is rare to non-existent elsewhere in the upper Sierra Nevada, Sacramento Valley, and Coast Ranges, suggesting related cultural traditions may have once occupied the entire San Joaquin Valley (Rosenthal et al. 2007), perhaps beginning in the middle Holocene.

Late Archaic and Recent Prehistoric (3000–100 cal BP)

The prevailing post-3000 cal BP cultural sequence for the study area is derived from investigations at Buchanan Reservoir (King 1976; Moratto 1972; Peak 1976), diagnostic features of which have been identified in a number of local assemblages (Kipps and Moratto 1985; Langenwalter et al. 1989; Meighan and Dillon 1987; Moratto 1988; Wallace et al. 1989). The earliest components at Buchanan Reservoir are subsumed under the Chowchilla Phase and date from approximately 2300 to 1650 cal BP (Moratto 1972, 1984:316–317, 1988:50). Recognized as an "interval of prosperity," assemblages include fish spears, large projectile points, millingslabs, cobble mortars, small obsidian flake tools, varied bone artifacts, and abundant shell ornaments and beads. Expanded exchange and/or contacts with areas to the east and west is indicated by a variety of marine shell beads and ornaments, as well as by the use of substantial amounts of exotic obsidian. Subsistence pursuits included hunting, fishing, and gathering vegetal foods, perhaps including acorns. A certain degree of non-egalitarian sociopolitical ranking is evident in mortuary structure and content (King 1976), and like San Joaquin Valley sites from this time period, burial posture is commonly extended (Moratto 1972). Settlement structure appears centered on relatively large base camps along major drainages.

The Raymond Phase, ranging from 1650 to 450 cal BP, is characterized as a period of cultural instability and change and perhaps decreased population densities in the foothills. Tool forms were dominated by small and medium points, millingslabs, bedrock mortars, unshaped pestles, core tools, and small retouched flakes. *Olivella* shell beads and *Haliotis* ornaments become scarce suggesting a lack of access or breakdown of certain exchange systems. Grave goods lack the displays of wealth of the earlier Chowchilla Phase. Villages seem to have experienced cycles of occupation and abandonment; violence was common. Moratto (1984:563–564) suggests that ancestral Yokuts groups during this time "may have abandoned marginal foothill and valley areas and congregated near reliable water sources at higher elevations, along principal streams, and near delta waterways." Factors initiating these disruptions and abandonments may center on paleoclimatic change resulting in "rapid desiccation of lowland environments." Since Moratto's (1972) pioneering work at Buchannan Reservoir (now known as Eastman Lake), archaeological research throughout central California and the western Great Basin has demonstrated that a number of significant cultural transformations occurred during the period encompassed by the Raymond Phase (e.g., introduction of the bow and arrow; adoption of bedrock milling technology; rapid economic intensification; Basgall 1987; Bettinger and Taylor 1974; Jackson and Dietz 1984; Hughes 1994; Hull and Moratto 1999; Rosenthal 2011; Rosenthal et al. 2007). This time interval subsumes the second half of the Middle Period, the Middle to Late Period Transition, and Phase 1 of the Late Period, as defined in the northern San Joaquin Valley (e.g., Bennyhoff and Hughes 1987; Groza 2002; Rosenthal et al. 2007) and elsewhere in central California (e.g., Jones et al. 2007; Milliken et al. 2007). As currently defined the Raymond Phase masks these important region-wide technological and economic developments.

The final interval of prehistoric occupation at Buchannan Reservoir, the Madera Phase, lasted from 450 to 100 cal BP and witnessed a "florescence of the ancestral Miwok," and presumably the ancestral foothill Yokuts. Assemblage characteristics include steatite disc and *Olivella* shell beads, lightweight arrow points, bedrock mortars and cobble pestles, steatite bowls, cooking vessels, pipes, arrowshaft straighteners, and ornaments. Dramatic population growth is inferred by the appearance of certain complex ceremonial and domestic structures, and by the emergence of a village community settlement pattern, with primary villages occurring along major water courses and subsidiary hamlets on large tributaries.

Issues of causality for late Holocene culture change have focused primarily on paleoenvironmental shifts and their concomitant effect on prehistoric human ecology (Davis and Moratto 1988; Moratto 1988:314–319; Moratto et al. 1978). This analysis has relied on regional and extra-regional paleoenvironmental reconstructions (e.g., palynology, dendrochronology, plant community successions, treeline studies, sedimentology, glaciology, tephrachronology, lake-level studies, and packrat midden analyses) broadly correlated with major shifts in prehistoric land-use patterns. Changes in climatic regimes are thought to have affected water resources, the elevations and productivity of various life zones, and the length of the warm season, all with effects on prehistoric land use, settlement, and subsistence. Thus, for example, late Holocene (1450–650 cal BP) warming and drying had the effect of "diminishing the carrying capacity of many foothill localities and destabilizing human ecosystems," whereas during the Little Ice Age (650–50 cal BP) cool-moist conditions are correlated with Madera Phase population increases (Moratto 1988:314–319).

The late Holocene prehistory of the southern San Joaquin Valley bottomlands is much less documented. Aside from several salvage excavations of Late Period burial sites, Wedel's (1941) work at Buena Vista Lake perhaps still stands as the most comprehensive excavation program conducted within this area (Hartzell 1992; Moratto 1984:215; Siefken 1999). In addition to the aforementioned Buena Vista Complex, subsequent occupations were also recognized.

As with much research conducted at that time, an emphasis was placed on documenting assemblage characteristics (read cultural affinities) with adjoining regions, in this case shifting influences emanating from the Delta, Santa Barbara coast, and southern California interior (Moratto 1984:188; Wedel 1941). Thus, for example, Wedel identifies assemblages that appear contemporary with and perhaps related to Middle Period components in the Delta, whereas the latest components are more reminiscent of materials recovered from the Santa Barbara region and southern California interior. Wallace (1991:30–31) characterizes later (post-1450 cal BP) cultural deposits in the Tulare Basin as both more numerous and complex, containing light-weight projectile points (arrow tips), steatite vessels, charmstones, and greater numbers of beads fashioned from marine shell. Wallace hypothesizes an increase in human population and more extensive exploitation of lake and marsh resources at this time, and notes the similarity of various artifact categories with those documented for the proto-historic and historic Yokuts. Hartzell (1992) later obtained radiocarbon dates from sites KER-39 and KER-116 previously excavated by Wedel (1941). The resulting dates ranged between 1345 and 1115 cal BP and were thought to represent increased use of residential sites along the shores of Buena Vista Lake, as indicated by associated house structures, cooking hearths, cache features, and a broad range of terrestrial and aquatic fauna (Hartzell 1992:303–305). Based mainly on obsidian hydration information, subsequent lake shore occupations were thought to have been much more sporadic, perhaps related to deteriorating environmental conditions (Hartzell 1992:312; Moratto et al. 1978).

FIELD METHODS AND RESULTS

FIELD METHODS

On June 10, 2016, Far Western archaeologist John Berg performed a pedestrian survey that included the entire APE (Figure 4). Efforts were focused on the unpaved portions of the APE. As can be seen in the survey photos, the ground visibility for the unpaved portions of the APE is poor due to heavy grass coverage but efforts were made to periodically scrape the grass to expose the ground surface. Rodent burrow spoil piles were also examined when present.

RESULTS

No previously unrecorded resources were identified during the survey of the APE.

SUMMARY AND RECOMMENDATIONS

An archival records search, consultation with interested Native American individuals, and a pedestrian survey identified only two historic canals within one-quarter mile of the project area; one of which is directly associated with the project. The buried site sensitivity assessment identified the entire APE as high to highest sensitivity for buried resources. A response via email from Shana Brum, a cultural specialist II with the Santa Rosa Rancheria Tachi Yokut Tribe, indicated that the project area is highly sensitive to the Yokuts and recommended Native American monitoring of all ground disturbances. Based on the buried site sensitivity analysis, it appears that the project has the potential to affect buried cultural resources. Pre-construction subsurface testing is recommended in areas of deep and extensive subsurface impacts. If previously unidentified resources are encountered during construction, it is recommended that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. Additional survey will be required if the project changes to include areas not previously surveyed.

Figure 4. Archaeological Survey Coverage.

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APPENDIX A

RECORDS SEARCH

Original Project Routing

California
Historical
Resources
Information
System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

6/24/2016

Adrian Whitaker
Far Western Anthropological Research Group, Inc.
2727 Del Rio Place, Suite A
Davis, CA 95618

Re: Alta Canal Bridge
Records Search File No.: 16-250

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Wahtoke USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.25 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format:
☐ custom GIS maps ☐ shapefiles ☒ hand-drawn maps (custom GIS maps & shapefiles are not currently available for reports in this area)

Resources within project area:	FRE-PRO-002 (informal resource – no database entry)
Resources within 0.25 mile radius:	P-10-005801, Friant-Kern Canal
Reports within project area:	None
Reports within 0.25 mile radius:	None

Resource Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Database Printout (details): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed

Report Database Printout (list): ☐ enclosed ☐ not requested ☒ nothing listed

Report Database Printout (details): ☐ enclosed ☐ not requested ☒ nothing listed

Report Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed

Resource Record Copies: ☒ enclosed ☐ not requested ☐ nothing listed

Report Copies: ☐ enclosed ☐ not requested ☒ nothing listed

OHP Historic Properties Directory: ☒ enclosed ☐ not requested ☐ nothing listed

Archaeological Determinations of Eligibility: ☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976): ☐ enclosed ☐ not requested ☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see
http://www.dot.ca.gov/hq/structur/strmaint/historic.htm

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see
http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC

Shipwreck Inventory: Not available at SSJVIC; please see
http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp

Soil Survey Maps: Not available at SSJVIC; please see
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Carrie L. Stephens
Center Assistant

Supplement

P-10-005801
CA-FRE-3519H

FRIANT-KERN CANAL
(Ditch/Canal Inventory Forms FK-1 and FK-2)

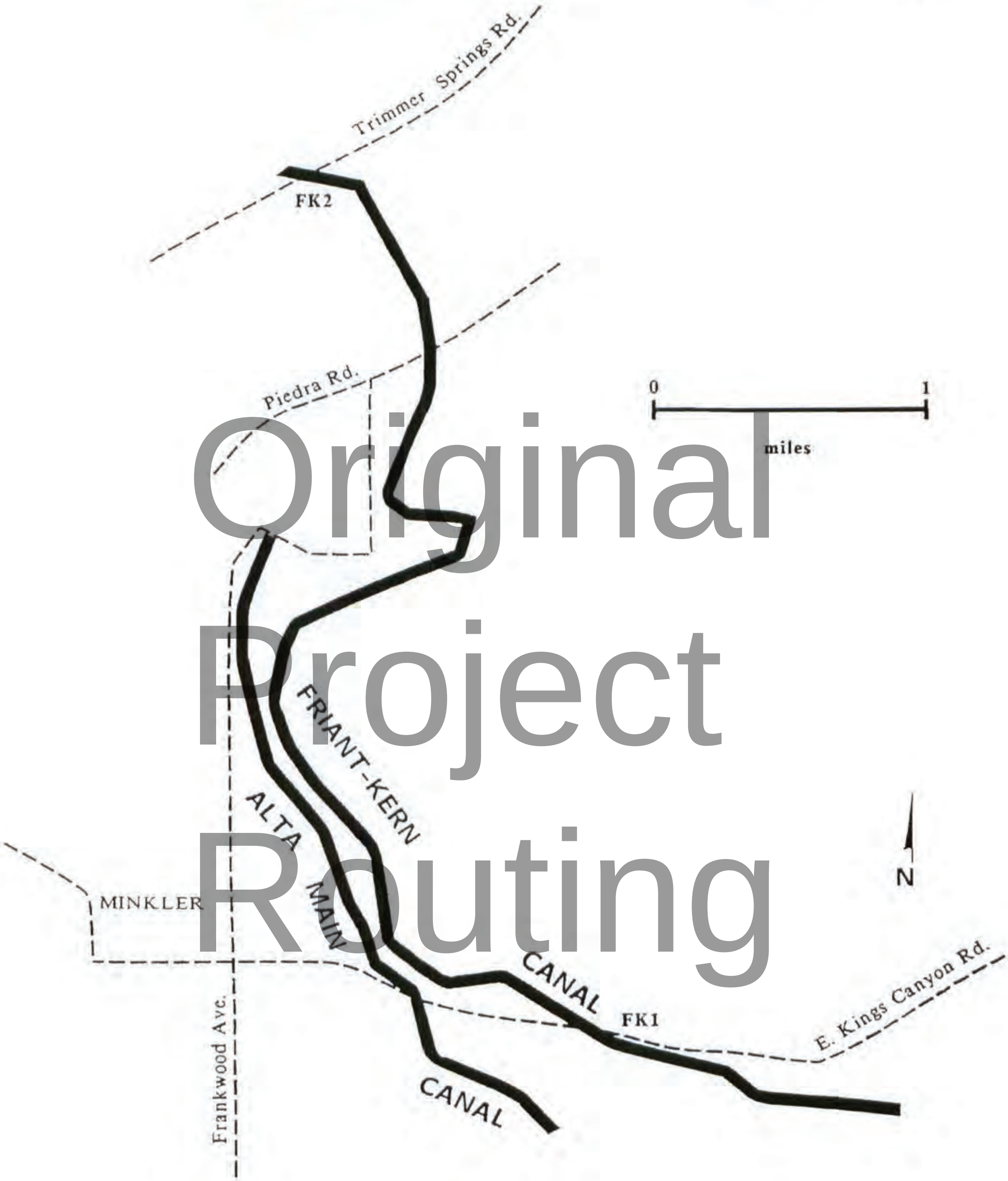
The Friant-Kern Canal is a federal canal, built by the U.S. Bureau of Reclamation as part of the Central Valley Project (CVP). As the name implies, it connects Friant Dam on the San Joaquin River with Kern County, a distance of 152 miles. The Friant-Kern Canal was built between 1945 and 1951. In its concrete lined sections, as in its upper reaches, it has a bottom width of 36', a water depth of 15.5', with very steep slopes of 1.25:1. It has a maximum capacity of 5000 cfs, with a normal diversion capacity of 4000 cfs.[15]

Specific measurements were not taken of the Friant-Kern Canal, in part because it is impossible while the canal is wet and in part because it is unnecessary, given the uniform nature of this conduit. The canal was observed at two points: at its intersection with Highway 180 and at its intersection with Trimmer Springs Road. It is nearly identical in appearance in both locations.

[15] Bureau of Reclamation. Central Valley Project, Friant Division, California. "Technical Record of Design and Construction," May 1958.

P-10-005801
CA-FRE-3519 H

Supplement



MAP 7: Friant-Kern Canal Recordation Points
HRER 06-Fre-180 64.6/84.0

P-10-005801
CA-FRE-3519H

Supplement

DITCH/CANAL INVENTORY FORM, HIGHWAY 180 "RURAL" PROJECT LOCATION NO. FK1
Developed by JRP Historical Consulting Services

1. **Name of ditch/canal:** Friant-Kern Canal

2. **Location for recordation:**
At Highway 180 crossing.

3. **Other locations for recording this ditch/canal:** FK2.

4. **Structures at or near this location:**
Bridge at Highway 180 crossing.

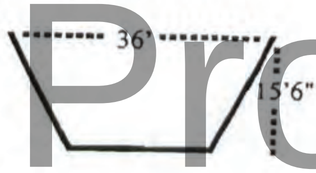
5. **Setting at this location:**
Rolling hills of open grassland.

6. **Integrity considerations for this ditch/canal:**
Excellent.

7. **Attributes of conduit at this location:**
Width (in feet) 36'
Depth (in feet) 15.5'
Material concrete

8. **Date(s) of enclosed photograph(s):**
October 2, 1991

9. **Sketch, in cross-section:**



P-10-005801
CA-FRE-3519 H

Supplement

DITCH/CANAL INVENTORY FORM, HIGHWAY 180 "RURAL" PROJECT **LOCATION NO. FK2**
Developed by JRP Historical Consulting Services

1. **Name of ditch/canal:** Friant-Kern Canal

2. **Location for recordation:**
Trimmer Springs Road crossing.

3. **Other locations for recording this ditch/canal:** FK1.

4. **Structures at or near this location:**
Trimmer Springs Road bridge.

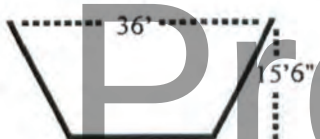
5. **Setting at this location:**
Orchards on both sides of the canal.

6. **Integrity considerations for this ditch/canal:**
Excellent.

7. **Attributes of conduit at this location:**
Width (in feet) 36'
Depth (in feet) 15.5'
Material concrete

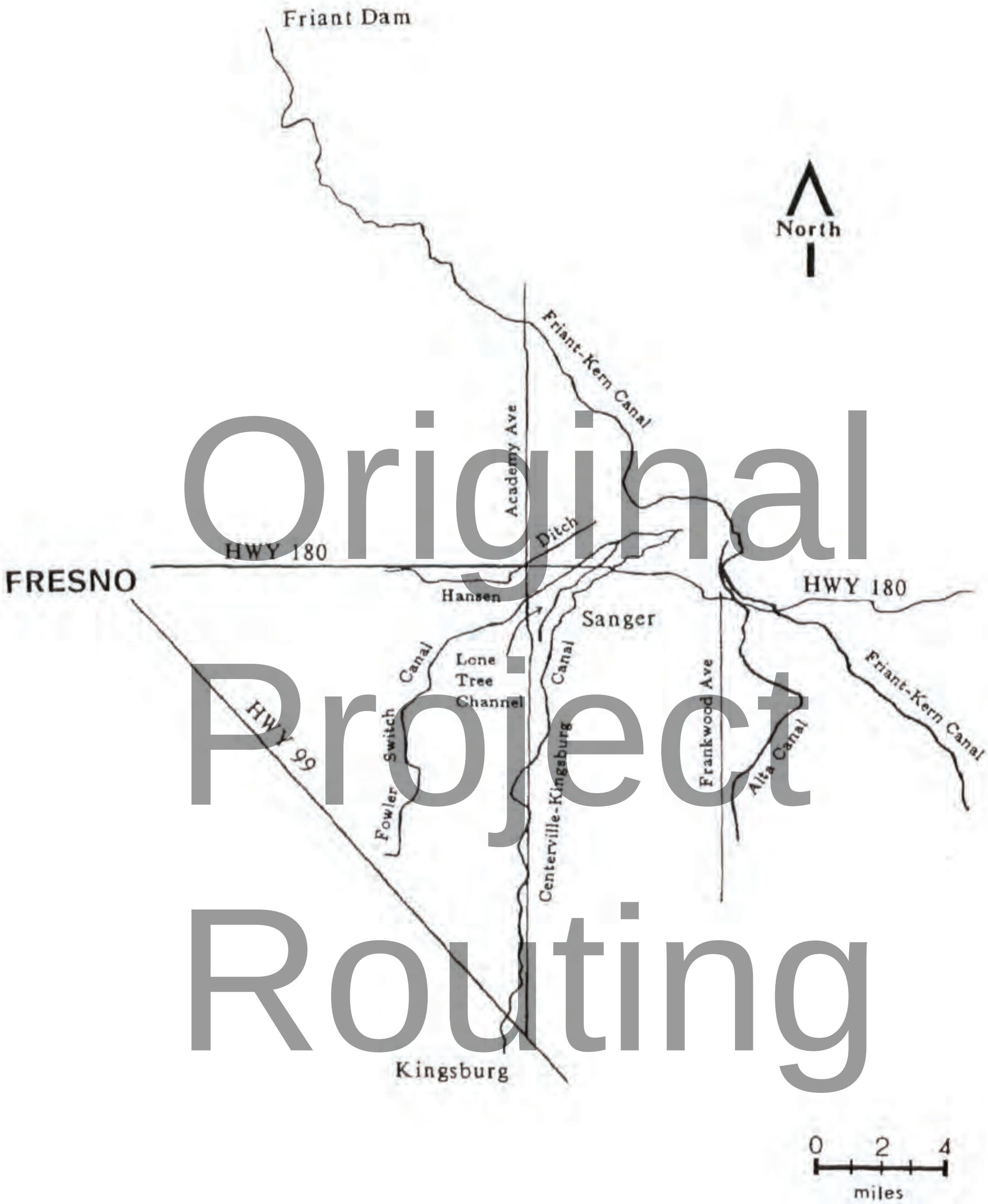
8. **Date(s) of enclosed photograph(s):**
October 2, 1991

9. **Sketch, in cross-section:**



P-10-005801
CA-FRE-3519 H

Supplement



MAP 1: General Alignment for Six Canals

HRER 06-Fre-180 64.6/84.0

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-10-5801
HRI #
Trinomial CA-FRE-3519H
NRHP Status Code 7

Other Listings
Review Code Reviewer Date

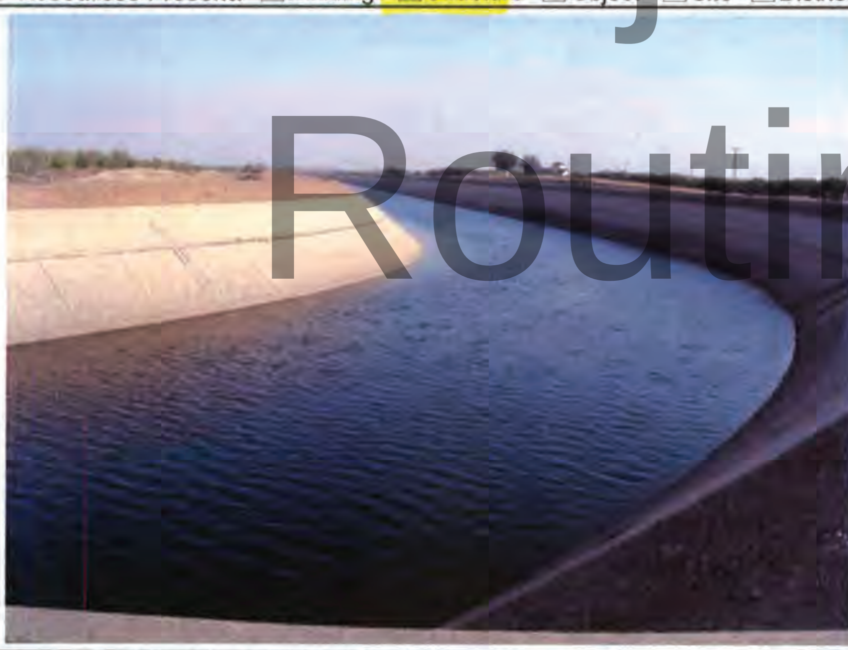
 *Resource Name or #: JFR-009

RECEIVED FEB 09 2010 By

P1. Other Identifier: Friant-Kern Canal
***P2. Location:** ☐ Not for Publication ☑ Unrestricted ***a. County:** Fresno
***b. USGS Quad:** Round Mtn (1964; photoinspected 1978); T12S R22E, Sec. 20; MDBM
c. Address:
d. UTM: Zone 11; 268979 mE/ 4083030 mN NAD27 Datum
e. Other Locational Data:
The resource is located northeast of the town of Clovis, on both (north and south) sides of State Route (SR) 168 from GIS-based post mile 13.21 to 13.26, partially within the highway right-of-way and adjacent to the edge-of-pavement. From the intersection with Temperance Avenue in the town of Clovis, proceed 4.5 miles northeast on SR 168 to the mailbox for 10900 Highway 168 (segment datum). From the mailbox, the canal is located 50 feet to the east.

***P3a. Description:**
This is a segment of the Friant-Kern Canal where it passes under SR 168 in rural Fresno County. The US Bureau of Reclamation began construction of the Friant-Kern Canal in 1945 and completed it in 1951. The canal was part of the Central Valley Project (CVP), an integrated system of dams, reservoirs, and canals in California's Central Valley designed to alleviate the state's chronic water shortages (California 1943: 10; USBR 1958: "Friant Dam Provides Water"). The Friant-Kern Canal begins at the Friant Dam on the San Joaquin River above Fresno and flows 152 miles, terminating at the Kern River. It provides additional irrigation water to land in Fresno, Tulare, and Kern counties in the eastern San Joaquin Valley. The canal's builders used crawler tractors towing an endless belt excavator to remove dirt from the path of the canal, and a combined shaper and concrete layer placed the lining. These machines were moved on tracks laid temporarily at the edge of the canal, and shifted as the crews finished each segment. The machines for cutting, shaping, and lining the canals were referred to as "jumbos." See Linear Feature Record and Continuation Sheet for a description of the resource.

***P3b. Resource Attributes:** HP20 (Canal)
***P4. Resources Present:** ☐ Building ☑ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)



***P5b. Description of Photo:**
Photograph 1. JFR-009, 05, SE -- 5463; facing southeast, view of canal from SR 168.

***P6. Date Constructed/Age & Sources:**
☑ Historic ☐ Prehistoric ☐ Both
1951

***P7. Owner and Address:**
U.S. Bureau of Reclamation, 2800 Cottage Way
Sacramento, CA 95825

***P8. Recorded by:**
Mark Beason and Rebecca Flores, JRP Historical Consulting, LLC, 1490 Drew Ave, Suite 110, Davis, CA 95618

***P9. Date Recorded:** 11/20/2008
***P10. Survey Type:**
Reconnaissance

***P11. Citation:** Leach-Palm et al. 2010. Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Kern, Kings, Madera, and Tulare Counties. Submitted to Caltrans District 6, Fresno, CA.

***Attachments:** ☐ None ☑ Location Map ☑ Sketch Map ☑ Continuation Sheet ☐ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☑ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other:

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LINEAR FEATURE RECORD

Primary # P-10-5801
HRI #
Trinomial CA-FRE-3519H

***Resource Name or #:** JFR-009

L1. Historic and/or Common Name: Friant-Kern Canal

L2a. Portion Described: ☐ Entire Resource ☑ Segment ☐ Point Observation **Designation:**

L2b. Location of Point or Segment:
The Friant-Kern Canal passes through the study area on SR 168 from GIS-based post mile 13.21 to 13.26.

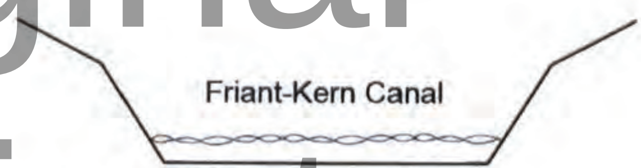
Segment UTMs: 268931 mE/ 4083273 mN to 268948 mE/ 4083194 mN

L3. Description:
The canal at this location is concrete-lined and has moderately sloped banks. On each side of the channel are dirt service roads built on berms about four feet above the surrounding fields. The canal was filled with water at the time of recordation, preventing a more complete description.

L4. Dimensions:
- **a. Top Width:** 50 feet
- **b. Bottom Width:** Unknown
- **c. Height or Depth:** Unknown
- **d. Length of Segment:** 200 feet

L5. Associated Resources:
None

L4e. Sketch of Cross-Section: **Facing:** South



Not to scale

L6. Setting:
The canal is located in the flat agricultural landscape of the eastern San Joaquin Valley, surrounded by orange orchards and other crops.

L7. Integrity Considerations:
Unknown

L8b. Description of Photo, Map, or Drawing
JFR-009, 01, SE -- 5459; facing southeast, view of canal across SR 168.

L9. Remarks:

L10. Form Prepared By:
M. Beason/J. Jones/S. Melvin, JRP Historical Consulting, LLC, 1490 Drew Ave, Suite 110, Davis CA 95618

L11. Date: 7/7/2009

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P-10-5801
HRI #
Trinomial CA-FRE-3519H

 ***Resource Name or #:** JFR-009

***Recorded By:** M. Beason & R. Flores, JRP, Historical Consulting, LLC ***Date:** 11/20/2008 ☑ Continuation ☐ Update

P3a. Description (continued):

The builders poured concrete into a slow moving slip form which followed the canal-shaping jumbo. The canal just below the Friant Dam is 80 feet wide at the top and 15 feet deep, and it gradually decreases in size as it runs south (USBR 1958: "Friant-Kern Canal").

References:

California Highways and Public Works. "Completion of Central Valley Project Urged to Produce Food Fiber Rubber," California Highways and Public Works (February 1943).

US Bureau of Reclamation. "Friant Dam Provides Water for 500,000 Thirsty Acres." Washington: US G.P.O, 1958.

US Bureau of Reclamation, Central Valley Project, Friant Division, California. "Friant-Kern Canal: Technical Record of Design and Construction." Denver, Colorado (May 1958).

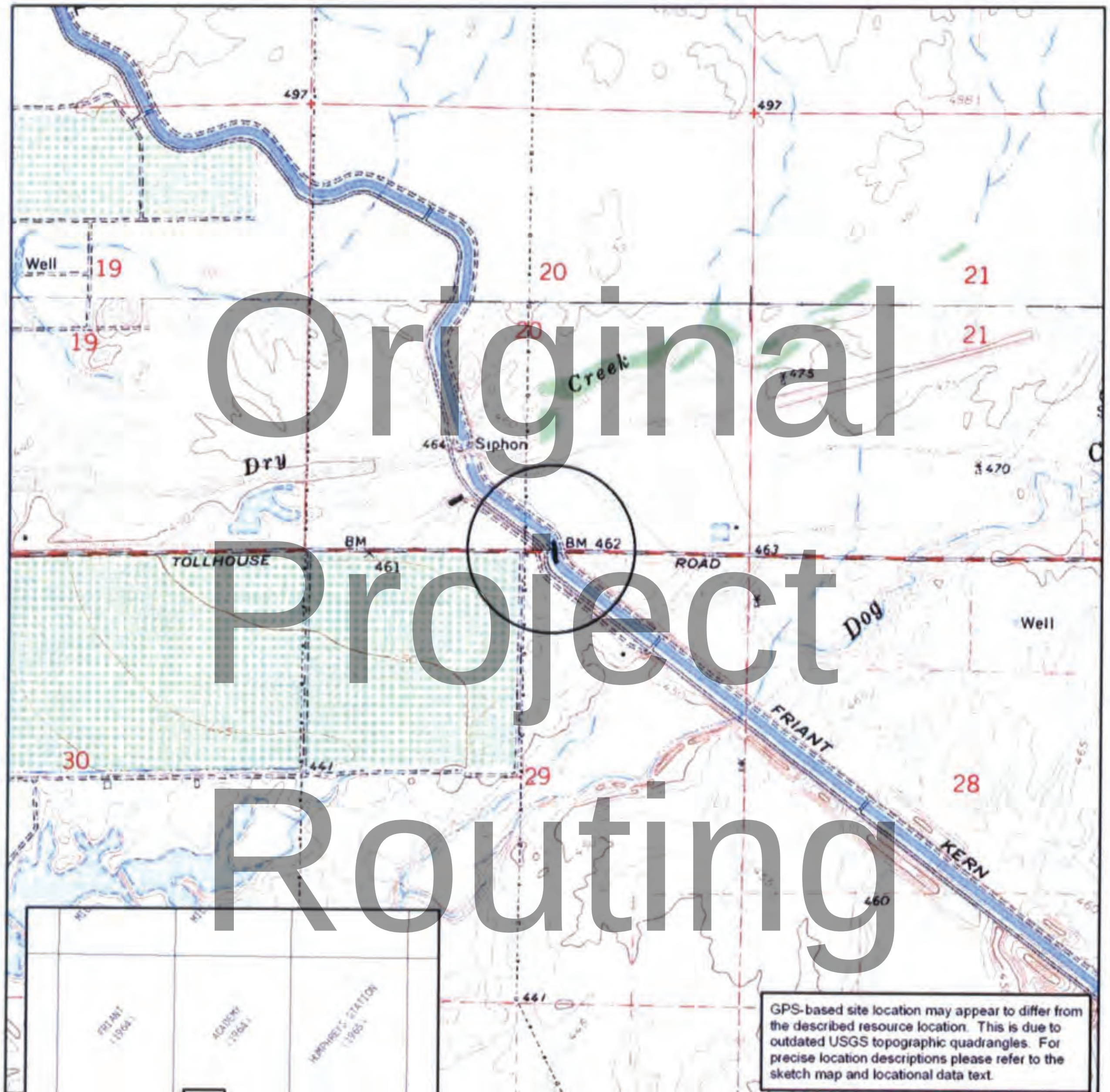
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

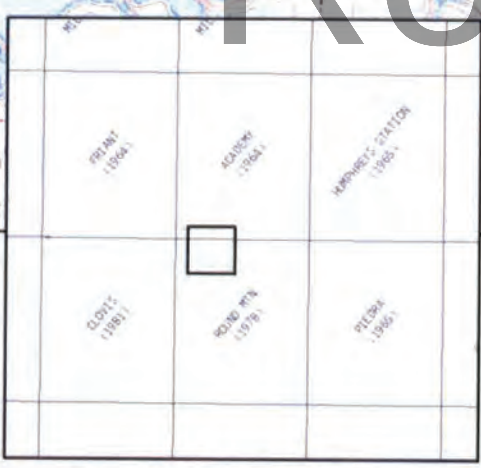
Primary # P-10-5801
HRI #
Trinomial CA-FRE-3519 H

***Resource Name or #:** JFR-009

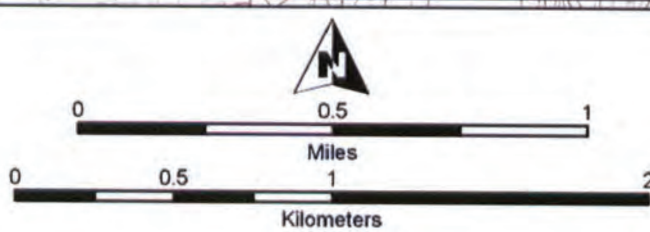
***Map Name:** Round Mountain (1978)

***Year:** 1978





Key to USGS 7.5' quads depicted



SCALE 1:24,000

*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary # P-10-5801
HRI #
Trinomial CA-FRE-3519 H

 ***Resource Name or #:** JFR-009

***Drawn By:** Far Western and JRP Historical Consulting, LLC ***Date:** 11/20/2008

Sketch map is based on 2008 GPS data collected within the highway right-of-way.

P-10-005801

Applied EarthWorks, Inc.
PRIMARY RECORD

Primary # ~~P-10-004704~~
HRI #
Trinomial CA-FRE-3519H
NRHP Status Code 3

Other Listings
Review Code   Reviewer   Date

P1. Temporary Number/Resource Name: AN-1W; Friant-Kern Canal/Academy Avenue Bridge

P2. Location: a. County: Fresno   ☐ **Not for Publication**   ✓ **Unrestricted**
b. USGS 7.5′ Quad: Round Mountain **Date** 1964 (photorevised 1978) T 12S, R 22E; NW 1/4 of NE 1/4 of Sec. 34 Mt. Diablo **B.M.**
c. Address: Academy Road and Friant-Kern Canal
d. Zone: 11 UTM: 4081200 mN / 272090 mE
e. Other Locational Data: Located 1.5 miles south of the intersection of Academy Avenue and Tollhouse Road/ Highway 168 on Academy Avenue.

P3a. Description: The resource consists of a concrete girder bridge on north Academy Avenue that spans the Friant-Kern Canal. The bridge is surrounded on all elevations by rural farmland. The bridge has a north-south alignment and is approximately 145 feet long (N-S) and 30 feet wide (E-W). (See continuation sheet.)

P3b. Resource Attributes: (List attributes and codes) HP19 (Bridge); HP20 (Canal/Aqueduct)

P4. Resources Present: ☐ Building ✓ Structure ☐ Object ☐ Site ☐ District ✓ Element of District ☐ Other:

P5. Photograph or Drawing (photograph required for buildings, structures, and objects): Roll 619-1, Frame 31; view to northwest of east elevation of canal and bridge.

P6. Date Constructed/Age:
☐ Prehistoric
✓ Historic
☐ Both

P7. Owner and Address:
Fresno County/Bureau of Reclamation

P8. Recorded by: Lex Palmer
Applied EarthWorks, Inc.
5090 N. Fruit Ave. # 101
Fresno, CA 93711

P9. Date Recorded:
6 January 2001

P10. Survey Type:
✓ Intensive
☐ Reconnaissance
☐ Other
Describe:

P11. Report Citation:
Nettles, Wendy M., Kevin (Lex) Palmer, and Sandra S. Flint
2001 *Archaeological Survey and Architectural Evaluation for the Academy Avenue Widening Project, Shaw Avenue to Highway 168, Fresno County, California.* Applied EarthWorks, Inc., Fresno, California. Prepared for URS Corporation, Fresno, California. Submitted to County of Fresno Public Works Department, Fresno, California.

Attachments: ☐ NONE ✓ Building, Structure, and Object Record ☐ Photograph Record ☐ Location Map ☐ Archaeological Record ☐ Milling Station Record ☐ Other (list): ☐ Site/Sketch Map ☐ District Record ☐ Rock Art Record ✓ Continuation Sheet ☐ Linear Feature Record ☐ Artifact Record

Temporary Number/Resource Name: AN-1W; Friant-Kern Canal/Academy Avenue Bridge

P3a. Description (continued): The precast concrete structure has two segments with wing walls on the east and west elevations. The roadbed consist of a bituminous surface over the concrete structure. The structure is supported by a centrally located, poured concrete span that is rounded to deflect canal debris. The roadbed structure is secured to the concrete span and the canal structure with large-diameter metal bolts. The structure has W-style steel guardrails attached to the north and south wing walls with 4-by-4 wooden posts. The bridge has a Bureau of Reclamation identification number "BH-17.26" stenciled on it.

P-10-005801

Applied EarthWorks, Inc.
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary # ~~P-10-004704~~
HRI #/Trinomial CA-FRE-3519H
***NRHP Status Code** 3

Resource Name or No.: AN-1W

B1. Historic Name: Friant-Kern Canal/Academy Avenue Bridge

B2. Common Name: None

B3. Original Use: Canal bridge

B4. Present Use: Same

***B5. Architectural Style:** Friant-Kern Canal

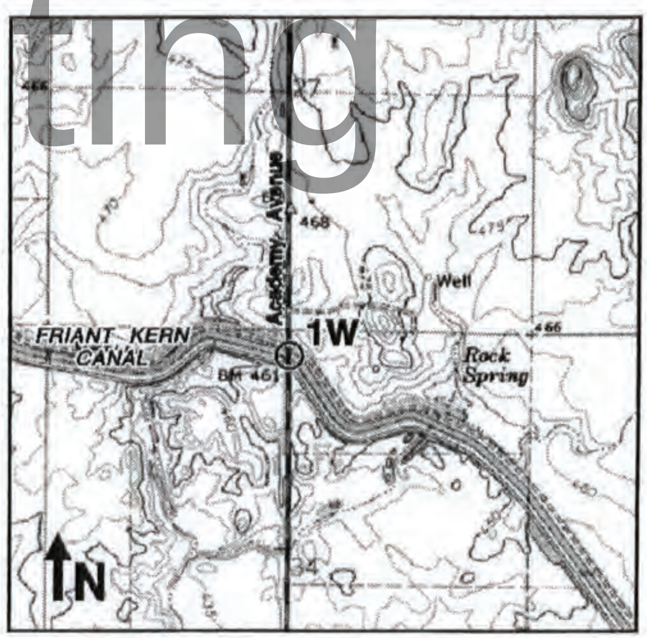
***B6. Construction History (construction date, alterations, and dates of alterations):** The Friant-Kern Canal is associated with the New Deal–era Central Valley Project. Part of the project involved construction of the Friant Dam on the San Joaquin River 25 miles northeast of Fresno. Construction began in 1939 and was completed by 1942. Plans for the Friant Dam involved diverting water north into the Madera Canal and south via the Friant-Kern Canal. Peter Kiewit and Sons Company of Omaha secured the Friant-Kern Canal construction contract of $1.1 million and initiated construction in August 1945. The majority of the canal (85%) was lined with concrete using a mobile canal construction gantry. Work crews constructed the bridge over Academy Avenue in 1946 (Caltrans 2001). Upon completion in 1951, the Friant-Kern Canal carried water from Millerton Lake 152 miles south to the Kern River 4 miles west of Bakersfield. The canal portion in the study area is concrete lined with a standard maximum top width of 128 feet, decreasing to a bottom width of 24 feet (Autobee 1994:np). The canal has been evaluated as potentially eligible to the National Register of Historic Places. Poured concrete walls have been added to the east and west side walls of the bridge at an unknown date.

***B7. Moved?:** ✓ No ☐ Yes ☐ Unknown **Date:** **Original Location:**

***B8. Related Features:**

B9. a. Architect: Unknown **b. Builder:** Peter Kiewit and Sons Company, Omaha, Nebraska

***B10. Significance:** Theme: California agriculture Area: Central Valley
Period of Significance: 1945–1951 Property Type: Water conveyance system Applicable Criteria: A, C
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
The Friant-Kern Canal Academy Avenue bridge is a contributing element to the Friant-Kern Canal. The canal has been previously determined NRHP eligible. The bridge was constructed for the canal during its construction phase, and is integrated into the canal structure. With the exception of a minor extension of the east and west side walls, the bridge appears to retain its physical integrity and exhibits construction techniques, workmanship, and materials utilized in the original construction of the Friant-Kern Canal. The canal segment at this location also retains its physical integrity.



This space reserved for official comments.

P-10-005801

Resource Name or No.: AN-1W

B11. Additional Resource Attributes (list attributes and codes): HP37 (canal maintenance road); HP20 (canal)

***B12. References:**

Autobee, Robert.
1994 *The Friant Division* (second draft). Bureau of Reclamation History Program, Research on Historic Reclamation Projects, Denver, Colorado. http://dataweb.usbr.gov/html/friant1.html.

California Department of Transportation (Caltrans)
2001 Historic Bridge Inventory. http://www.dot.ca.gov/hq/LocalPrograms.

B13. Remarks:

***B14. Evaluator:** Lex Palmer
Date of Evaluation: 20 March 2001

FRE-PRO-002

ALTA CANAL
(Ditch/Canal Inventory Forms A-1 and A-2)

The Alta Canal was built in 1882 by the 76 Land & Water Company, an active land subdivision firm incorporated in 1876, and was for many years known as the 76 Canal. As discussed under "Agricultural Colonies," the 76 Land & Water Company was unusual among Fresno County developers in that it was both a canal company and land subdivider.[13] It was largely responsible for subdividing the town of Reedley and had tried during the 1880s to establish a town on the Wahtoke Creek. In the early 20th century, it attempted to establish the Wahtoke Colony and Carmelita Colony, at the eastern end of the APE for this project.

The Alta Canal was recorded in two locations -- at its crossing at Highway 180 and at its headgates. In general, it can be observed that it is a wide and shallow canal in this its upper reaches. The table below summarizes the recordation data:

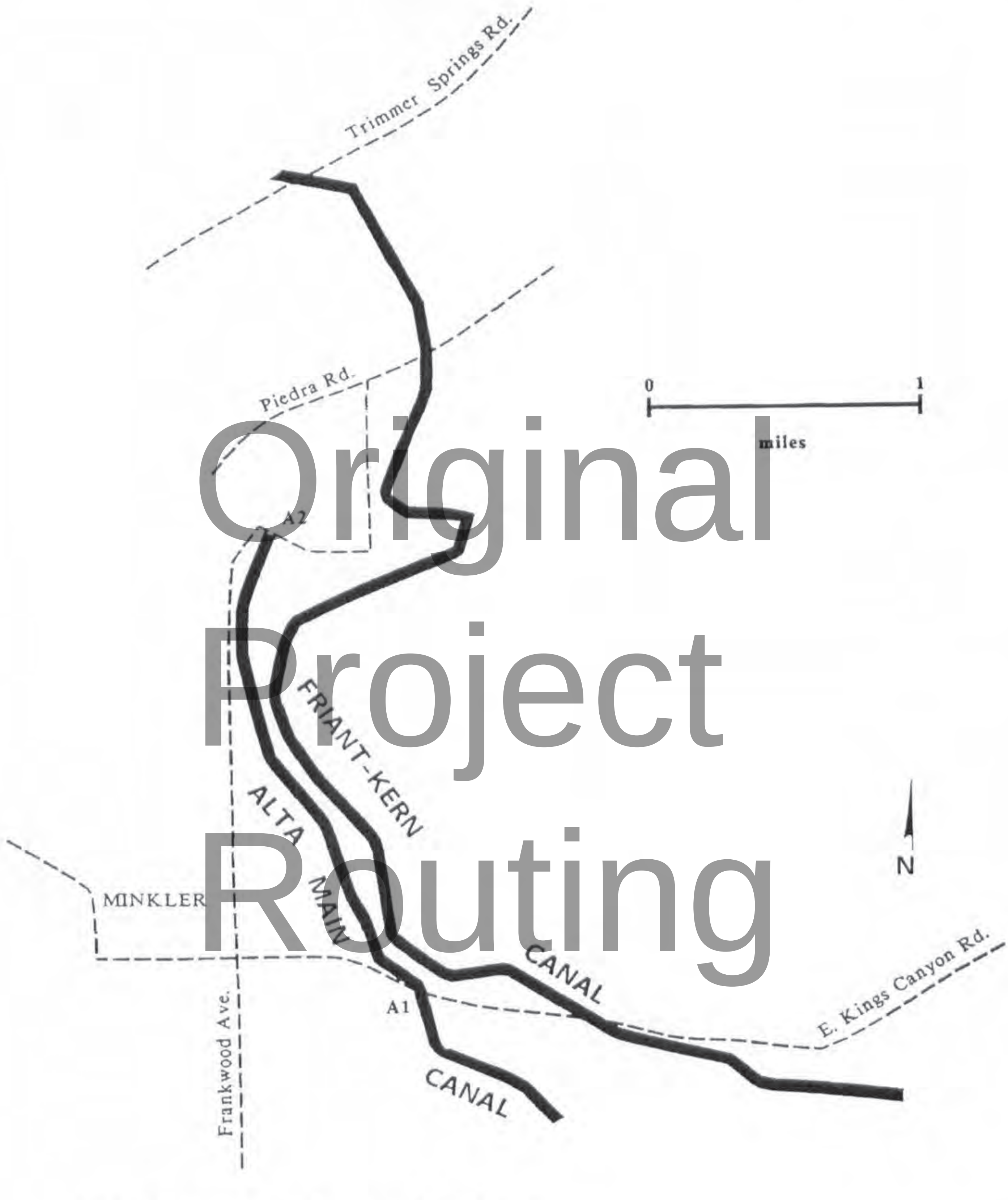
POINT	TOP WIDTH	BOTTOM WIDTH	DEPTH	MATERIAL	CONFIGURATION
A-1	100'	90'	3'6"	Asphalt	U
A-2	120'	110'	5'	Cobble	U

The headgates for the Alta Canal (Point A-2), are located north of Highway 180, east of the main river channel. The original regulatory structure was built of timber posts and three-inch planking. Water is now diverted through a 1920s-era concrete regulator, which also serves as a bridge on Frankwood Avenue. The channel at this location is essentially a natural slough. Three miles downstream the canal turns away from the Centerville Bottoms and skirts the western foothills base. At the Highway 180 crossing (Point A-1), the Alta Canal is located in a cut, i.e., not part of the bottom slough. It is a wide and shallow channel, measuring about 100' across the top, with a depth of less than 4'. Along the foothill base, the soil into which the canal was cut is a light soil that contracted, cracked, and crumbled in drying. When wet, the bank became spongy, causing failure of the embankments.[14] At this location, the canal bottom was later surfaced in an asphalt paving material.

[13] Maass, 1978. p. 159.

[14] Grunsky, 1898. pp. 53-5.

FRE-PRO-002



MAP 6: Alta Canal Recordation Points
HRER 06-Fre-180 64.6/84.0

FRE-PRO-2

DITCH/CANAL INVENTORY FORM, HIGHWAY 180 "RURAL" PROJECT **LOCATION NO. A1**
Developed by JRP Historical Consulting Services

1. **Name of ditch/canal:** Alta Canal

2. **Location for recordation:**
At Highway 180 crossing.

3. **Other locations for recording this ditch/canal:** A2.

4. **Structures at or near this location:**
Bridge at Highway 180 overcrossing.

5. **Setting at this location:**
Rolling hills of open grassland.

6. **Integrity considerations for this ditch/canal:**
Integrity compromised by asphalt lining.

7. **Attributes of conduit at this location:**
Width (in feet) Top: 100' Bottom: 90'
Depth (in feet) 3' 6"
Material Asphalt paving

8. **Date(s) of enclosed photograph(s):**
October 2, 1991

9. **Sketch, in cross-section:**

FRE-PRO-2

DITCH/CANAL INVENTORY FORM, HIGHWAY 180 "RURAL" PROJECT **LOCATION NO. A2**

Developed by JRP Historical Consulting Services

1. **Name of ditch/canal:** Alta Canal

2. **Location for recordation:**

Alta Canal headgates at Frankwood Avenue crossing.

3. **Other locations for recording this ditch/canal:** A1.

4. **Structures at or near this location:**

The headgates are built into the Frankwood Avenue bridge with the same design as an erosion control structure: concrete slab on concrete piers on the downstream side and buttresses that contain gates are piers for upstream side. There are six sets of steel gates.

5. **Setting at this location:**

Surrounded by grazing land and riparian vegetation. Canal has adopted the old slough channel with mature riparian trees on the banks.

6. **Integrity considerations for this ditch/canal:**

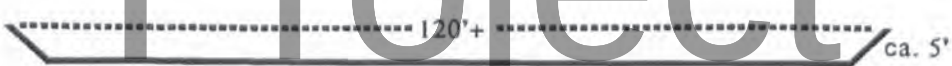
A sign on the bridge reads: "Alta Irrigation Headgate Est. 1888 Area 129,300 acres." The bridge and headgates date to the 1920's, with screw-controlled gates.

7. **Attributes of conduit at this location:**
   - **Width (in feet)** 120+'
   - **Depth (in feet)** ca. 5'
   - **Material** Cobblestone bottom

8. **Date(s) of enclosed photograph(s):**

October 2, 1991

9. **Sketch, in cross-section:**



FRE-PRO-2

MAP 1: General Alignment for Six Canals

HRER 06-Fre-180 64.6/84.0

OFFICE OF HISTORIC PRESERVATION * * * Directory of Properties in the Historic Property Data File for KERN County. Page 1 03-18-13

PROPERTY-NUMBER	PRIMARY-#	STREET.ADDRESS............	NAMES..........................	CITY.NAME........	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
182145		1541 BEAR MOUNTAIN BLVD		ARVIN	P	1931	PROJ.REVW.	FHWA110323A	04/07/11	6Y	
066794	15-007942	768 BUTTE AVE		ARVIN	U		PROJ.REVW.	HUD880714T	08/16/88	6Y	
182144		16114 COMANCHE DR		ARVIN	P	1940	PROJ.REVW.	FHWA110323A	04/07/11	6Y	
123644		16114 COMANCHE RD		ARVIN	U		HIST.RES.	DOE-15-99-0007-0000	12/02/99	6Y	
							PROJ.REVW.	FHWA991012A	12/02/99	6Y	
067007	15-007943	325 DERBY ST		ARVIN	U		PROJ.REVW.	HUD891114C	12/18/89	6Y	
090228	15-007744	350 E BEAR MOUNTAIN BLVD	OUTERMOST POINT IN SOUTH SAN JOAQU	ARVIN	U		HIST.RES.	SHL-0371-0000	09/04/40	7L	
182142		14358 E BEAR MOUNTAIN BLVD		ARVIN	P	1929	PROJ.REVW.	FHWA110323A	04/07/11	6Y	
182143		14410 E BEAR MOUNTAIN BLVD		ARVIN	P	1948	PROJ.REVW.	FHWA110323A	04/07/11	6Y	
067130	15-007944	472 FRANKLIN ST		ARVIN	U		PROJ.REVW.	HUD900129J	02/28/90	6Y	
172490		409 GROVE ST		ARVIN	P	1943	PROJ.REVW.	HUD080623F	07/15/08	6Y	
160513		500 LA VISTA DR		ARVIN	P	1951	PROJ.REVW.	HUD060106I	01/19/06	6Y	
070061	15-007945	517 MEYER ST		ARVIN	U	1911	PROJ.REVW.	HUD910206F	03/13/91	6Y	
167364		301 N DERBY ST		ARVIN	P	1928	PROJ.REVW.	HUD070813F	08/23/07	6Y	
092887	15-007946	348 ORANGE AVE		ARVIN	P	1939	PROJ.REVW.	HUD941018B	11/23/94		
156543		324 PLUM TREE DR		ARVIN	P	1951	PROJ.REVW.	HUD051103D	11/09/05	6Y	
123641		SR 223	PALM TREE ROW	ARVIN	U		HIST.RES.	DOE-15-99-0004-0000	12/02/99	6Y	
							PROJ.REVW.	FHWA991012A	12/02/99	6Y	
165558		825 STOCKTON AVE		ARVIN	P	1947	PROJ.REVW.	HUD070307E	03/19/07	6Y	
166217		873 STOCKTON AVE		ARVIN	P	1947	PROJ.REVW.	HUD070529D	06/04/07	6Y	
129248		417 STUART ST		ARVIN	P	1950	HIST.RES.	DOE-15-01-0023-0000	10/17/01	6Y	
							PROJ.REVW.	HUD010906A	10/17/01	6Y	
066906	15-007947	241 TUCKER ST		ARVIN	U		PROJ.REVW.	HUD890927J	10/24/89	6Y	
067579	15-008250		BRICEBURG INN	BAKERSFIELD	U		HIST.RES.	DOE-15-89-0002-0000	10/03/89	2S2	C
							PROJ.REVW.	BLM890911A	10/03/89	2S2	C
102400	15-007232		STINE CANAL	BAKERSFIELD		1873	HIST.RES.	DOE-15-96-0052-0000	05/24/96	6Y	
							PROJ.REVW.	FHWA960509A	05/24/96	6Y	
129209			BRIDGE #50C-081R / KERN RIVER BRID	BAKERSFIELD	S	1978	HIST.RES.	DOE-15-01-0012-0000	10/22/01	6Y	
							PROJ.REVW.	FHWA010522A	10/22/01	6Y	
150075	15-010877		SAWYER & REID / BETHLEHEM #7	BAKERSFIELD	P	1958	HIST.RES.	DOE-15-04-0042-0000	04/23/04	6Y	
							PROJ.REVW.	FHWA040315A	04/23/04	6Y	
129208			BRIDGE #50C-081L / KERN RIVER BRID	BAKERSFIELD	S	1941	HIST.RES.	DOE-15-01-0011-0000	10/22/01	6Y	
							PROJ.REVW.	FHWA010522A	10/22/01	6Y	
149881	15-010878		SWEITZER #8	BAKERSFIELD	P	1958	HIST.RES.	DOE-15-04-0036-0000	04/23/04	6Y	
							PROJ.REVW.	FHWA040315A	04/23/04	6Y	
131430			BRIDGE #50-0047/ COTTONWOOD CREEK/	BAKERSFIELD			HIST.RES.	DOE-15-02-0028-0000	03/07/02	6Y	
							PROJ.REVW.	FHWA010517K	03/07/02	6Y	
132363	15-10104		KERN ISLAND CANAL; WEST BRANCH	BAKERSFIELD			HIST.RES.	DOE-15-02-0040-0000	03/12/02	7N1	
							PROJ.REVW.	FHWA020208A	03/12/02	7N1	
150119			GATES CANAL	BAKERSFIELD			HIST.RES.	DOE-15-04-0045-0000	04/23/04	6Y	
							PROJ.REVW.	FHWA040315A	04/23/04	6Y	
163703			FRIANT-KERN CANAL	BAKERSFIELD		1945	PROJ.REVW.	BUR060525A	06/01/06	2S2	
072749	15-008678	0	JEFFERSON PARK RESTROOMS	BAKERSFIELD	U	1937	PROJ.REVW.	HUD910627C	07/24/91	6Y	
068388	15-008677	0	ARNALL CABIN CA-018-TM-132	BAKERSFIELD	U		HIST.RES.	DOE-15-89-0004-0000	07/24/89	6Y	
							PROJ.REVW.	BLM890703A	07/24/89	6Y	
073817	15-008679	0	KRESS COMPANY BUILDING	BAKERSFIELD	P	0	TAX.CERT.	537.9-15-0002		2S3	
147216		415 10TH ST		BAKERSFIELD	P	1938	HIST.RES.	DOE-15-04-0027-0000	04/20/04	6Y	
							PROJ.REVW.	HUD040324A	04/20/04	6Y	
052256	15-006918	1010 13TH ST		BAKERSFIELD	P	1880	HIST.SURV.	3303-0104-0000		5S2	
052257		1016 13TH ST		BAKERSFIELD	P	1900	HIST.SURV.	3303-0105-0000		5S2	
052258		1018 13TH ST		BAKERSFIELD	P	1905	HIST.SURV.	3303-0106-0000		5S2	
052259	15-006921	1024 13TH ST		BAKERSFIELD	P	1900	HIST.SURV.	3303-0107-0000		5S2	
052255	15-006917	1029 13TH ST		BAKERSFIELD	P	1915	HIST.SURV.	3303-0103-0000		5S2	
052375	15-007037	1521 13TH ST		BAKERSFIELD	P	1915	HIST.SURV.	3303-0224-0000		5S2	
052260	15-006922	1525 13TH ST	MOORE APARTMENTS	BAKERSFIELD	P	1926	HIST.SURV.	3303-0108-0000		5S2	

Resource Detail: P-10-005801

Identifying information

Primary No.: P-10-005801
Trinomial: CA-FRE-003519H
Name: JFR-009; Friant-Kern Canal
Other IDs:

Type	*Name*
Resource Name	JFR-009
Resource Name	Friant-Kern Canal

Cross-refs: Subsumes 10-004704

Attributes

Resource type: Structure
Age: Historic
Information base: Survey
Attribute codes: HP20 (Canal/aqueduct)
Disclosure: Unrestricted
Collections: No
Accession no(s):
Facility:

General notes

Recording events

Date	*Recorder(s)*	*Affiliation*	*Notes*
11/20/2008	Mark Beason, Rebecca Flores	JRP Historical Consulting, LLC.	
1/6/2001	Lex Palmer	Applied EarthWorks	Supplement
10/2/1991	Unknown	Unknown	Supplement

Associated reports

Location information

County: Fresno
USGS quad(s): Academy, Friant, Orange Cove North, Orange Cove South, Piedra, Round Mountain, Wahtoke
Address:
PLSS: T12S R22E Sec. 20 MDBM
UTMs: Zone 11 268979mE 4083030mN NAD27

Management status

Database record metadata

	Date	*User*
Entered:	11/6/2014	user
Last modified:	4/19/2016	user1

IC actions:

Date	*User*	*Action taken*
11/6/2014	user	Entered resource: MMB
4/19/2016	user1	entered update/supplements: cls

Record status: Database Complete

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-005801	CA-FRE-003519H	Resource Name - JFR-009; Resource Name - Friant-Kern Canal	Structure	Historic	HP20 (Canal/aqueduct)	1991 (Unknown, Unknown); 2001 (Lex Palmer, Applied EarthWorks); 2008 (Mark Beason, Rebecca Flores, JRP Historical Consulting, LLC.)	

APPENDIX B

NATIVE AMERICAN CONSULTATION

Original Project Routing

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

July 1, 2016

Adie Whitaker
Far West Anthropological Research Group, Inc.

Sent by E-mail: adie@farwestern.com
Number of Pages: 3

RE: Proposed Alta Canal Bridge Project, near the Town of Sanger, Wahtoke USGS Quadrangle, Fresno County, California

Dear Ms. Whitaker:

Attached is a contact list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. A search of the SFL was completed for the USGS quadrangle information provided with negative results.

Our records indicate that the lead agency for this project has not requested a Native American Consultation List for the purposes of formal consultation. Lists for cultural resource assessments are different than consultation lists. Please note that the intent of the referenced codes below is to avoid or mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects under AB-52.

As of July 1, 2015, Public Resources Code Sections 21080.3.1 and 21080.3.2 **require public agencies** to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> **Within 14 days** of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.3.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.3.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.

- Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.
   - All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

The results of these searches and surveys should be included in the "Tribal Cultural Resources" subsection of the Cultural Resources section of the environmental document submitted for review.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

Native American Contact List
Fresno County
June 30, 2016

Picayune Rancheria of Chukchansi
Claudia Gonzalez, Chairperson
8080 Palm Ave, Suite 207 — Chukchansi / Yokut
Fresno, CA 93711

Table Mountain Rancheria
Michael Russell, Tribal Administrator
P.O. Box 410 — Yokuts
Friant, CA 93626
(559) 822-2587
(559) 822-2693 Fax

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios Sr., Chairperson
P.O. Box 8 — Tache, Tachi, Yokut
Lemoore, CA 93245
(559) 924-1278
(559) 924-3583 Fax

Table Mountain Rancheria
Bob Pennell, Cultural Resources Director
P.O. Box 410 — Yokuts
Friant, CA 93626
rpennell@tmr.org
(559) 325-0351
(559) 217-9718 - cell
(559) 325-0394 Fax

Table Mountain Rancheria
Leanne Walker-Grant, Chairperson
P.O. Box 410 — Yokuts
Friant, CA 93626
(559) 822-2587
(559) 822-2693 Fax

Santa Rosa Rancheria Tachi Yokut Tribe
Lalo Franco, Cultural Coordinator
P.O. Box 8 — Tachi, Tache, Yokut
Lemoore, CA 93245
(559) 924-1278 Ext. 5
(559) 924-3583 Fax

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589 — Yokuts
Porterville, CA 93258
chairman@tulerivertribe-nsn.gov
(559) 781-4271
(559) 781-4610 Fax

Tule River Indian Tribe
Kerri Vera, Environmental Department
P.O. Box 589 — Yokuts
Porterville, CA 93258
(559) 783-8892
(559) 783-8932 Fax

Picayune Rancheria of Chukchansi
Mary Matola, THPO
8080 Palm Ave, Suite 207 — Chukchansi / Yokut
Fresno, CA 93711

Tule River Indian Tribe
Joey Garfield, Tribal Archeological
P.O. Box 589 — Yokuts
Porterville, CA 93258
(559) 783-8892
(559) 783-8932 Fax

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person or agency of statutory responsibility as defined in Public Resources Code Sections 21080.3.1 Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Alta Canal Bridge Project; near the Town of Sanger; Wahtoke USGS Quadrangle, Fresno County, California.

FAR WESTERN
ANTHROPOLOGICAL RESEARCH GROUP, INC.

July 6, 2016

Claudia Gonzalez, Chairperson
Chukchansi/Yokut
Picayune Rancheria of Chukchansi
8080 Palm Ave, Suite 207
Fresno, Ca 93711

Dear Claudia Gonzalez:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is responsible for implementing Section 106 of the National Historic Preservation Act for this project. Far Western Anthropological Research Group, Inc., (Far Western) has been retained by Area West Environmental, Inc. to complete an archaeological resources assessment for the project and to assist the County with the Section 106 consultation process. We have conducted an archival records search and identified two built-environmental resources, the Alta Main Canal and the Friant-Kern Canal. We will be conducting a pedestrian survey of the project area to identify and record any additional cultural resources that may be present.

The intent of this letter is to inform you about the project and provide the opportunity for you to express any concerns you may have about impacts to traditional values or spiritual places within the project APE. We would appreciate your response by August 7, 2016. If you need any further information or wish to discuss this project, please contact me at (530) 756-3941.

Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

FAR WESTERN
ANTHROPOLOGICAL RESEARCH GROUP, INC.

July 6, 2016

Mary Motola, THPO
Chukchansi/Yokut
Picayune Rancheria of Chukchansi
8080 Palm Ave, Suite 207
Fresno, CA 93711

Dear Mary Motola:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

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Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

July 6, 2016

Rueben Barrios Sr., Chairperson
Tache/Tachi/Yokut
Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA 93245

Dear Rueben Barrios Sr. :

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is responsible for implementing Section 106 of the National Historic Preservation Act for this project. Far Western Anthropological Research Group, Inc., (Far Western) has been retained by Area West Environmental, Inc. to complete an archaeological resources assessment for the project and to assist the County with the Section 106 consultation process. We have conducted an archival records search and identified two built-environmental resources, the Alta Main Canal and the Friant-Kern Canal. We will be conducting a pedestrian survey of the project area to identify and record any additional cultural resources that may be present.

The intent of this letter is to inform you about the project and provide the opportunity for you to express any concerns you may have about impacts to traditional values or spiritual places within the project APE. We would appreciate your response by August 7, 2016. If you need any further information or wish to discuss this project, please contact me at (530) 756-3941.

Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

July 6, 2016

Lalo Franco, Cultural Coordinator
Tachi/Tache/Yokut
Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA 93245

Dear Lalo Franco:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is responsible for implementing Section 106 of the National Historic Preservation Act for this project. Far Western Anthropological Research Group, Inc., (Far Western) has been retained by Area West Environmental, Inc. to complete an archaeological resources assessment for the project and to assist the County with the Section 106 consultation process. We have conducted an archival records search and identified two built-environmental resources, the Alta Main Canal and the Friant-Kern Canal. We will be conducting a pedestrian survey of the project area to identify and record any additional cultural resources that may be present.

The intent of this letter is to inform you about the project and provide the opportunity for you to express any concerns you may have about impacts to traditional values or spiritual places within the project APE. We would appreciate your response by August 7, 2016. If you need any further information or wish to discuss this project, please contact me at (530) 756-3941.

Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

July 6, 2016

Bob Pennell, Cultural Resources Director
Yokuts
Table Mountain Rancheria
P.O. Box 410
Friant, CA 93626

Dear Bob Pennell:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

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The intent of this letter is to inform you about the project and provide the opportunity for you to express any concerns you may have about impacts to traditional values or spiritual places within the project APE. We would appreciate your response by August 7, 2016. If you need any further information or wish to discuss this project, please contact me at (530) 756-3941.

Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

FAR WESTERN
ANTHROPOLOGICAL RESEARCH GROUP, INC.

July 6, 2016

Michael Russell, Tribal Administrator
Yokuts
Table Mountain Rancheria
P.O. Box 410
Friant, CA 93626

Dear Michael Russell:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

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Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

MAIN OFFICE 2727 DEL RIO PLACE, SUITE A, DAVIS, CALIFORNIA 95618 • PHONE: 530-756-3941 • FAX: 530-756-0811
GREAT BASIN BRANCH 3656 RESEARCH WAY, SUITE 32, CARSON CITY, NEVADA 89706 • PHONE: 775-847-0223 • FAX: 775-885-7440
DESERT BRANCH 1180 CENTER POINT DRIVE, SUITE 100, HENDERSON, NEVADA 89074 • PHONE: 702-982-3691 • FAX: 702-982-3693

July 6, 2016

Leanne Walker-Russell, Chairperson
Yokuts
Table Mountain Rancheria
P.O. Box 410
Friant, CA 93626

Dear Leanne Walker-Russell:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is responsible for implementing Section 106 of the National Historic Preservation Act for this project. Far Western Anthropological Research Group, Inc., (Far Western) has been retained by Area West Environmental, Inc. to complete an archaeological resources assessment for the project and to assist the County with the Section 106 consultation process. We have conducted an archival records search and identified two built-environmental resources, the Alta Main Canal and the Friant-Kern Canal. We will be conducting a pedestrian survey of the project area to identify and record any additional cultural resources that may be present.

The intent of this letter is to inform you about the project and provide the opportunity for you to express any concerns you may have about impacts to traditional values or spiritual places within the project APE. We would appreciate your response by August 7, 2016. If you need any further information or wish to discuss this project, please contact me at (530) 756-3941.

Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

July 6, 2016

Joey Garfield, Tribal Archaeological
Yokuts
Tule River Indian Tribe
P.O. Box 589
Porterville, CA 93258

Dear Joey Garfield:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is responsible for implementing Section 106 of the National Historic Preservation Act for this project. Far Western Anthropological Research Group, Inc., (Far Western) has been retained by Area West Environmental, Inc. to complete an archaeological resources assessment for the project and to assist the County with the Section 106 consultation process. We have conducted an archival records search and identified two built-environmental resources, the Alta Main Canal and the Friant-Kern Canal. We will be conducting a pedestrian survey of the project area to identify and record any additional cultural resources that may be present.

The intent of this letter is to inform you about the project and provide the opportunity for you to express any concerns you may have about impacts to traditional values or spiritual places within the project APE. We would appreciate your response by August 7, 2016. If you need any further information or wish to discuss this project, please contact me at (530) 756-3941.

Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

FAR WESTERN
ANTHROPOLOGICAL RESEARCH GROUP, INC.
FW

July 6, 2016

Neil Peyron, Chairperson
Yokuts
Tule River Indian Tribe
P.O. Box 589
Porterville, CA 93528

Dear Neil Peyron:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is responsible for implementing Section 106 of the National Historic Preservation Act for this project. Far Western Anthropological Research Group, Inc., (Far Western) has been retained by Area West Environmental, Inc. to complete an archaeological resources assessment for the project and to assist the County with the Section 106 consultation process. We have conducted an archival records search and identified two built-environmental resources, the Alta Main Canal and the Friant-Kern Canal. We will be conducting a pedestrian survey of the project area to identify and record any additional cultural resources that may be present.

The intent of this letter is to inform you about the project and provide the opportunity for you to express any concerns you may have about impacts to traditional values or spiritual places within the project APE. We would appreciate your response by August 7, 2016. If you need any further information or wish to discuss this project, please contact me at (530) 756-3941.

Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

FAR WESTERN
ANTHROPOLOGICAL RESEARCH GROUP, INC.

July 6, 2016

Kerri Vera, Environmental Department
Yokuts
Tule River Indian Tribe
P.O. Box 589
Porterville, CA 93258

Dear Kerri Vera:

The County of Fresno is proposing to replace the Alta Main Canal Bridge on N. Frankwood Avenue, 1.15 miles south of Piedra Road. The project area is downstream from and inclusive of the existing bridge, extending 400 feet on either side of the canal covering a total of 2.875 acres. The Area of Potential Impacts (APE) is shown on the enclosed maps. The primary impact within the proposed project area will be excavating the concrete footings to a depth of approximately 5.5 feet outside of the invert of the canal and the road improvements for the east and west approaches.

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is responsible for implementing Section 106 of the National Historic Preservation Act for this project. Far Western Anthropological Research Group, Inc., (Far Western) has been retained by Area West Environmental, Inc. to complete an archaeological resources assessment for the project and to assist the County with the Section 106 consultation process. We have conducted an archival records search and identified two built-environmental resources, the Alta Main Canal and the Friant-Kern Canal. We will be conducting a pedestrian survey of the project area to identify and record any additional cultural resources that may be present.

The intent of this letter is to inform you about the project and provide the opportunity for you to express any concerns you may have about impacts to traditional values or spiritual places within the project APE. We would appreciate your response by August 7, 2016. If you need any further information or wish to discuss this project, please contact me at (530) 756-3941.

Sincerely,

Justin Wisely, M.A.
Staff Archaeologist
Far Western Anthropological Research Group, Inc.
justin@farwestern.com
Office: 530-756-3941
Mobile: 925-216-7732

Justin Wisely

From: Shana Brum <SBrum@tachi-yokut-nsn.gov>
Sent: Thursday, July 14, 2016 12:46 PM
To: Justin Wisely
Cc: Hector Franco; Greg Cuara
Subject: Alta main Canal Bridge

Hello Justin,
Thank you for contacting Santa Rosa Rancheria Tachi Yokut Tribe about the proposed Alta Main Canal Bridge project. This is considered a highly sensitive area to the Yokut. Native American Monitoring is recommended on all ground disturbance associated with this project. Thank you for your time.

Sincerely,

Shana Powers
Cultural Specialist II
SBrum@tachi-yokut-nsn.gov
Office: (559)924-1278 Ext: 4013
Cell: (559)997-9919

ATTACHMENT C

EXTENDED PHASE I REPORT
(SCHER ET AL. 2018)

Original
Project
Routing

Extended Phase I Archaeological Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno, California

BRLO 5942(247)

By:
Naomi Scher, M.A.
Nick Longo, B.A.
Jack Meyer, M.A.

April 2018 DRAFT

USGS Topographic Quadrangle:
Piedra 1978 7.5-minute

Submitted to:
Aimee Dour-Smith
Area West Environmental, Inc.
6248 Main Avenue, Suite C
Orangevale, CA 95662

FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
http://www.farwestern.com 530-756-3941

Extended Phase I Archaeological Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno, California

BRLO 5942(247)

By:
Naomi Scher, M.A.

Far Western Anthropological Research Group, Inc.

×ÙĐÓ 2018

Prepared for and Approved by:

John Whitehouse, Principal Investigator,
Archaeology and Architectural History
California Department of Transportation, District 6
855 M Street, Suite 200
Fresno, CA 93721

Shane Gunn, Branch Chief,
Environmental Analysis, Planning & Local Programs
California Department of Transportation, District 6
855 M Street, Suite 200
Fresno, CA 93721

Submitted to:
Aimee Dour-Smith
Area West Environmental, Inc.
6248 Main Avenue, Suite C
Orangevale, CA 95662

SUMMARY OF FINDINGS

Fresno County proposes to replace the existing Alta Main Canal Bridge on North Frankwood Avenue approximately nine miles northeast of the city of Sanger, in Fresno County, California. A prior study identified only one previously recorded built environment resource within the project area, the Alta Main Canal built in 1882 (Wisely 2017). No archeological sites were identified within the project area based on the records search or survey, but the area has high potential for buried archaeological sites due to its young soil and proximity to the Kings River.

Four exploratory cores were collected to assess the presence or absence of archaeological materials in the project area, and further refine the sensitivity assessment. The natural deposits collected within the cores were described and examined for archaeological materials. The stratigraphy underlying the project area generally consists of a very weakly developed soil (AC horizon) that may be historic-era in age, grading to clean sand (C1 horizon) and sand with gravels (C2), overlying channel cobbles that caused refusal for the core collection.

No archaeological materials or buried soils with the potential for such materials were identified during the Extended Phase I effort. The high-energy depositional environment indicated by the coarse-grained natural deposits observed within the cores would be unlikely to have preserved archaeological materials that may have been present in the past. Based on these findings, the project area is considered to have a low potential for intact prehistoric archaeological deposits.

It is the California Department of Transportation's (Caltrans) policy to avoid cultural resources whenever possible. If buried cultural resources are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find.

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INTRODUCTION

Fresno County (County) proposes to replace the existing Alta Main Canal Bridge on North Frankwood Avenue (Figures 1 and 2). The existing bridge has been deemed "functionally obsolete" and needs to be replaced.

The nature of proposed activities and involvement of federal funds require compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800, and revisions). Compliance is being carried out with California Department of Transportation's (Caltrans) regulatory responsibilities in accordance with the Caltrans Public Resources Code 5024 January 2015 *Memorandum of Understanding between the California Department of Transportation and the California State Historic Preservation Office Regarding Compliance with Public Resources Code Section 5024 and Governor's Executive Order W-26-92*, and as delegated on behalf of the Federal Highway Administration in accordance with the January 1, 2014, *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California*.

On behalf of the County, Area West Environmental, Inc., (Area West) contracted with Far Western Anthropological Research Group, Inc., (Far Western) to conduct an archaeological inventory in support of the proposed project. Far Western completed an Archaeological Survey Report in 2017 (Wisely 2017). An archival records search, consultation with interested Native American individuals, and a pedestrian survey identified only two historic-era canals within one-quarter mile of the project area, one of which, the Alta Main Canal built in 1882, is within the project area. A response via email from Shana Brum, a Cultural Specialist II with the Santa Rosa Rancheria Tachi Yokut Tribe, indicated that the project area is highly sensitive to the Yokuts and recommended Native American monitoring of all ground disturbances. The buried site sensitivity assessment identified the entire Area of Potential Effects (APE) as high to highest sensitivity for buried resources. Therefore, an Extended Phase I (XPI) study was recommended to determine the presence or absence of buried archaeological resources within the APE. Prior to execution of this study an XPI proposal was prepared and approved by Caltrans (Scher et al. 2018).

This report documents the methods, results, and findings of Far Western's investigation. Exploratory coring was performed under the supervision of crew chief Nicholas Longo, B.A., on March 1, 2018; all work was conducted within the existing County road right-of-way under road encroachment permit number EP18-0047. This study was conducted under the direction of Project Manager Adrian Whitaker, Ph.D., and Geoarchaeologist Naomi Scher, M.A., who undertook core analysis and documentation. These individuals have many years of experience in California archaeology and exceed the required qualifications for archaeology as defined by the US Department of Interior.

PROJECT DESCRIPTION

The County is proposing the Alta Main Canal Bridge Project, which would replace the existing four-span, integrated controlled weir concrete edge girder bridge (Bridge No. 42C0289) over the Alta Main Canal with a new four-span, cast-in-place, concrete slab bridge. The new bridge construction would include widening North Frankwood Avenue as part of the new approach. The project is located on North Frankwood Avenue, approximately nine miles northeast of the City of Sanger, California.

Figure 1. Project Vicinity.

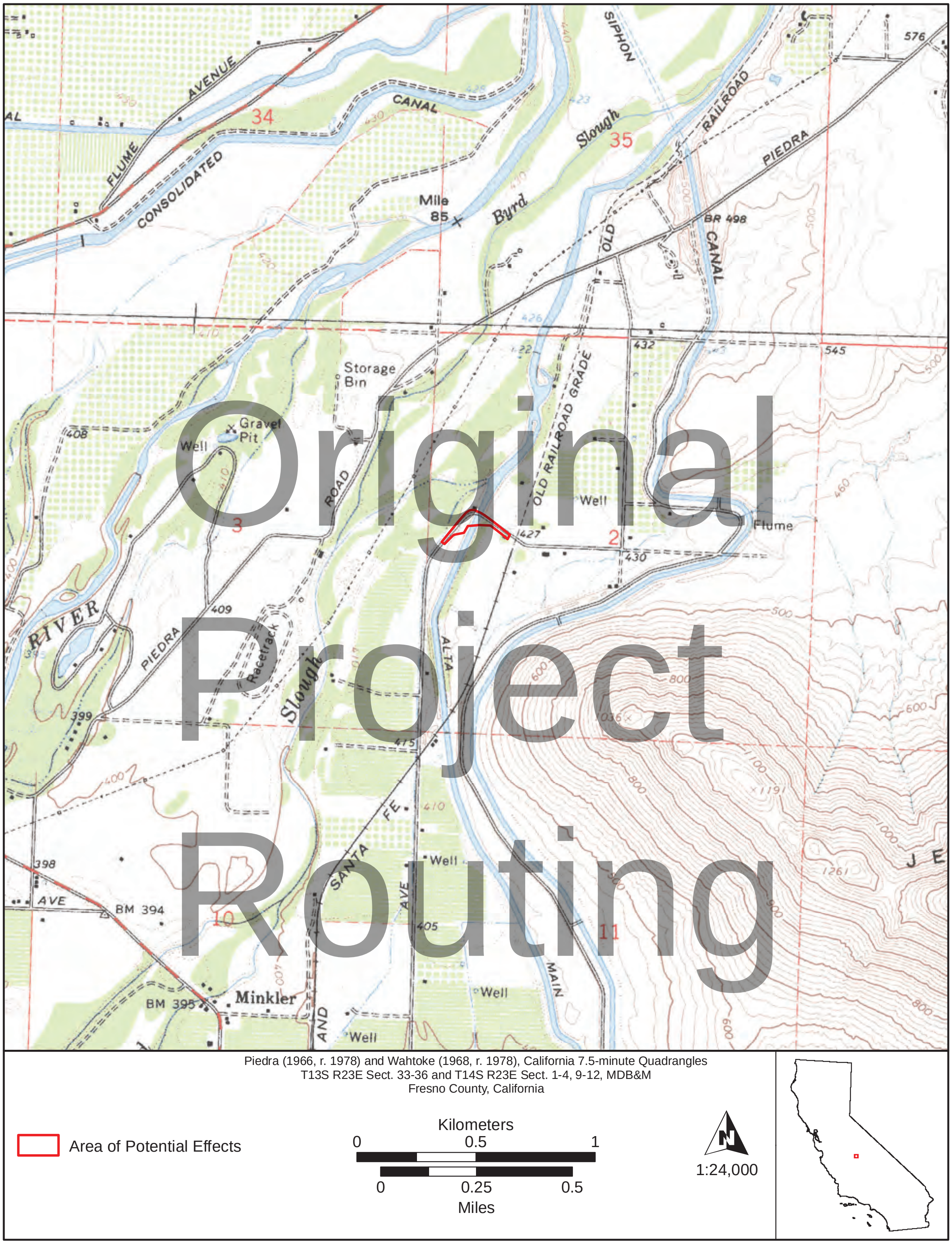


Figure 2. Project Location.

The original bridge crossing the Alta Main Canal was constructed in 1925 as a four-span structure consisting of one integrated weir, concrete edge-girder bridge. According to the Caltran's *Historical Significance-Local Agency Bridges* list, the bridge is ineligible for listing on the National Register of Historic Places.

The existing bridge is functionally obsolete with a sufficiency rating of 50.6. It cannot be widened to current standards; thus, a replacement bridge is required. To avoid lengthy road closures, the existing bridge will remain open until the new bridge and approaches are finished, and will then be used solely by the Alta Irrigation District for the maintenance of the weir and canal.

The new bridge alignment to the south of the existing bridge is necessary to allow for the improved west bridge approach and the eastern bridge approach realignment of North Frankwood Avenue while maintaining access to the current bridge to traffic. The new bridge would be approximately 145 feet long and would span the Alta Main Canal to the south of the existing bridge. Foundation construction would consist of either spread footings (which would result in 10–20 feet of excavation) or cast-in-drilled hole piles not more than 50–70 feet deep. Curb-to-curb bridge width will be no less than 22 feet, following American Association of State Highway Transportation Officials requirements.

Additionally, existing overhead utility lines may need to be relocated. Potential staging areas would be located within the project boundary, likely within open areas south of North Frankwood Avenue.

AREA OF POTENTIAL EFFECTS

The archaeological APE is shown in Figure 3; it was defined by Area West in consultation with James Perrault, Local Assistance Engineer and John Whitehouse, Caltrans Professionally Qualified Staff, Principal Investigator – Archaeology and Architectural History. It was signed on June 15, 2016. The archaeological APE includes both eastern and western approaches to the bridge with a sufficient buffer to include both the current and proposed alignments. The potential staging areas are also included. The vertical APE is assumed to be no greater than five feet six inches below current ground surface in all areas except the footprint of the new bridge, where piles and footings may be installed at a depth of 10 to 70 feet.

The APE for this project includes the current right-of-way for North Frankwood Avenue and two parcels that contain the new right-of-way. A third parcel, owned by Alta Irrigation District, will require revised access to the new right-of-way and is also included in the APE. The APE includes the current bridge structure and a portion of the Alta Main Canal above and below the current and proposed bridges.

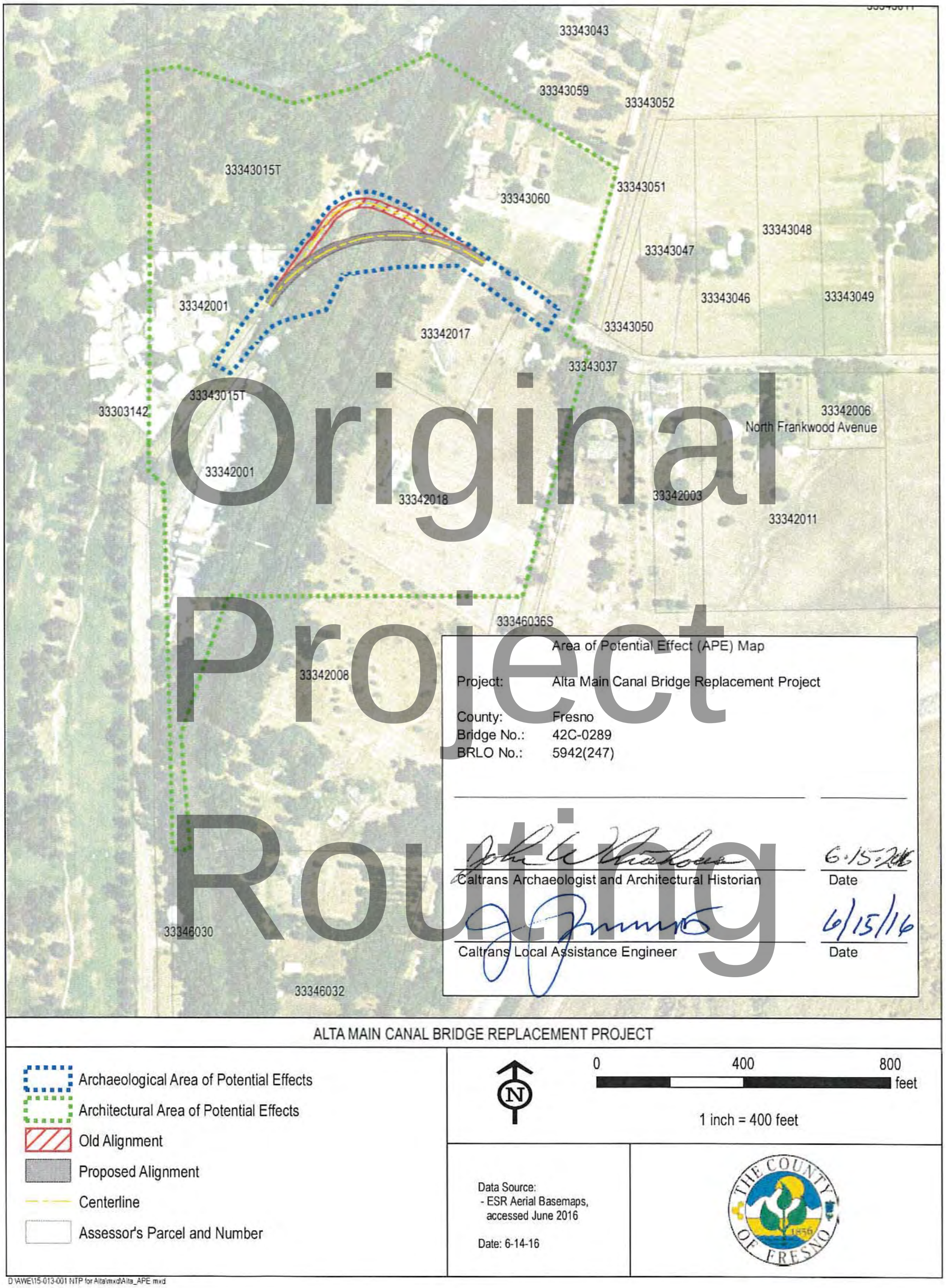


Figure 3. Area of Potential Effects

STUDY CONTEXT

Environmental and cultural background information is provided in Wisely's (2017) archaeological survey report for the project. Only the buried site sensitivity assessment is repeated here to provide a context for the XPI study.

BURIED SITE SENSITIVITY ASSESSMENT (with Jack Meyer)

The potential for buried archaeological sites is a practical problem for resource managers who must make a reasonable effort to identify archaeological deposits in a three-dimensional project area, ensuring that potentially important resources are not affected by project activities. Early detection of buried archaeological deposits also avoids the potential for costly delays that may occur when unknown resources are discovered after project-related, earth-moving activities have begun and late discovery protocols are necessary.

Before buried sites can be avoided, sampled, or otherwise "managed," they must first be identified. Most buried sites are not found by conventional pedestrian surface surveys because they typically lack visible or obtrusive features that would indicate their presence to an observer in the field (Bettis 1992:120). Thus, locating sites that may be buried by natural deposition can be one of the most difficult issues faced by archaeologists and cultural resources managers.

To help ensure that project schedules (critical path) and budgets are not inadvertently affected by late archaeological discoveries, a buried site sensitivity study was conducted to determine where buried sites are most likely to be located in the proposed corridor. When designed and conducted in an informed fashion, this type of geoarchaeological approach can help satisfy the requirements of Section 106 that "a reasonable and good faith effort to carry out appropriate identification efforts" (800.4(b)(1)) is made for undertakings that receive federal funds.

Buried Site Sensitivity Factors

Simply stated, there is generally an inverse relationship between landform age and the potential for buried archaeological deposits. For example, archaeological deposits cannot be buried within landforms that developed prior to human colonization of North America (Rosenthal and Meyer 2004). Therefore, as a first step, landforms with the potential to contain buried sites must be distinguished from those that are too old to contain them, allowing older portions of the landscape to be confidently excluded from further consideration. While this basic distinction addresses the potential for buried sites, the relative probability of locating a buried site depends largely on a more fine-grained distinction between the ages of different Holocene landforms.

Furthermore, archaeological deposits are not distributed randomly throughout the landscape, but tend to occur in specific environmental settings (Foster and Sandelin 2003:4; Hansen et al. 2004:5; Pilgram 1987; Rosenthal and Meyer 2004). While the complexities of human decision-making are beyond the scope of this study, it is well known that most prehistoric occupation sites are associated with level or nearly level landforms that occur near stream confluences, especially where at least one stream is perennial (Pilgram 1987:44–47). This means that many sites are located in settings that were subject to periodic flooding and sediment deposition due to the combination of low-lying topography and active water sources.

For the purposes of the project, buried site potential was determined using three main assumptions: (1) archaeological sites tend to be located near perennial or reliable water sources; (2) archaeological deposits from later time periods are more common because the density of human populations increased over time; and (3) the longer a landform remained at the surface, the greater the probability that any one spot on that landform was occupied. Thus, the potential for buried archaeological deposits is elevated when once-stable landforms are buried late in time, particularly near active water sources.

Buried Site Assessment

The soils within the APE are primarily Hesperia fine sandy loam with the eastern portion of the APE crossing into Hanford fine sandy loam. The Hesperia soil series dates to the latest Holocene (2200–1150 cal BP) and the Hanford soil series dates to the recent Holocene (600–100 cal BP). As soils within the APE were recently deposited, and in conjunction with the close proximity of the project to the Kings River Channel (<100 meters), the potential for buried archaeological sites was estimated to be high to highest across the entire project area. Given these circumstances, subsurface exploratory testing was recommended.

Geotechnical Results

Results of geotechnical coring suggested that the upper deposits in the project area consist of mixed silt and sand (Kleinfelder 2016). A thick cobble layer is present at depths of approximately 18 feet below ground surface on the west side of the existing bridge, and only seven feet below ground surface on the east side. On the west side of the bridge geotechnical coring continued into this cobble layer, which extends to at least 55 feet below ground surface where the core was terminated; coring on the east side terminated at approximately 12 feet, within the cobble layer. The cobble layer represents a very high-energy depositional environment that would be unlikely to preserve archaeological resources. These results suggest that the greatest potential for intact archaeological resources would be in the upper seven to 18 feet of deposits, above the cobble layer.

STUDY METHODS

This section presents methods of the XPI test explorations conducted within the project APE. The goals of the investigation were to: (1) determine the presence or absence of archaeological deposits within the project area; and (2) refine the sensitivity assessment for the project area based on stratigraphy (i.e., presence or absence of buried Holocene soils). A minimum of four cores were proposed, including at least one core on each side of the existing Alta Main Canal within existing County road right-of-way (Scher et al. 2018). Cores were planned to an average depth of 15 feet below ground surface based on the geotechnical results (Kleinfelder 2016).

PREFIELD PREPARATION

Prefield activities were coordinated with the County to secure physical and legal access to conduct work in the project area, and to ensure the safety of field personnel; a County encroachment permit was obtained (Fresno County Permit No. EP18-0047). In advance of fieldwork, an Underground Service Alert was activated on February 20, 2018, to check for underground utilities that may exist in or near the proposed test areas, as required by law. An additional prefield visit was conducted by Far Western crew chief Nicholas Longo on February 28, 2018, to inspect the project area for any markings related to underground utilities. Since exploration was not planned within any known prehistoric sites, Native American field monitoring was not required by Caltrans.

FIELDWORK – EXPLORATORY CORING

Subsurface testing was conducted with a hydraulic coring device, known as a Geoprobe 8040, under the supervision of Far Western crew chief Nicholas Longo on March 1, 2018, with the aid of Cascade Drilling. John Barbery, the Inspector for the County, also made a site visit during the drilling of one of the cores.

Four exploratory cores extending 18–21 feet (5.5–6.4 meters) below surface were collected (Table 1; Figure 4). All cores were placed within existing County road right-of-way. However, core locations were restricted by existing constraints, including utilities and accessibility. In order to adequately examine the stratigraphy across the entire project area, Core 4 was placed in the nearest accessible location south of the APE. All four cores were terminated when a cobble layer that could not be penetrated was encountered.

Cores were numbered sequentially in the order excavated, and their locations recorded in the field with a Global Positioning System unit. Cores were grouted immediately upon completion and the ground surface restored as closely as possible to their original appearance. It is worth noting that the first few feet of Core 1, located on the east side of the bridge, were difficult to drill/collect; this differed from the other cores collected and may represent a layer of fill possibly associated with the construction of the road.

Table 1. Core Summary.

Core Number	Maximum Depth Feet (meters)	Samples Screened [a]
1	21 (6.4)	AC horizon
2	20 (6.1)	Ap and AC horizons
3	18 (5.5)	AC horizon
4	18 (5.5)	AC horizon

Note: [a] Selective deposits from cores wet-screened through 1/16-inch mesh.

The samples from subsurface deposits were recovered and stored in hard plastic PVC liners that are five feet long (1.5 meters) and 1.85 inches (approximately five centimeters) in diameter. Each liner was placed in a dual-walled push tube and hydraulically driven to the appropriate depth to capture a

Figure 4. Core Locations.

Extended Phase I Archaeological Report for the Alta Main Canal Bridge Replacement Project on North Frankwood Avenue, Fresno, California

BRLO 5942(247)

By:
Naomi Scher, M.A.

Far Western Anthropological Research Group, Inc.

× 2018

Prepared for and Approved by:

John Whitehouse, Principal Investigator,
Archaeology and Architectural History
California Department of Transportation, District 6
855 M Street, Suite 200
Fresno, CA 93721

Shane Gunn, Branch Chief,
Environmental Analysis, Planning & Local Programs
California Department of Transportation, District 6
855 M Street, Suite 200
Fresno, CA 93721

Submitted to:

Aimee Dour-Smith
Area West Environmental, Inc.
6248 Main Avenue, Suite C
Orangevale, CA 95662

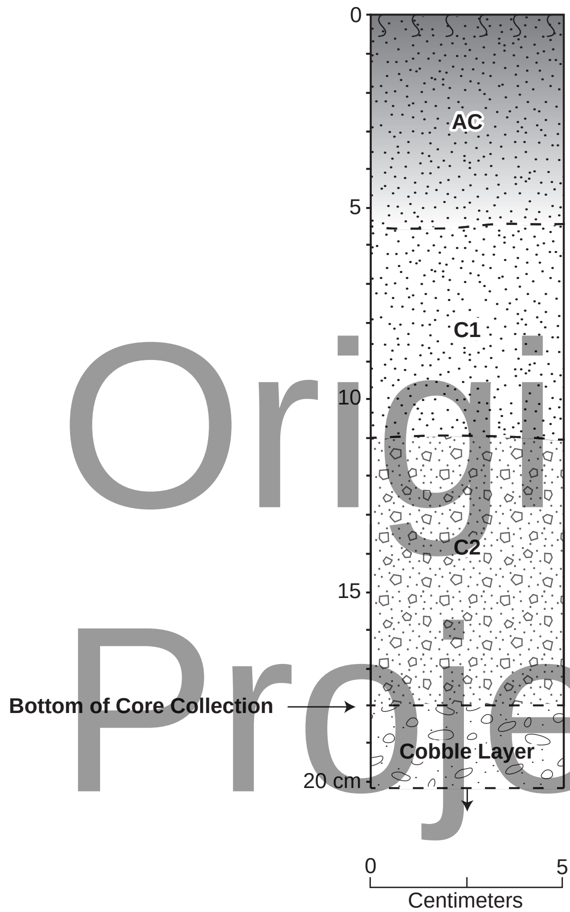
RESULTS

No archaeological resources or buried soils with the potential to contain archaeological resources were identified. The deposits identified in the cores are consistent with those described in the earlier geotechnical study results (Kleinfelder 2016), and relatively consistent across the project area. Complete core descriptions are available in Appendix A.

All cores hit refusal at 18–21 feet below surface at what is presumed to be a cobble layer matching the description in the geotechnical study results (Kleinfelder 2016). The deposits observed in the cores variably consist of sand to silt and appear to comprise a single fining upwards sequence. The profile of core 4 (Figure 5) offers a typical example: the deepest sediment horizon collected (C2) consists of coarse sand with greater than 75 percent gravel content, which fines upwards to clean sand (C1 horizon) and silt loam at the ground surface (AC horizon). This type of fining upwards sequence profile is typical of floodplain deposition. The generally coarse-grained deposits identified are indicative of a high-energy depositional environment, within or immediately adjacent to an active channel. High-energy deposits are more likely to have eroded any previously present archaeological resources, rather than preserve them in place.

The upper portion of each core may already be disturbed. In Core 2 distinct fill deposits were observed extending to six inches below ground surface. In Core 1 the presence of fill was unclear; however, the deposits may be mixed and/or redeposited to as much as 13 feet below ground surface. A very weakly-developed, cumulic, soil (AC horizon) was identified at, or near, the ground surface in all four cores. Cumulic deposits are formed by gradual addition of sediment deposition that are incorporated into soil profile development during pedogeneis, and are identified by thick, weakly developed soil horizons (Schaetzl and Anderson 2007). No samples suitable for radiocarbon dating were recovered; however, the weak degree of development suggests that this soil is relatively youthful, possibly even historic-era in age.

Far Western conducted a previous XPI study in 2013 and 2014, 1.5 miles south of the current project area along the State Route 180 corridor with a series of 56 backhoe trenches on the Kings River floodplain (Kaijankoski et al. 2014). Comparable stratigraphy was identified during that study consisting of a relatively fine-grained capping alluvium underlain by very coarse-grained channel deposits, indicative of a very active, high-energy channel. Cobble deposits were observed in the majority of the trenches, similar to those underlying the current project area, indicating a low potential for buried sites. This study did, however, identify isolated basins (i.e., marshes) and small remnant areas of stable alluvial islands (buried soils), where buried sites may have been preserved and it is possible that other such remnant areas may be located very near the current project area. The results of seven radiocarbon dated samples from the Kings River floodplain demonstrate that the modern ground surface was deposited during the last 2,000 years, and was, in fact, historic-era in age in many areas.



AC 10YR 3/3 dark brown massive to single grain sandy loam; <10% gravels

C1 10YR 4/3 brown massive to single grain sand to sandy loam; no gravel

C2 10YR 7/2 light gray massive to single grain sand; >75% grains

Figure 5. Representative Stratigraphic Core 4.

SUMMARY AND CONCLUSIONS

Far Western conducted an XPI investigation for the Alta Main Canal Bridge Project, located on North Frankwood Avenue in Fresno County. An earlier archaeological survey study identified one built environment resource, the Alta Main Canal; no prehistoric archaeological sites were identified (Wisely 2017). However, the APE was estimated to have a high potential for buried sites due to the proximity to the Kings River and youthful age of soils mapped at the surface. Therefore, four exploratory cores were collected to identify any archaeological resources present in the project area, and refine the buried site sensitivity assessment. The stratigraphy observed in the cores generally consisted of a very weakly developed soil (AC horizon) grading to clean sand (C1 horizon) and sand with gravels (C2), overlying channel cobbles that caused refusal for the core collection.

No archaeological materials were identified during this investigation. Additionally, the likelihood of encountering prehistoric archaeological deposits in the project area is considered to be low based on the high-energy depositional environment represented in the subsurface deposits identified and a lack of buried soils, as well as a possibly historic-era modern ground surface.

It is Caltrans' policy to avoid cultural resources whenever possible. If buried cultural resources are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find.

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APPENDIX A

CORE DESCRIPTIONS

Original Project Routing

GLOSSARY OF STRATA AND SOIL TERMS AND KEY FOR DESCRIPTIONS

Adapted from P. H. Schoeneberger, D. A. Wysocki, E. C. Benham, and Soil Survey Staff 2012
Field book for describing and sampling soils, Version 3.0
Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska

SOIL HORIZON. A layer of soil, approximately parallel to the surface, which has distinct characteristics produced by soil-forming processes. These are the major soil horizons present in the project area:

> **A horizon**—the mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).
>
> **C horizon**—the relatively unweathered material immediately beneath the solum. Included are sediment, saprolite, organic matter, and bedrock excavatable with a spade. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a number precedes the letter C.

MUNSELL COLOR and **COLOR NAME**. Scientific description of color determined by comparing soil to a Munsell Soil Color Chart For example, dark yellowish brown is denoted as 10YR3/4m in which the 10YR refers to the hue or proportions of yellow and red, 3 refers to value or lightness (0 is black and 10 is white), 4 refers to chroma (0 is pure black and white and 20 is the pure color), and m refers to the moist condition rather than the dry (d) condition. (Available from Macbeth Division of Kollmorgen Corp. 2441 N. Calvert St., Baltimore, MD 21218).

STRUCTURE. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates, which is described on the basis of grade, size, and type. The principal forms of soil structure are--platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are either single grained (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans). Abbreviations include:

STRUCTURE
m – massive, particles adhere without any regular cleavage
sg – single grain, no aggregation

GRAVEL. % - estimated volume percent occupied by gravel (>2 mm). Categorized as 0, <10, >10, 25, 50, 75, or >75 percent.

GRAVEL SIZE AND SHAPE
S—small
M – medium
L - large
A – angular
SA - subangular
SR—subrounded
R – rounded
WR – well rounded

CONSISTENCE. This is a measure of the adherence of the soil particles to the fingers, the cohesion of soil particles to one another, and the resistance of the soil mass to deformation. Because this property varies with moisture content, different classifications are given for soils that are dry, moist, or wet. Terms used to describe consistence are:

Moist Consistence:

lo – loose. Noncoherent; does not hold together in a mass.

vfr – very friable. Weakly coherent; easily crushed under gentle pressure and can be pressed into a lump.

Dry Consistence:

so – weakly coherent. Easily crushes to powder or single grain.

TEXTURE. Particle size classification of a soil, generally given in terms of the USDA system which uses the term "loam" for a soil having equal properties of sand, silt, and clay. The basic textural classes, in order of their increasing proportions of fine particles are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sand clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine. Abbreviations for these include:

TEXTURE
S – sand
SiL – silt loam
SL – sandy loam

CONTACT. Describes the lower boundary of each stratum or soil horizon, indicating the thickness and shape of the transition as follows:

TRANSITION
a—abrupt (less than 2 cm thick)
BOE – bottom of exposure
c—clear (from 2 to 5 cm)
g—gradual (from 5 to 15 cm thick)

Appendix A. Core Descriptions.

Project Name	Core Number	Minimum Depth (Feet)	Maximum Depth (Feet)	Soil Horizon	Color Type-Munsell Designation	Color Name (Munsell or General)	Structure Type	Gravel %	Gravel Size	Gravel Shape	Consistence Moist	Consistence Dry	Texture	Contact Transi-tion	Additional Comments
Alta Main Canal	Core 1	0	3	AC	10YR 3/4	dark yellowish brown	-	-	-	-	-	-	-	a	Is this fill?
Alta Main Canal	Core 1	3	11.5	C1	10YR 6/2	light brownish gray	m-sg	-	S-L	A-SA	lo	-	-	a	Still fill? Similar to below.
Alta Main Canal	Core 1	11.5	13	C2	10YR 7/1	light gray	-	-	-	-	-	-	-	a	Still fill?
Alta Main Canal	Core 1	13	20	C3	10YR 4/3	brown	m-sg	<10	M	SR-WR	lo	-	-	a	Mostly clean coarse sand well-sorted. Few gravels in patches.
Alta Main Canal	Core 1	20	21	C4	10YR 6/2 - Gley 1 6/10Y	light brownish gray - greenish gray	m-sg	>75	S-L	A-R	lo	-	S	BOE	coarse sand with gravel. Refusal for cobble layer.
Alta Main Canal	Core 2	0	0.5	Ap	10YR 6/2	light brownish gray	-	-	-	-	-	-	-	c	disturbed fill with gravel
Alta Main Canal	Core 2	0.5	6	AC	10YR 4/3	brown	m-sg	<10	-	-	-	so	SL-SiL	c-g	CaCo3 filaments? Silt to fine sand
Alta Main Canal	Core 2	6	8	C1	10YR 3/4	dark yellowish brown	m	-	-	-	vfr	-	S-SL	a	sand
Alta Main Canal	Core 2	8	9	C2	10YR 3/3	dark brown	m-sg	-	-	-	lo	-	S	a	clean coarse sand
Alta Main Canal	Core 2	9	20	C3	Gley 1 4/5GY	dark greenish gray	m-sg	>75	S-L	A-R	lo	-	S	BOE	coarse sand with gravel. Refusal for cobble layer.
Alta Main Canal	Core 3	0	6	AC	10YR 3/3	dark brown	m-sg	<10	-	-	-	so	SL-SiL	c-g	CaCo3 filaments? Silt to fine sand
Alta Main Canal	Core 3	6	7.5	C1	10YR 4/3	brown	m	-	-	-	vfr	-	S-SL	a	sand
Alta Main Canal	Core 3	7.5	18	C2	10YR 7/2	light gray	m-sg	>75	S-L	A-R	lo	-	S	BOE	coarse sand with gravel. Refusal for cobble layer.
Alta Main Canal	Core 4	0	5.5	AC	10YR 3/3	dark brown	m-sg	<10	-	-	-	so	SL-SiL	c-g	CaCo3 filaments? Silt to fine sand
Alta Main Canal	Core 4	5.5	11	C1	10YR 4/3	brown	m-sg	-	-	-	vfr	-	S-SL	a	sand
Alta Main Canal	Core 4	11	18	C2	10YR 7/2	light gray	m-sg	>75	S-L	A-R	lo	-	S	BOE	coarse sand with gravel. Refusal for cobble layer.

HARO ENVIRONMENTAL

HAZARDOUS WASTE

INITIAL SITE ASSESSMENT

Federal Project No. BRLO 5942(247)
Alta Main Bridge
Fresno County, California

November 6, 2015

Prepared by:
Haro Environmental
Project 6012-2015

In conjunction with:
SWCA Environmental Consultants
1422 Monterey Street, Suite C200
San Luis Obispo, California

Prepared for:

County of Fresno
Erin Haagenson
2220 Tulare Street, Suite 600
Fresno, CA 93721

Prepared by:

Elliot R. Haro

Elliot R. Haro
Principal Scientist

Reviewed by:

Timothy Nelligan
Professional Engineer

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EXECUTIVE SUMMARY

This Hazardous Waste Initial Site Assessment (ISA) was performed by Haro Environmental, Inc. in conjunction with SWCA Environmental Consultants (SWCA) for the County of Fresno (county) in support of the Federal Project BRLO-5942(247) Alta Main Bridge (project) in the County of Fresno, California. A site vicinity map is provided on Plate 1. The area evaluated for this ISA, defined as the "project area," includes those areas which would be disturbed during construction of the proposed project (refer to Plate 2 for identification of the project area). Haro Environmental performed this ISA consistent with the California Department of Transportation (Caltrans) Environmental Guidance Handbook, Volume 1, Chapter 10 Hazardous Materials, Hazardous Waste, and Contamination, Initial Site Assessment (Caltrans, 2014), and the American Society for Testing and Materials (ASTM) Practice E-1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM Standard). Exceptions to, or deletions from, this practice are described in this report.

The purpose of this assessment was to identify known, potential, and historic recognized environmental conditions (RECs) resulting from historic and/or current uses of hazardous substances or petroleum products at the project area. We understand SWCA has requested this ISA on behalf of the County of Fresno (project proponent). The findings of this assessment are based on Haro Environmental's knowledge of the project area from observations and information gathered during this ISA.

The proposed project consists of replacing the Alta Main Canal Bridge on Frankwood Avenue, 1.15 miles south of Piedra Road. The county of Fresno is proposing to replace the existing two-lane bridge with a new bridge built to current standards on a new alignment. The existing bridge is integrated with a fully operational weir structure owned by Alta Irrigation District, which stretches the full length of the bridge. It is anticipated the existing bridge would remain in place and continue to serve as an irrigation control structure and also function as an onsite detour during construction. Once the project is completed, access to the existing bridge will be limited to Alta Irrigation District.

Results of a regulatory agency database search performed by Environmental Database Resources (EDR) indicate the project area was not listed in any of the databases searched, and no nearby properties were listed.

A review of historic aerial photographs, topographic maps, and city directory listings indicate the Alta Main Canal Bridge was present by at least 1923, and agricultural land uses and rural residences have been present since at least 1937.

A field visit of the project area was conducted by a Haro Environmental representative on October 19, 2015. During the field visit, Haro Environmental did not observe hazardous materials and/or petroleum products under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. No hazardous materials or petroleum products were observed at off-site, nearby properties under current conditions that would pose a significant environmental concern to the project area.

Based on the data gathered and reviewed during this ISA, Haro Environmental did not identify RECs that have impacted, or pose a significant environmental threat to the project area with the exception of the following:

- The concrete used to construct Alta Main Canal Bridge may contain asbestos.
- The paint used on the railing may contain lead.
- The pole-mounted transformer may contain PCBs.

Based on the findings of this ISA, Haro Environmental provides the following recommendations:

- An asbestos survey should be performed to determine whether or not the concrete will require special handling and disposal.
- A lead-based paint survey should be performed to determine whether or not the railing paint contains elevated concentrations of lead which could require special handling and disposal.
- The electrical company responsible for the electrical transformer should be contacted to determine if the transformer contains PCBs, and if so, the transformer should be properly disposed of in accordance with all applicable rules and regulations.

Haro Environmental provides the following general recommendations:

- As for all projects proposing excavation or grading, the potential exists for unknown hazardous contamination to be encountered during the project construction. Therefore, for any previously unknown hazardous waste/material encountered as part of construction of the proposed project, the procedures outlined in Appendix E (Caltrans Unknown Hazards Procedures) shall be followed (Caltrans, 2002).

Based on the information gathered and reviewed during preparation of this ISA, the potential appears low for hazardous materials to be encountered during the project, and as such, the potential impact to the overall project scope, cost, and schedule from hazardous materials is expected to be low.

1.0 INTRODUCTION

This Hazardous Waste Initial Site Assessment (ISA) was performed by Haro Environmental, Inc. in conjunction with SWCA Environmental Consultants (SWCA) for the County of Fresno in support of the Federal Project BRLO-5942(247) Alta Main Bridge (project) in the County of Fresno, California. A site vicinity map is provided on Plate 1. The area evaluated for this ISA, defined as the "project area," includes those areas which would be disturbed during construction of the proposed project (refer to Plate 2 for identification of the project area). Haro Environmental performed this ISA consistent with the California Department of Transportation (Caltrans) Environmental Guidance Handbook, Volume 1, Chapter 10 Hazardous Materials, Hazardous Waste, and Contamination, Initial Site Assessment (Caltrans, 2014), and the American Society for Testing and Materials (ASTM) Practice E-1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM Standard). Exceptions to, or deletions from, this practice are described in this report.

1.1 PURPOSE

This ISA was performed to identify potential hazardous materials that could be encountered during implementation of the proposed project. We understand the County has requested this ISA to meet the requirement for federal funding of the proposed project. In addition, we understand that although the project is federally funded, no land will be deeded over to Caltrans from the County. The purpose of this assessment was to identify known, potential, and historic recognized environmental conditions (RECs) resulting from historic and/or current uses of hazardous substances or petroleum products at or near the project area.

The ASTM Standard defines a REC as:

> "The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate

governmental agencies. Conditions determined to be *de minimis* are not recognized environmental conditions"

The ASTM Standard defines a historical REC as:

> "An environmental condition which in the past would have been considered a recognized environmental condition, but which may or may not be considered a recognized environmental condition currently." For example, a historical REC could be identified if a past release of any hazardous substances or petroleum products has occurred in connection with the property and has been remediated to the satisfaction of the lead regulatory agency as evidenced by a no further action letter or a case closure determination."

At the request of SWCA, on behalf of the County, Haro Environmental has completed this ISA. This report is subject to the limitations presented in this ISA report. This report describes Haro Environmental's assessment methodology, presents our findings, and provides our opinion as to the potential presence of RECs in connection with the project area.

1.2 SCOPE OF SERVICES

The scope of services conducted for this study included the following tasks:

- Perform an on-site reconnaissance to identify indicators of the existence of hazardous materials or petroleum products.

- Observe adjacent or nearby properties from the project area and public thoroughfares in an attempt to see if such properties are likely to use, store, generate, or dispose of hazardous materials or petroleum products.

- Obtain and review an environmental records database search from Environmental Data Resources, Inc. (EDR) to acquire information about the potential for hazardous materials to exist on-site or at nearby properties.

- Review the current U.S. Geological Survey (USGS) topographic map to obtain information about topography and uses of the project area and nearby properties.

- Review historic aerial photographs, topographic maps, Sanborn Fire Insurance Maps, and historic city directory listings, if available, to obtain information about historic uses of the project area and adjacent properties.

- Review California Division of Oil, Gas and Geothermal Resources records to obtain information about historic oil and gas activity in the vicinity of the project area.

- Conduct interviews with persons familiar with the project area development and local and/or State government agencies, as warranted, to obtain information about current and historic uses of the property.

- Prepare this report documenting the findings of the ISA.

The scope of services did not include any inquiries with respect to non-scope ASTM considerations including, but not limited to, mold, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, electromagnetic fields or geologic hazards.

2.0 PROJECT INFORMATION

A description of the prosed project setting is presented in this section and describes the condition of the project area at the time of the ISA. Tables 2-1 and 2-2 summarize the physical characteristics of the project area and adjoining properties. A Site and Adjacent Land Use Map is provided on Plate 2.

2.1 PROJECT DESCRIPTION

The proposed project consists of replacing the Alta Main Canal Bridge on Frankwood Avenue, 1.15 miles south of Piedra Road. The county of Fresno is proposing to replace the existing two-lane bridge with a new bridge built to current standards on a new alignment. The existing bridge is integrated with a fully operational weir structure owned by Alta Irrigation District, which stretches the full length of the bridge. It is anticipated the existing bridge would remain in place and continue to serve as an irrigation control structure and also function as an onsite detour during construction. Once the project is completed, access to the existing bridge will be limited to Alta Irrigation District.

2.2 PROJECT AREA DESCRIPTION

Table 2-1 provides a summary of the physical location and size of the project area, as well as the current and proposed land uses. This information was obtained from review of various maps (such as topographic maps and tax assessor maps) and aerial photographs. Additional site description information was obtained during the site visit. Please refer to the Section 5.0 for site reconnaissance information.

TABLE 2-1
PROJECT AREA LOCATION AND LAND USE

Parameter	Information/Comments
Location	The project area consists of approximately 400 feet east and west of the Alta Main Canal Bridge on Frankwood Avenue. The project area is located in an area of agricultural and rural residential land uses.
Assessor's Parcel Nos. (APNs)	The project area is located within APNs 333-42-17, 33-42-01, 333-43-60, and 333-43-15.
Section, Township, and Range	Sections 2, Township 14 South, Range 23 East of the Mount Diablo Base and Meridian.
Current Use	N. Frankwood Avenue.

2.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

Information on regional geology and hydrogeology is presented in Table 2-2. This information was obtained from published data and maps of the project area vicinity.

TABLE 2-2
PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

Geologic/Hydrogeologic Parameter	Information/Comments
Project Area Topography	Based on a review of the USGS Fresno North, California 7.5-Minute Topographic Quadrangle Map dated 1981, elevation at the project area is approximately 423 feet above MSL. The site has a gentle slope to the west.
Project Area Geology and Soil Types	The project area is located within the Great Valley Geomorphic Province in California (CGS, 2002). The Great Valley is an alluvial plain, extending approximately 50 miles wide by 400 miles long. The northern part is identified as the Sacramento Valley (drained by the Sacramento River) and the southern part is identified as the San Joaquin Valley (drained by the San Joaquin River). The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic period (about 160 million years ago). The Great Valley is bound by the Klamath Mountains to the north, the Sierra Nevada to the east, the Coast Ranges to the west, and the Tehachapi Mountains to the south. According to the Geologic Atlas of California – Fresno Sheet (CGS, 1965), geologic deposits beneath the site consist of alluvial fan deposits. Based on information provided in the Geo-Check® section of the EDR report (Appendix A), soils at the project area include the San Joaquin fine sandy loam series. These soils are deep to moderately deep and are moderately well-drained and well drained, and have fine sandy loam surface textures and moderate infiltration rates.
Project Area Hydrogeologic Setting	The site is located within the Kings Subbasin of the San Joaquin Valley Groundwater Basin (DWR, 2006). The San Joaquin Valley represents the southern portion of the Great Central Valley of California. The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide filled with up to 32,000 feet of marine and continental sediments deposited during periodic inundation by the Pacific Ocean and by erosion of the surrounding mountains, respectively. Sediments that comprise the shallow-to-intermediate depth of water-bearing deposits in the groundwater subbasin are primarily continental deposits of Tertiary and Quaternary age. According to the GeoCheck® section of the EDR report (Appendix A), two groundwater wells are located within a one-quarter mile radius of the site. The closest well is 276 feet to the west north west of the project site, used as a irrigation well. The nearest surface water body is the Alta Main Canal which is in the project area. No groundwater wells are located within the project area.

2.4 ADJOINING AREA LAND USE

A drive-by survey of the land adjoining the project area was performed by Haro Environmental personnel on October 19, 2015. The results of this survey indicate rural residential land uses are present surrounding the project area. The project area and adjoining land uses are depicted on Plate 2.

2.5 LOCATION AND LEGAL DESCRIPTIONS

The project area is located on N. Frankwood Avenue, 400 feet north and south of Alta Man Canal Bridge, near the town of Sanger, in Fresno County. The project area is in the public right of way and including APN's: 333-42-17, 333-42-01, 333-43-60, and 333-43-15.

2.6 USER PROVIDED INFORMATION

The Preliminary Environmental Study (PES) prepared by Ms. Erin Haagenson was reviewed as part of this ISA and a copy is provided in Appendix B. Based on the answers to the questions in the PES, Ms. Haagenson indicated she was not aware of the presence of railroads or hazardous materials associated with the project, and that there are no clean-up or listed sites with the vicinity of the project area.

2.7 ENVIRONMENTAL LIENS

No environmental lien search was conducted by the user or preparer of this ISA report.

3.0 RECORDS REVIEW

Government agency database records are sources of information that may be helpful in evaluating activities that may have contributed to a release of hazardous substances or petroleum products to soil and/or groundwater. Haro Environmental contracted a government agency database search from EDR. A copy of the EDR report, which specifies the approximate minimum search distance for each public list as defined in the ASTM Standard, is included as Appendix A. The project area was not listed in any of the databases searched by EDR. No nearby properties were listed in any of the databases searched by EDR.

3.1 RESULTS OF DATABASE SEARCH

The following sections contain information on the results of the government records search conducted by EDR. Opinions presented below are based on information provided in the EDR report (unless otherwise noted) and on criteria such as distance from the project area, anticipated groundwater movement and direction in the vicinity of the project area, and the nature of any reported unauthorized releases. In assessing the potential impact to buildings, materials, soil, soil vapor, and/or groundwater beneath the project area, the shallowest groundwater was considered with an anticipated groundwater movement direction assumed to be south southwest.

3.1.1 Subject Property

The project area was not listed in the databases searched by EDR.

3.1.2 Adjacent Properties

No immediately adjacent properties were listed in the databases searched by EDR.

3.1.3 Nearby Properties

George Sani (735 Feet – South southwest) – 308 North Frankwood Avenue

The George Sani site had two historic 350-gallon underground storage tanks that held gasoline products. However, this property was plotted in the wrong location and is over 1 mile away from the project area. Therefore, based on the distance of this site from the project area, the George Sani site would not be expected to pose an environmental concern to the project area.

3.1.4 EDR Orphan List

Sites that have poor or inadequate address information are not plotted by EDR and are referred to as orphan sites. One unmapped orphan site was listed in the EDR Report. The orphan summary/unmapped sites report was reviewed by Haro Environmental to assess the potential for off-site properties to affect the project area. Because they have incomplete addresses, these orphan sites are not practicably reviewable as defined by the ASTM standard. However, based upon the street name, location reported, and Haro Environmental's knowledge of the area, the single orphan/unmapped site does not have the potential to impact the project area.

3.1.5 Non-ASTM Issues

Assessment of non-ASTM issues including, but not limited to, mold, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, electromagnetic fields or geologic hazards was not included as part of this ISA. According to the National Wetland Inventory Map, the project area is located within a wetland (USFWS, 2014). According to information provided in the EDR Report, the project area is located within a 100-year floodplain.

3.2 OTHER RECORDS REVIEWED

3.2.1 Public Agency Records

The Alta Irrigation District was contacted regarding the potential for hazardous materials in connection with the weir gates. Mr. Javier Calasos, maintenance supervisor with the Alta Irrigation District, was contacted and indicated there are no hazardous materials stored or used at the bridge.

The National Pipeline Mapping System maintained by the Pipeline and Hazardous Materials Safety Administration was reviewed for the presence of gas and hazardous liquid transmission pipelines, and the results indicate there are no mapped pipelines located within a one-mile radius of the project area (PHMSA, 2015).

The following additional public agencies were contacted regarding files for the project area and indicated no files are available:

- Fresno County Department Public Health – Environmental Health Division
- Regional Water Quality Control Board – Central Valley Region
- California Department of Toxic Substances Control
- San Joaquin Valley Unified Air Pollution Control District

3.2.2 Previous Environmental Reports

No previous environmental reports were provided for review.

4.0 PROJECT AREA HISTORY

The history of the project area was researched to identify obvious uses of the project area as early as the first developed use, or at least 40 years ago, whichever is earlier or readily available. Four data gaps since 1940 of greater than 5 years was identified in the historical records reviewed and included the years from 1943 to 1950, from 1954 to 1962, from 1970 to 1975, and from 1975 to 1980. These data gaps are considered insignificant because the project area use appears to be similar during the data gap.

4.1 AERIAL PHOTOGRAPHS

A review of historical aerial photography may indicate past activities at a property that may not be documented by other means, or observed during a site visit. The effectiveness of this technique depends on the scale and quality of the photographs and the available coverage. Aerial photographs were obtained from several historical photograph collections through EDR. A tabulation of the aerial photographs reviewed is presented in Table 4-1.

TABLE 4-1
HISTORICAL AERIAL PHOTOGRAPHS REVIEWED

Date	Approximate Scale	Source
1937	1" = 500'	USGS
1950	1" = 500'	USGS
1954	1" = 500'	USGS
1962	1" = 500'	USGS
1970	1" = 500'	Cartwright
1984	1" = 500'	USGS
1987	1" = 500'	USGS
1998	1" = 500'	USGS/DOQQ
2005	1" = 500'	USDA/NAIP
2006	1" = 500'	USDA/NAIP
2009	1" = 500'	USDA/NAIP
2010	1" = 500'	USDA/NAIP
2012	1" = 500'	USDA/NAIP

Note: Aerial photographs only provide information on indications of land use and no conclusions regarding the release of hazardous substances or petroleum products can be drawn from the review of photographs alone.

Copies of the reviewed aerial photographs are included in Appendix A. The following is a summary of our review of these photographs.

- ***1937*** **–** The project area is depicted with the Alta Main Canal Bridge and North Frankwood Avenue. The surrounding land is depicted as agricultural land uses.

- ***1950*** **–** The project area and nearby properties appear similar to the 1937 aerial photograph.

- ***1954*** **–** The project area and nearby properties appear similar to the 1950 aerial photograph.

- ***1962*** **–** The project area and nearby properties appear similar to the 1954 aerial photograph.

- ***1970*** **–** The project area and nearby properties appear similar to the 1962 aerial photograph.

- ***1984*** **–** The project area and nearby properties appear similar to the 1970 aerial photograph with the addition of the residential community to the southwest of the project area.

- ***1987*** **–** The project area and nearby properties appear similar to the 1984 aerial photograph.

- ***1998*** **–** The project area and nearby properties appear similar to the 1987 aerial photograph.

- ***2005*** **–** The project area and nearby properties appear similar to the 1998 aerial photograph.

- ***2006*** **–** The project area and nearby properties appear similar to the 2005 aerial photograph with the addition of more rural homes.

- ***2009*** **–** The project area and nearby properties appear similar to the 2006 aerial photograph.

- ***2010*** **–** The project area and nearby properties appear similar to the 2009 aerial photograph.

- ***2012*** **–** The project area and nearby properties appear similar to the 2010 aerial photograph.

4.2 HISTORICAL TOPOGRAPHIC MAPS

Haro Environmental reviewed historical topographic maps of the project area vicinity. The topographic maps reviewed for this assessment are listed below in Table 4-2.

TABLE 4-2
HISTORICAL TOPOGRAPHIC MAPS REVIEWED

Year	Quadrangle	Series	Scale
1920	Orangedale School	7.5 minute	1: 24,000
1923	Wahtoke	7.5 minute	1:31,680
1924	Dinuba	30 minute	1:125,000
1943	Watts Valley	15 minute	1:62,500
1950	Wahtoke	7.5 minute	1:24,000
1962	Watts Valley	15 minute	1:62,500
1965	Piedra	7.5 minute	1:24,000
1966	Wahtoke	7.5 minute	1:24,000

The following is a summary of our review of the maps.

- ***1920*** – The project area is not depicted in the map. Surrounding land use is depicted as vacant.
- ***1923*** – The project area is depicted as developed with Alta Main Canal Bridge and Frankwood Avenue. The surrounding properties are depicted as undeveloped and agricultural land.
- ***1924*** – The scale of the map is too large to depict the project area.
- ***1943*** – The project area is depicted with the Alta Main Canal Bridge and surrounding land use is depicted as agricultural land and orchards.
- ***1950*** – The project area and surrounding properties are depicted similar to the 1943 map.
- ***1962*** – The project area and surrounding properties are depicted similar to the 1950 map.
- ***1965*** – The project area and surrounding properties are depicted similar to the 1962 map with the addition of more agricultural land.
- ***1966*** – The project area and surrounding properties are depicted similar to the 1965 map.

4.3 SANBORN® FIRE INSURANCE MAPS

Sanborn® Fire Insurance Maps provide historical land use information in some metropolitan areas and small, established towns. EDR indicated Sanborn® Fire Insurance Maps are not available for the project area. A copy of the no-coverage letter is included in Appendix A.

4.4 CITY DIRECTORIES

Haro Environmental contacted EDR to obtain a historical City Directory Abstract, which lists the names and/or businesses that historically occupied an address. The City Directory Abstract, which covers the period from 1975 to 2013, provides tenant information for an address and/or adjoining streets. In general, rural residential listings were noted for surrounding properties, and is consistent with the rural residential setting of the project area. The complete EDR City Directory Abstract listing results is provided in Appendix A.

4.5 OIL AND GAS MAPS

Maps provided online by the California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) were reviewed to determine the current and historic presence of oil and gas wells in the vicinity of the project area (DOGGR, 2003). The maps indicated there are no oil or gas wells located within a one-quarter-mile radius of the project area.

4.6 CHAIN OF TITLE RECORDS

Haro Environmental was not provided a Preliminary Title Report for the project area.

5.0 SITE RECONNAISSANCE AND INTERVIEWS

5.1 SITE RECONNAISSANCE

Haro Environmental's assessment activities included a site reconnaissance. This section summarizes the findings from the site reconnaissance.

5.1.1 Methodology and Limiting Conditions

Haro Environmental performed a reconnaissance of the project area on October 19, 2015. The project area reconnaissance was conducted by observing the project area and adjacent properties from public thoroughfares. The purpose of the site reconnaissance was to identify the presence or likely presence of hazardous substances or petroleum products under conditions that indicate an existing release, a past release, or threat of release into soil, groundwater, or surface water at the project area (RECs). Observations from the site reconnaissance are summarized in the following sections. A photo log of photographs taken during the site reconnaissance is provided in Appendix C.

5.1.2 Current Use of the Property and Adjoining Properties

The project area is currently developed as primary multilane road on North Frankwood Avenue. The majority of the project area lies within 400 feet east and west of the Alta Main Canal Bridge. Rural residential communities surround the project area. Project area and adjoining land uses are depicted on Plate 2.

5.1.3 General Description of Structure

Alta Main Canal Bridge is the current structure onsite that is a two-lane bridge. This bridge has a fully functional weird structure that serves as an irrigation control structure.

5.1.4 Interior and Exterior Observations

No buildings are located within the project area with the exception of a small shed on the west bank to the south of the Alta Main Canal. According to the Alta Irrigation District, this shed contains the computer which controls the weir gates.

5.1.5 Hazardous Substances and Petroleum Products

No hazardous substances were observed at the project area.

5.1.6 Unidentified Substance Containers

Unidentified hazardous substance containers or unidentified containers that might contain hazardous substances were not observed during the site reconnaissance.

5.1.7 Storage Tanks

During the site reconnaissance, Haro Environmental did not observe evidence of underground storage tanks (USTs) or above ground storage tanks (ASTs) at the project area.

5.1.8 Odors

During the site reconnaissance, Haro Environmental did not identify any strong, pungent, or noxious odors.

5.1.9 Pools of Liquid

During the site reconnaissance Haro Environmental did not identify any pools of liquid or standing surface water. In addition, sumps containing liquids such as hazardous substances or spent petroleum products were not observed.

5.1.10 Drums

During the site reconnaissance, Haro Environmental did not observe drums at the project area. A drum is a container (typically, but not necessarily, holding 55-gallons of liquid) that may be used to store hazardous substances or petroleum products.

5.1.11 Indications of Polychlorinated Biphenyls (PCBs)

During the site reconnaissance, Haro Environmental did not observe evidence of PCBs onsite. An electrical pole-mounted transformer was observed near the southwest corner of the project area.

5.1.12 Other Conditions of Concern

During the site reconnaissance, Haro Environmental did not note any of the following:

- Corrosion
- Clarifiers, and/or sumps
- Stressed vegetation
- Waste water
- Storm drains
- Ponds
- Septic tanks

The concrete used to construct the Alta Main Canal Bridge may contain asbestos and the paint used on the railing may contain lead.

6.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This Hazardous Waste ISA was performed by Haro Environmental, Inc. in conjunction with SWCA for the Federal Project BRLO-5942(247) Alta Main Bridge (project) in the County of Fresno, California. The area evaluated for this ISA, defined as the "project area," includes those areas, which will be disturbed during construction of the proposed project. Haro Environmental performed this ISA consistent with the Caltrans Environmental Guidance Handbook, Volume 1, Chapter 10 Hazardous Materials, Hazardous Waste, and Contamination, Initial Site Assessment (Caltrans, 2014), and the ASTM Practice E-1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. Exceptions to, or deletions from, this practice are described in this report.

Based on the data gathered and reviewed during this ISA, Haro Environmental did not identify RECs that have impacted, or pose a significant environmental threat to the project area with the exception of the following:

- The concrete used to construct Alta Main Canal Bridge may contain asbestos.
- The paint used on the railing may contain lead.
- The pole-mounted transformer may contain PCBs.

Based on the findings of this ISA, Haro Environmental provides the following recommendations:

- An asbestos survey should be performed to determine whether or not the concrete will require special handling and disposal.
- A lead-based paint survey should be performed to determine whether or not the railing paint contains elevated concentrations of lead which could require special handling and disposal.
- The electrical company responsible for the electrical transformer should be contacted to determine if the transformer contains PCBs, and if so, the transformer should be properly disposed of in accordance with all applicable rules and regulations.

Haro Environmental provides the following general recommendations:

- As for all projects proposing excavation or grading, the potential exists for unknown hazardous contamination to be encountered during the project construction. Therefore, for any previously unknown hazardous waste/material encountered as part of construction of the proposed project, the procedures outlined in Appendix E (Caltrans Unknown Hazards Procedures) shall be followed (Caltrans, 2002).

Based on the information gathered and reviewed during preparation of this ISA, the potential appears low for hazardous materials to be encountered during the project, and as such, the potential impact to the overall project scope, cost, and schedule from hazardous materials is expected to be low.

Original Project Routing

7.0 STANDARD OF CARE

The findings and conclusions contained in this ISA are based upon professional opinions with regard to the subject matter. These conclusions have been made in accordance with currently accepted industry standards and practices applicable to this location and are subject to the following inherent limitations:

Accuracy of Information. Certain information utilized by Haro Environmental in this assessment has been obtained, reviewed, and evaluated from various sources believed to be reliable. Although Haro Environmental's conclusions, opinions, and recommendations are based, in part, on such information, Haro Environmental's services did not include the verification of the information's accuracy or authenticity. Should such information prove to be inaccurate or unreliable, Haro Environmental reserves the right to amend or revise its conclusions, opinions and/or recommendations.

Reconnaissance. Haro Environmental performed a reconnaissance of the project area that is the subject of this assessment to document current conditions. No known areas were inaccessible at the time of our reconnaissance.

Limitations. Haro Environmental does not guarantee that the project area is free of hazardous or potentially hazardous materials or conditions, or that latent or undiscovered conditions will not become evident in the future. This assessment has been prepared in accordance with currently accepted industry standards, and no other warranties, representations, or certifications are made. Unless stated otherwise herein, this report is intended for and restricted to the sole use by SWCA and the County of Fresno. Any other use, interpretation, or reliance upon this assessment is at the sole risk of the user, and Haro Environmental shall have no liability for such unauthorized use, interpretation, or reliance.

Qualifications of Environmental Professionals. Mr. Elliot Haro representing Haro Environmental performed this ISA. Mr. Haro is an environmental consultant who has performed over 100 ISAs for a variety of clients. Mr. Timothy Nelligan reviewed this report. Mr. Nelligan is a California State Licensed Professional Engineer with over 15 years of site assessment experience. Messrs. Haro's and Nelligan's resumes are provided in Appendix F.

Reliance. This ISA report has been prepared for the exclusive use and reliance by SWCA and the County of Fresno. Use or reliance by any other party is prohibited without the written authorization of SWCA, the County of Fresno and Haro Environmental.

Scope Limitations and ASTM Exceptions. This ISA did not include any inquiries with respect to non-scope ASTM considerations including, but not limited to, asbestos-containing materials, radon gas, lead-based paint, lead in drinking water, mold, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality or electromagnetic fields, subsurface or other invasive assessments, business environmental risk evaluations or other services not particularly identified and discussed herein.

Reasonable attempts were made to obtain information within the scope and time constraints set forth by the client; however, in some instances, information requested may not be received by the issuance date of the report. In the event information obtained from sources mentioned previously alters the findings stated in this report, an addendum letter will be forwarded to SWCA and the County of Fresno under separate cover providing Haro Environmental's findings and conclusions. Additional ISA limitations include:

- Four data gaps since 1940 of greater than 5 years was identified in the historical records reviewed and included the years from 1943 to 1950, from 1954 to 1962, from 1970 to 1975, and from 1975 to 1980. These data gaps are considered insignificant because the project area use appears to be similar during the data gap.

This report represents our service to you as of the report date and constitutes our final document; its text may not be altered after final issuance. Findings in this report are based upon the current utilization of the project area, information derived from the most recent reconnaissance, and from other activities described herein; such information is subject to change. Certain indicators of the presence of hazardous substances or petroleum products may have been latent, inaccessible, unobservable, or not present during the reconnaissance and may subsequently become observable (such as after site renovation or development). Further, these services are not to be construed as legal interpretation or advice.

8.0 REFERNCES

California Department of Conservation, California Geological Survey (CGS). 2002. *California Geomorphic Provinces – Note 36.*

CGS. 1965. *Geologic Atlas of California – Fresno Sheet*.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR). 2003. *ftp://ftp.consrv.ca.gov/pub/oil/maps/dist1/126/Map126.pdf*.

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Environmental Data Resources (EDR). October 6, 2015. EDR Historical Topographic Map Report, Alta Canal Bridge, 400 N Frankwood Ave, Sanger, CA 93657.

EDR. October 9, 2015. The EDR Aerial Photo Decade Package, Alta Canal Bridge, 400 N Frankwood Ave, Sanger, CA 93657.

EDR. October 6, 2015. The EDR Sanborn® Map Report, Alta Canal Bridge, 400 N Frankwood Ave, Sanger, CA 93657.

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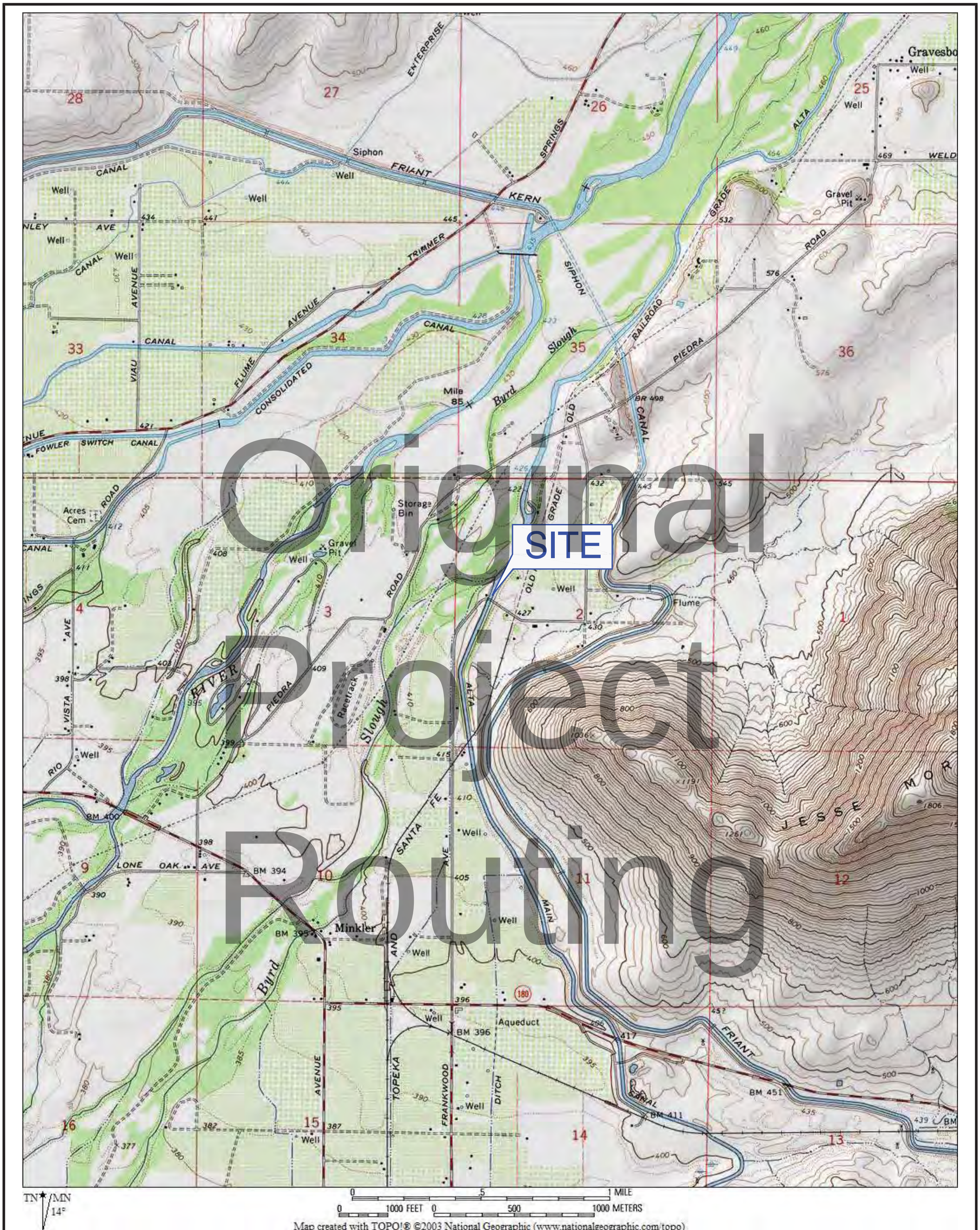
Preliminary Environmental Study (PES). September 30, 2015. The County of Fresno by Erin Haagenson.

Pipeline and Hazardous Materials Safety Administration (PHMSA). 2015. National Pipeline Mapping System website: https://www.npms.phmsa.dot.gov/PublicViewer/

United States Fish and Wildlife Service (USFWS). 2014. National Wetlands Inventory Map. Online at http://www.fws.gov/wetlands/Data/Mapper.html.

Original Project Routing

Original
Project
Routing



HARO ENVIRONMENTAL
1065 Higuera St. Suite 301
San Luis Obispo, CA 93401
Phone: 805 204 4483
Fax: 805 831 6081

FILE NAME: SITE VICINITY MAP.DWG

SITE VICINITY MAP

Alta Main Canal Bridge
Fresno County, California

PLATE: 1
SHEET: of
REVISION NO: 0
DATE: 10/15

HARO ENVIRONMENTAL

1065 Higuera Street, Suite 301
San Luis Obispo, California 93401
Phone: 805.204.4483
Fax: 805.832.6081

SALU MAP.dwg

SITE AND ADJACENT LAND USE MAP

Alta Main Canal Bridge
Fresno County, California

PLATE: 2

REVISION NO:

DATE: 11/15

APPENDIX A

REGULATORY RECORDS DOCUMENTATION

Original Project Routing

Alta Canal Bridge
400 N Frankwood Ave
Sanger, CA 93657

Inquiry Number: 4430670.3
October 06, 2015

Certified Sanborn® Map Report

EDR®

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

10/06/15

Site Name:
Alta Canal Bridge
400 N Frankwood Ave
Sanger, CA 93657

EDR Inquiry # 4430670.3

Client Name:
Haro Environmental, Inc.
PO Box 7002
Los Osos, CA 93412

Contact: Elliot Haro

EDR®

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Haro Environmental, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Site Name:	Alta Canal Bridge
Address:	400 N Frankwood Ave
City, State, Zip:	Sanger, CA 93657
Cross Street:	
P.O. #	NA
Project:	NA
Certification #	C39F-41E7-982F

Sanborn® Library search results
Certification # C39F-41E7-982F

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Limited Permission To Make Copies

Haro Environmental, Inc. (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Alta Canal Bridge
400 N Frankwood Ave
Sanger, CA 93657

Inquiry Number: 4430670.4
October 06, 2015

Original Project Routing

EDR Historical Topographic Map Report

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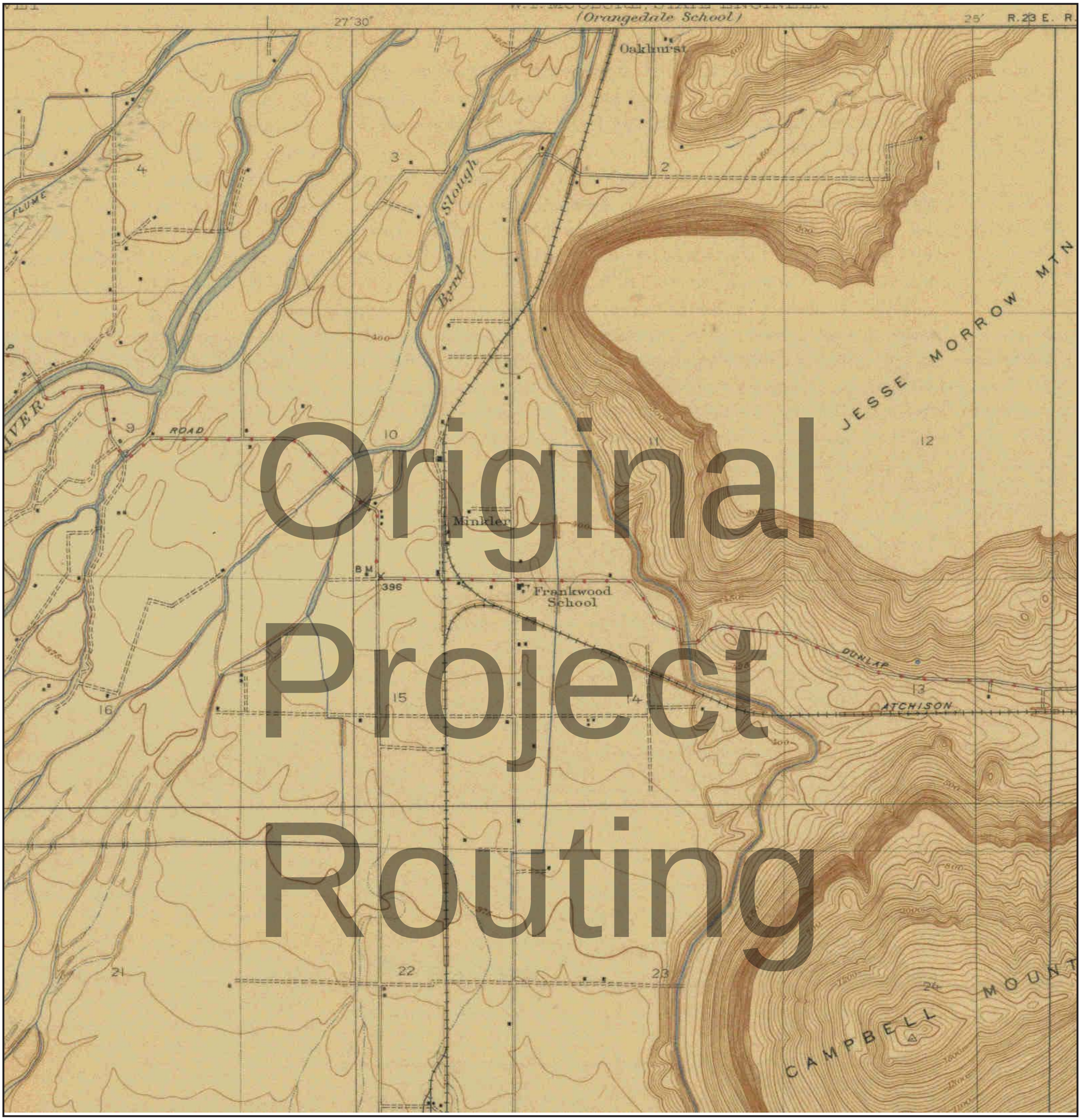
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

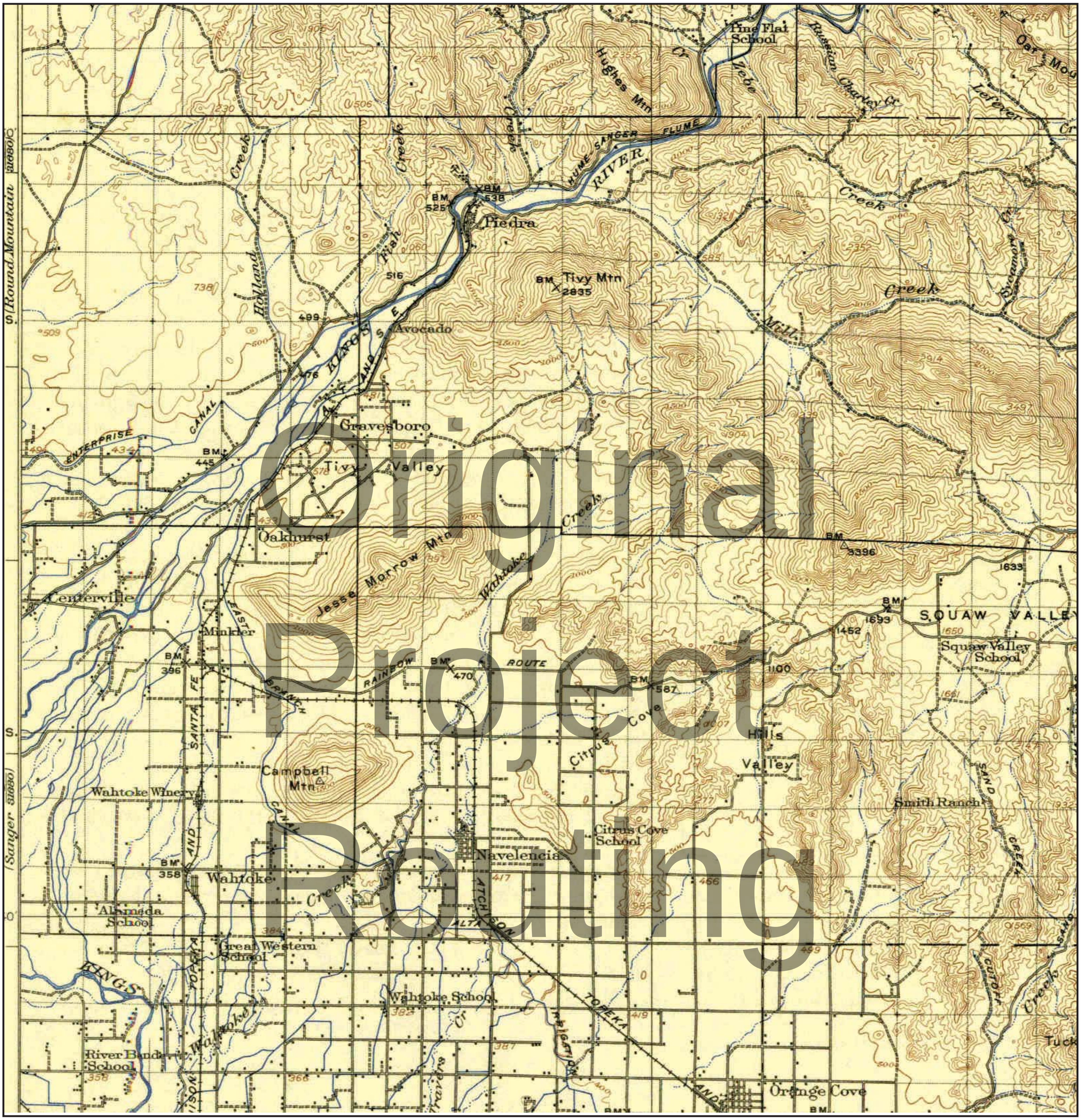
Historical Topographic Map



Unsurveyed Area on the Topographic Map

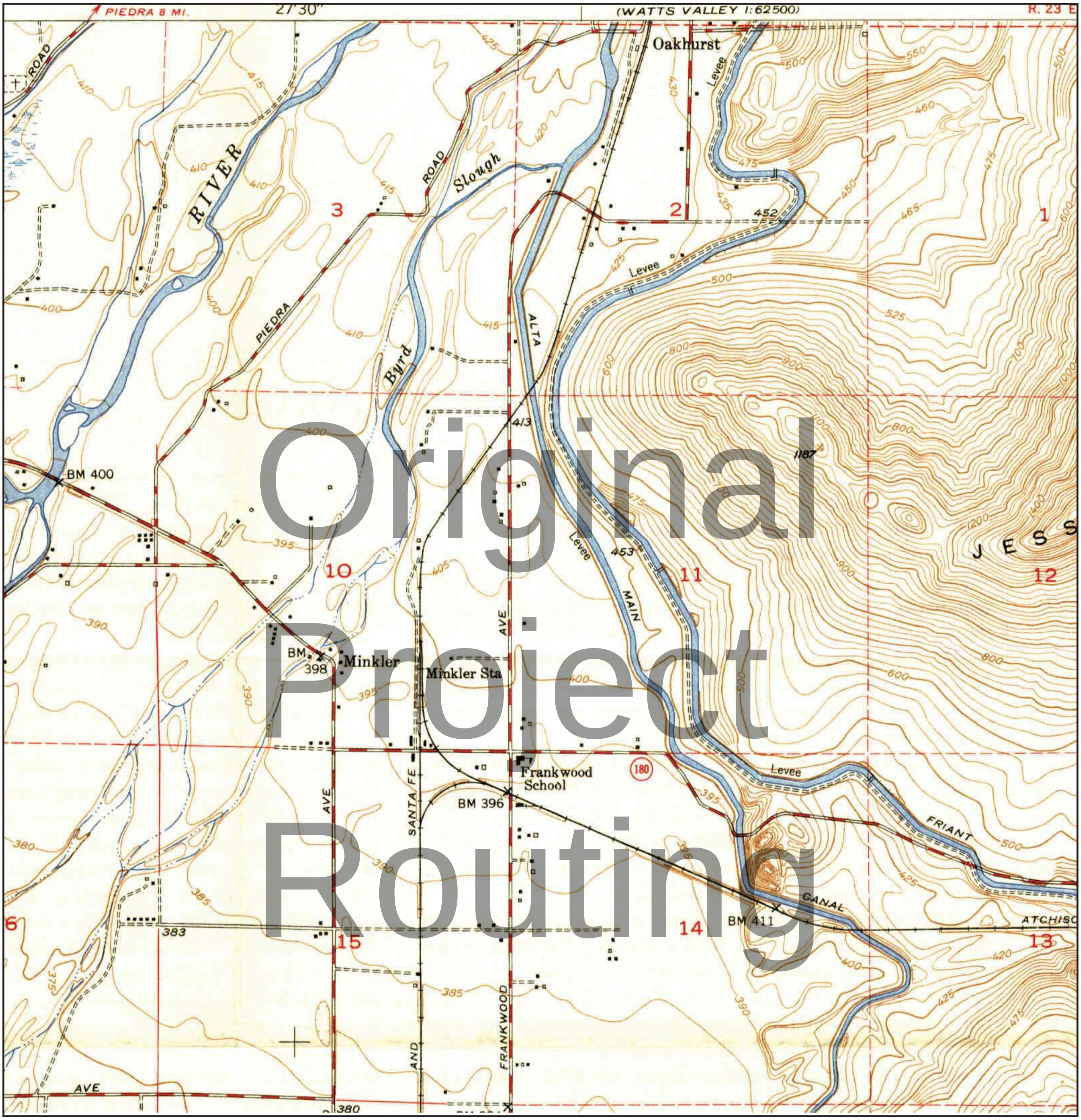
N	TARGET QUAD NAME: WAHTOKE MAP YEAR: 1923 SERIES: 7.5 SCALE: 1:31680	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

Historical Topographic Map



N ↑	TARGET QUAD NAME: DINUBA MAP YEAR: 1924 SERIES: 30 SCALE: 1:125000	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

Historical Topographic Map



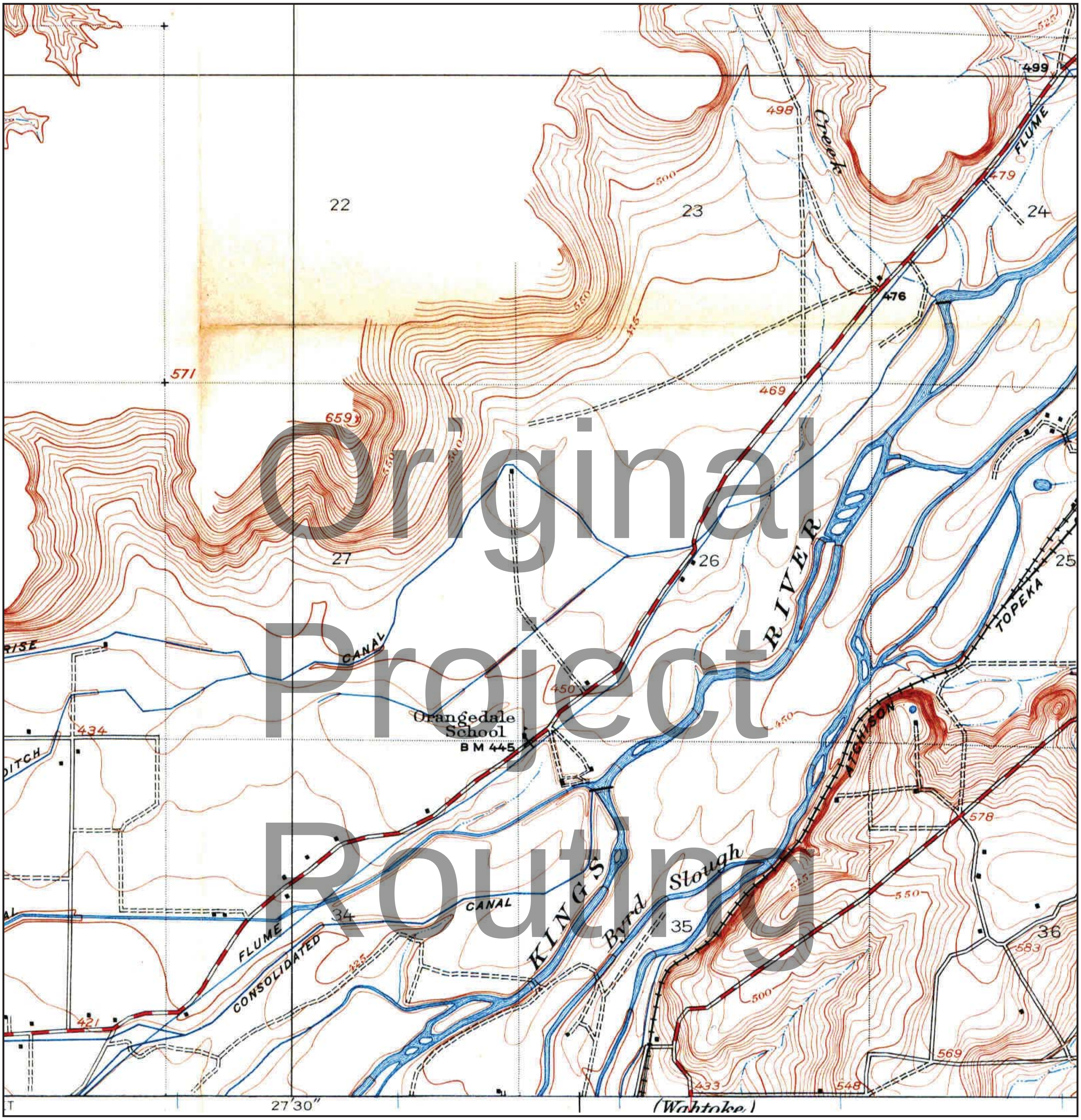
N ↑	TARGET QUAD NAME: WAHTOKE MAP YEAR: 1950 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

Historical Topographic Map

N

TARGET QUAD		SITE NAME:	Alta Canal Bridge	CLIENT:	Haro Environmental, Inc.
NAME:	WAHTOKE	ADDRESS:	400 N Frankwood Ave	CONTACT:	Elliot Haro
MAP YEAR:	1966		Sanger, CA 93657	INQUIRY#:	4430670.4
		LAT/LONG:	36.7429 / -119.4458	RESEARCH DATE:	10/06/2015
SERIES:	7.5				
SCALE:	1:24000				

Historical Topographic Map



N ↑	ADJOINING QUAD NAME: ORANGEDALE SCHOOL MAP YEAR: 1920 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

Historical Topographic Map

N	ADJOINING QUAD NAME: WATTS VALLEY MAP YEAR: 1943 SERIES: 15 SCALE: 1:62500	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

Historical Topographic Map

N ↑	ADJOINING QUAD		SITE NAME:	Alta Canal Bridge	CLIENT:	Haro Environmental, Inc.
	NAME:	WATTS VALLEY	ADDRESS:	400 N Frankwood Ave	CONTACT:	Elliot Haro
	MAP YEAR:	1962		Sanger, CA 93657	INQUIRY#:	4430670.4
	REVISED FROM :	1942	LAT/LONG:	36.7429 / -119.4458	RESEARCH DATE:	10/06/2015
	SERIES:	15				
	SCALE:	1:62500				

Historical Topographic Map

N ↑	ADJOINING QUAD NAME: PIEDRA MAP YEAR: 1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

Alta Canal Bridge
400 N Frankwood Ave
Sanger, CA 93657

Inquiry Number: 4430670.9
October 09, 2015

The EDR Aerial Photo Decade Package

EDR®

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Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

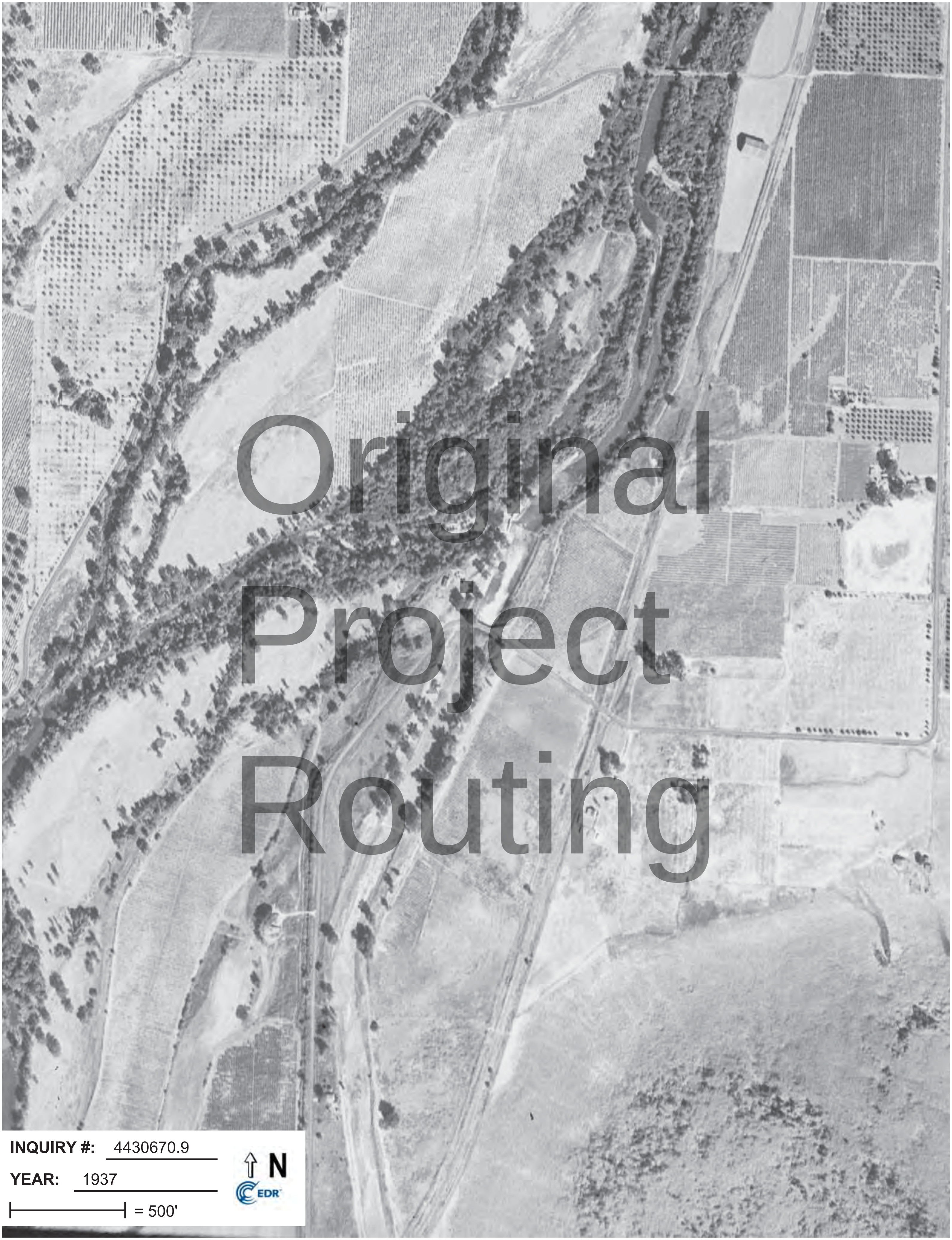
When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:
Aerial Photography October 09, 2015

Target Property:
400 N Frankwood Ave
Sanger, CA 93657

Year	***Scale***	***Details***	***Source***
1937	Aerial Photograph. Scale: 1"=500'	Flight Year: 1937	USGS
1950	Aerial Photograph. Scale: 1"=500'	Flight Year: 1950	USGS
1954	Aerial Photograph. Scale: 1"=500'	Flight Year: 1954	USGS
1962	Aerial Photograph. Scale: 1"=500'	Flight Year: 1962	USGS
1970	Aerial Photograph. Scale: 1"=500'	Flight Year: 1970	Cartwright
1984	Aerial Photograph. Scale: 1"=500'	Flight Year: 1984	USGS
1987	Aerial Photograph. Scale: 1"=500'	Flight Year: 1987	USGS
1998	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1998	USGS/DOQQ
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	USDA/NAIP
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	USDA/NAIP


Original
Project
Routing
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YEAR: 1937
= 500'
N
EDR

INQUIRY #: 4430670.9

YEAR: 1950

= 500'

N

EDR

INQUIRY #: 4430670.9

YEAR: 1954

= 500'

N

EDR


Original
Project
Routing
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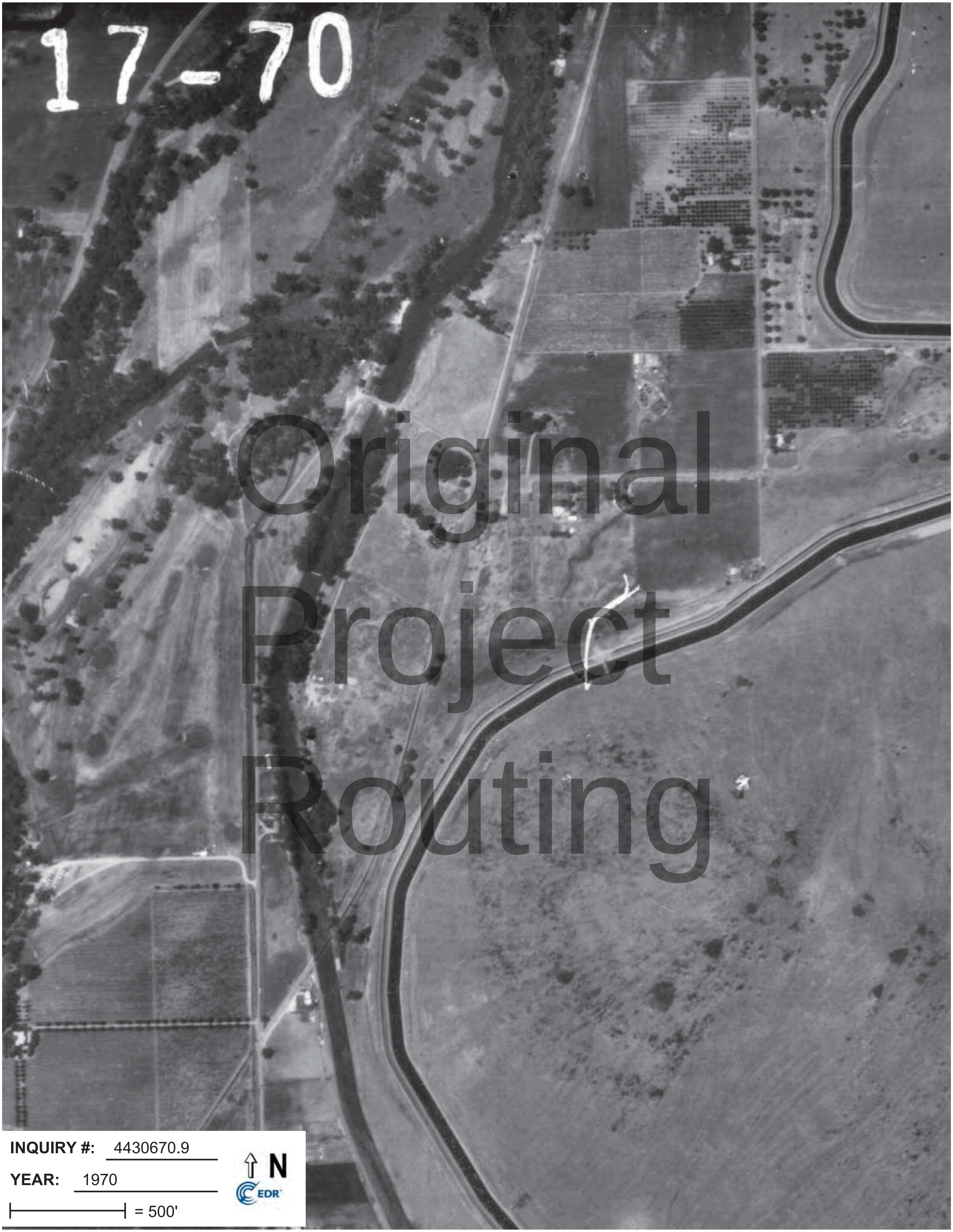
YEAR: 1962
= 500'
N
EDR



INQUIRY #: 4430670.9

YEAR: 1970

N

EDR

= 500'

Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 1984
= 500'
N
EDR


INQUIRY #: 4430670.9
YEAR: 1987
= 500'
N
EDR

INQUIRY #: 4430670.9

YEAR: 1998

= 500'

N

EDR


INQUIRY #: 4430670.9
YEAR: 2005
= 500'
N
EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 2006
N
EDR
= 500'


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 2009
= 500'
N
EDR

INQUIRY #: 4430670.9

YEAR: 2010

= 500'

N


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 2012
= 500'
N
EDR

Alta Canal Bridge
400 N Frankwood Ave
Sanger, CA 93657

Inquiry Number: 4430670.2s
October 06, 2015

The EDR Radius Map™ Report with GeoCheck®

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TABLE OF CONTENTS

GEOCHECK ADDENDUM

Thank you for your business.
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with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

400 N FRANKWOOD AVE
SANGER, CA 93657

COORDINATES

Latitude (North):	36.7429000 - 36˚ 44' 34.44''
Longitude (West):	119.4458000 - 119˚ 26' 44.88''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	281627.5
UTM Y (Meters):	4068938.8
Elevation:	423 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5619128 WAHTOKE, CA
Version Date:	2012
North Map:	5603200 PIEDRA, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20120630
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
400 N FRANKWOOD AVE
SANGER, CA 93657

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	GEORGE SANI	308 W. FRANKWOOD AVE	HIST UST	Higher	80, 0.015, SE
A2	GEORGE SANI	308 W FRANKWOOD AVE	SWEEPS UST	Higher	80, 0.015, SE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
NPL LIENS	Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL	National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY	Federal Facility Site Information listing
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System

Federal CERCLIS NFRAP site List

CERC-NFRAP	CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS	Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF	RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG	RCRA - Large Quantity Generators
RCRA-SQG	RCRA - Small Quantity Generators
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS	Land Use Control Information System
US ENG CONTROLS	Engineering Controls Sites List

EXECUTIVE SUMMARY

US INST CONTROL - Sites with Institutional Controls

Federal ERNS list

ERNS - Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE - State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR - EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF - Solid Waste Information System

State and tribal leaking storage tank lists

LUST - Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST - Leaking Underground Storage Tanks on Indian Land
SLIC - Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST - Underground Storage Tank Listing
UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS - Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands
ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	Clandestine Drug Labs

Local Lists of Registered Storage Tanks

CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data

EXECUTIVE SUMMARY

CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
FINDS	Facility Index System/Facility Registry System
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR US Hist Auto Stat	EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
GEORGE SANI Status: A Tank Status: A Comp Number: 63333	308 W FRANKWOOD AVE	SE 0 - 1/8 (0.015 mi.)	A2	8

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.25 miles of the target property.

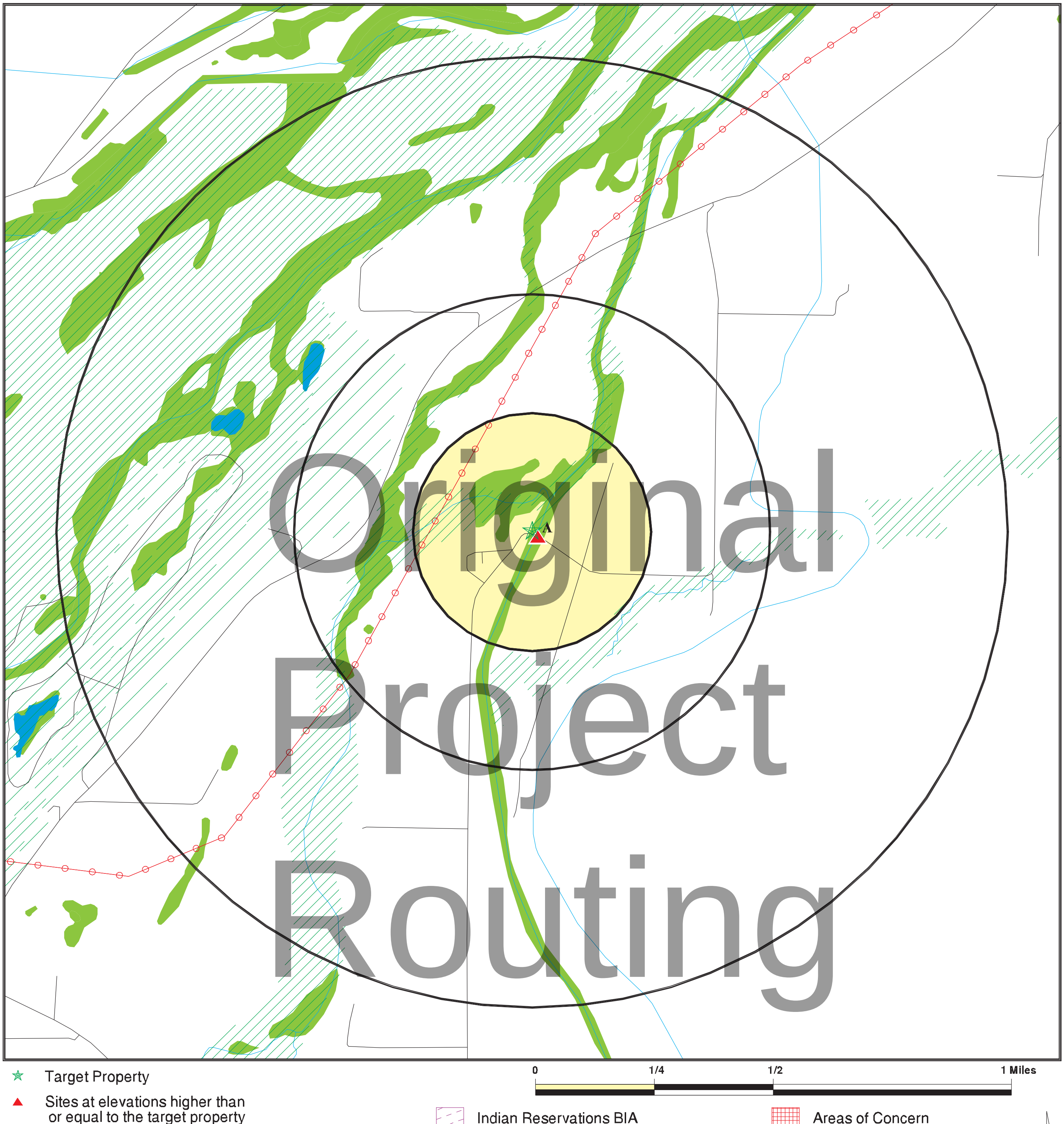
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
GEORGE SANI Facility Id: 00000063333	308 W. FRANKWOOD AVE	SE 0 - 1/8 (0.015 mi.)	A1	8

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 4430670.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
National Priority List Sites
Dept. Defense Sites

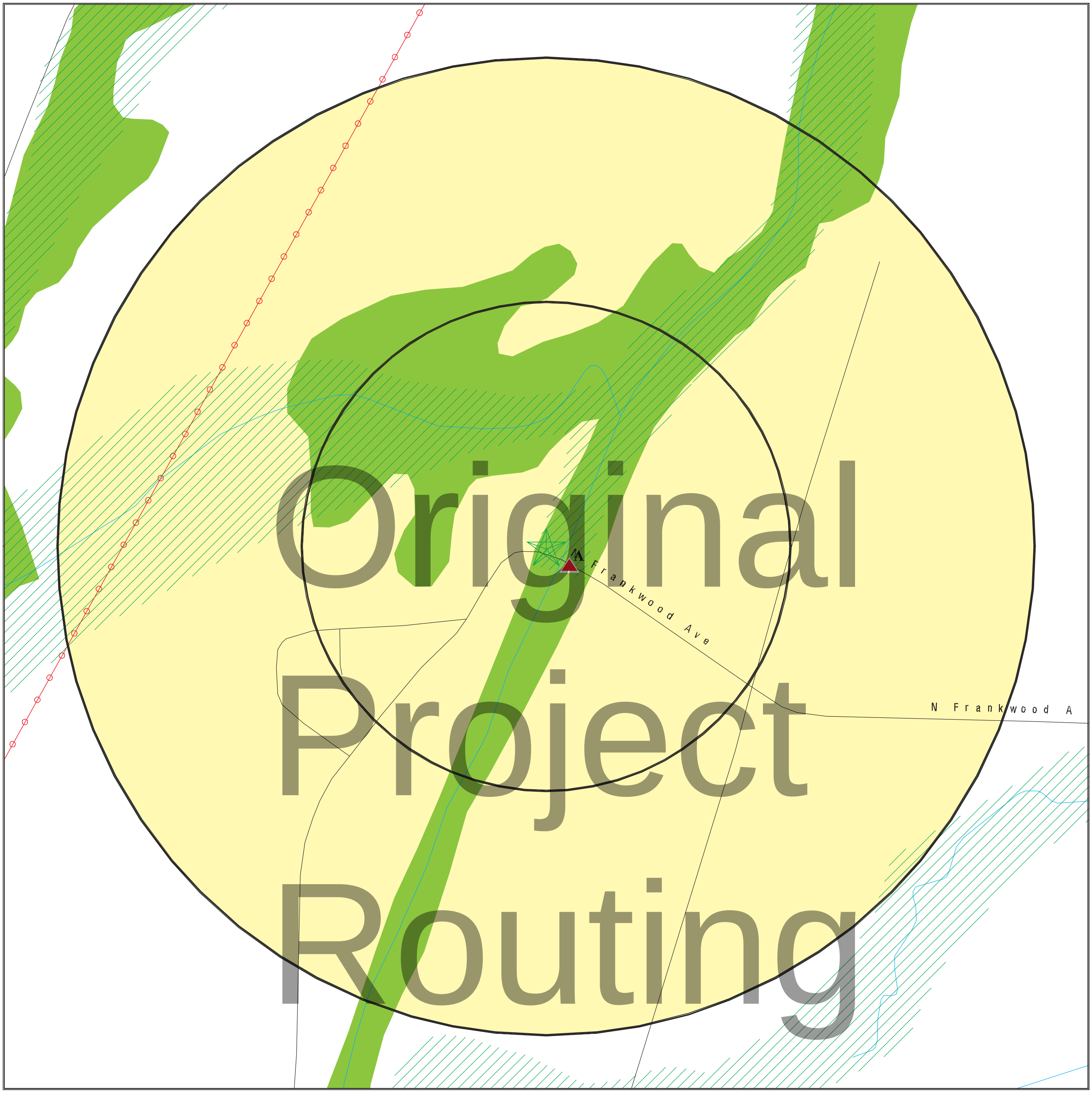
Indian Reservations BIA
Power transmission lines
100-year flood zone
500-year flood zone
National Wetland Inventory

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Alta Canal Bridge	CLIENT: Haro Environmental, Inc.
ADDRESS: 400 N Frankwood Ave	CONTACT: Elliot Haro
Sanger CA 93657	INQUIRY #: 4430670.2s
LAT/LONG: 36.7429 / 119.4458	DATE: October 06, 2015 4:21 pm

DETAIL MAP - 4430670.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

Indian Reservations BIA
Power transmission lines
100-year flood zone
500-year flood zone
National Wetland Inventory

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger CA 93657 LAT/LONG: 36.7429 / 119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY #: 4430670.2s DATE: October 06, 2015 4:23 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
CERCLIS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		1	0	NR	NR	NR	1
HIST UST	0.250		1	0	NR	NR	NR	1
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	TP		NR	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	2	0	0	0	0	2

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

A1 **GEORGE SANI** **HIST UST** **U001590518**
SE **308 W. FRANKWOOD AVE** **N/A**
< 1/8 **SAME, CA 93657**
0.015 mi.
80 ft. **Site 1 of 2 in cluster A**

Relative: Higher

Actual: 423 ft.

HIST UST:

Region:	STATE
Facility ID:	00000063333
Facility Type:	Other
Other Type:	FARM
Contact Name:	Not reported
Telephone:	2097872132
Owner Name:	GEORGE SANI
Owner Address:	308 W. FRANKWOOD AVE
Owner City,St,Zip:	SANGER, CA 93657
Total Tanks:	0002
Tank Num:	001
Container Num:	1
Year Installed:	1959
Tank Capacity:	00000350
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	1/8
Leak Detection:	Visual, None
Tank Num:	002
Container Num:	2
Year Installed:	1976
Tank Capacity:	00000270
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	3/16
Leak Detection:	Visual, None

A2 **GEORGE SANI** **SWEEPS UST** **S106926672**
SE **308 W FRANKWOOD AVE** **N/A**
< 1/8 **SANGER, CA 93657**
0.015 mi.
80 ft. **Site 2 of 2 in cluster A**

Relative: Higher

Actual: 423 ft.

SWEEPS UST:

Status:	Active
Comp Number:	63333
Number:	9
Board Of Equalization:	Not reported
Referral Date:	02-09-93
Action Date:	02-09-93
Created Date:	02-29-88
Owner Tank Id:	1
SWRCB Tank Id:	10-000-063333-000001
Tank Status:	A
Capacity:	350
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	LEADED
Number Of Tanks:	2

GEORGE SANI (Continued) **S106926672**

Status:	Active
Comp Number:	63333
Number:	9
Board Of Equalization:	Not reported
Referral Date:	02-09-93
Action Date:	02-09-93
Created Date:	02-29-88
Owner Tank Id:	2
SWRCB Tank Id:	10-000-063333-000002
Tank Status:	A
Capacity:	270
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
SINGER	S107737800		PIEDRA AVE, 1/2 MI W OF FRANKW	93657	CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 75

Source: EPA
Telephone: N/A
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 75

Source: EPA
Telephone: N/A
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 75

Source: EPA
Telephone: N/A
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/10/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Varies

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 11/11/2013
Date Made Active in Reports: 02/13/2014
Number of Days to Update: 94

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 11/11/2013
Date Made Active in Reports: 02/13/2014
Number of Days to Update: 94

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/09/2015	Source: EPA
Date Data Arrived at EDR: 06/26/2015	Telephone: 800-424-9346
Date Made Active in Reports: 09/16/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 82	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/09/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/26/2015	Telephone: (415) 495-8895
Date Made Active in Reports: 09/16/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 82	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/26/2015	Telephone: (415) 495-8895
Date Made Active in Reports: 09/16/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 82	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/09/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/26/2015	Telephone: (415) 495-8895
Date Made Active in Reports: 09/16/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 82	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/26/2015	Telephone: (415) 495-8895
Date Made Active in Reports: 09/16/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 82	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/28/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 13

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 16

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/18/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 03/17/2015
Date Data Arrived at EDR: 05/01/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 52

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 24

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 04/30/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 53

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 29

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/08/2015
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/05/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 48

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 04/28/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006	Source: California Regional Water Quality Control Board Central Coast Region (3)
Date Data Arrived at EDR: 05/18/2006	Telephone: 805-549-3147
Date Made Active in Reports: 06/15/2006	Last EDR Contact: 07/18/2011
Number of Days to Update: 28	Next Scheduled EDR Contact: 10/31/2011
	Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004	Source: Region Water Quality Control Board Los Angeles Region (4)
Date Data Arrived at EDR: 11/18/2004	Telephone: 213-576-6600
Date Made Active in Reports: 01/04/2005	Last EDR Contact: 07/01/2011
Number of Days to Update: 47	Next Scheduled EDR Contact: 10/17/2011
	Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005	Source: Regional Water Quality Control Board Central Valley Region (5)
Date Data Arrived at EDR: 04/05/2005	Telephone: 916-464-3291
Date Made Active in Reports: 04/21/2005	Last EDR Contact: 09/12/2011
Number of Days to Update: 16	Next Scheduled EDR Contact: 12/26/2011
	Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005	Source: Regional Water Quality Control Board, Victorville Branch
Date Data Arrived at EDR: 05/25/2005	Telephone: 619-241-6583
Date Made Active in Reports: 06/16/2005	Last EDR Contact: 08/15/2011
Number of Days to Update: 22	Next Scheduled EDR Contact: 11/28/2011
	Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004	Source: California Regional Water Quality Control Board, Lahontan Region
Date Data Arrived at EDR: 09/07/2004	Telephone: 530-542-5574
Date Made Active in Reports: 10/12/2004	Last EDR Contact: 08/15/2011
Number of Days to Update: 35	Next Scheduled EDR Contact: 11/28/2011
	Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004	Source: California Regional Quality Control Board, Colorado River Basin Region
Date Data Arrived at EDR: 11/29/2004	Telephone: 760-346-7491
Date Made Active in Reports: 01/04/2005	Last EDR Contact: 08/01/2011
Number of Days to Update: 36	Next Scheduled EDR Contact: 11/14/2011
	Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/10/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 03/17/2015
Date Data Arrived at EDR: 05/01/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 52

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/05/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 48

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/14/2014
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/06/2015
Date Data Arrived at EDR: 05/19/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 34

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 04/30/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 53

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/26/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 27

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/29/2014
Date Data Arrived at EDR: 10/01/2014
Date Made Active in Reports: 11/06/2014
Number of Days to Update: 36

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/08/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/10/2015
Number of Days to Update: 31

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/22/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/24/2015	Telephone: 202-566-2777
Date Made Active in Reports: 09/02/2015	Last EDR Contact: 06/24/2015
Number of Days to Update: 70	Next Scheduled EDR Contact: 10/05/2015
	Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000	Source: State Water Resources Control Board
Date Data Arrived at EDR: 04/10/2000	Telephone: 916-227-4448
Date Made Active in Reports: 05/10/2000	Last EDR Contact: 08/04/2015
Number of Days to Update: 30	Next Scheduled EDR Contact: 11/23/2015
	Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 06/15/2015	Source: Department of Conservation
Date Data Arrived at EDR: 06/17/2015	Telephone: 916-323-3836
Date Made Active in Reports: 08/03/2015	Last EDR Contact: 06/17/2015
Number of Days to Update: 47	Next Scheduled EDR Contact: 09/28/2015
	Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 05/26/2015	Source: Integrated Waste Management Board
Date Data Arrived at EDR: 05/28/2015	Telephone: 916-341-6422
Date Made Active in Reports: 06/05/2015	Last EDR Contact: 08/12/2015
Number of Days to Update: 8	Next Scheduled EDR Contact: 11/30/2015
	Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/03/2007	Telephone: 703-308-8245
Date Made Active in Reports: 01/24/2008	Last EDR Contact: 05/01/2015
Number of Days to Update: 52	Next Scheduled EDR Contact: 08/17/2015
	Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009	Source: EPA, Region 9
Date Data Arrived at EDR: 05/07/2009	Telephone: 415-947-4219
Date Made Active in Reports: 09/21/2009	Last EDR Contact: 07/22/2015
Number of Days to Update: 137	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/01/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/18/2015
Number of Days to Update: 8

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/07/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 05/15/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994	Source: California Environmental Protection Agency
Date Data Arrived at EDR: 09/05/1995	Telephone: 916-341-5851
Date Made Active in Reports: 09/29/1995	Last EDR Contact: 12/28/1998
Number of Days to Update: 24	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/11/2015	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 06/16/2015	Telephone: 916-323-3400
Date Made Active in Reports: 07/14/2015	Last EDR Contact: 06/05/2015
Number of Days to Update: 28	Next Scheduled EDR Contact: 09/21/2015
	Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/18/2014	Telephone: 202-564-6023
Date Made Active in Reports: 04/24/2014	Last EDR Contact: 07/22/2015
Number of Days to Update: 37	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/08/2015	Source: DTSC and SWRCB
Date Data Arrived at EDR: 06/09/2015	Telephone: 916-323-3400
Date Made Active in Reports: 07/14/2015	Last EDR Contact: 06/09/2015
Number of Days to Update: 35	Next Scheduled EDR Contact: 09/21/2015
	Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/24/2015	Source: U.S. Department of Transportation
Date Data Arrived at EDR: 06/26/2015	Telephone: 202-366-4555
Date Made Active in Reports: 09/02/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 68	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 07/28/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 6

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/28/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 06/06/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 09/18/2014
Number of Days to Update: 8

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 07/08/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/21/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/01/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/14/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/25/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 110

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 01/29/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/12/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2015
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/14/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 33

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/17/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/06/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/20/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/20/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/31/2015
Date Data Arrived at EDR: 04/09/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 63

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 06/04/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/12/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/07/2015
Date Data Arrived at EDR: 07/09/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 46

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/28/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 11/25/2014
Date Data Arrived at EDR: 11/26/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/07/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 07/22/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 40

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 07/22/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 40

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/22/2015
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/14/2015
Date Data Arrived at EDR: 06/03/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 91

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/01/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 01/18/2015
Date Data Arrived at EDR: 02/27/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 26

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/24/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 18

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/10/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/03/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 03/25/2014
Date Made Active in Reports: 04/28/2014
Number of Days to Update: 34

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/25/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/06/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/24/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 16

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/14/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/19/2014
Number of Days to Update: 35

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/17/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Annually

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/26/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/07/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 35

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 06/09/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/11/2015
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/18/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/07/2015
Date Data Arrived at EDR: 06/10/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 34

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 08/04/2015
Date Data Arrived at EDR: 08/25/2015
Date Made Active in Reports: 10/05/2015
Number of Days to Update: 41

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 10/05/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 11/19/2014
Date Data Arrived at EDR: 12/15/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 45

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/19/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing

Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/20/2007	Telephone: 916-341-5227
Date Made Active in Reports: 06/29/2007	Last EDR Contact: 05/20/2015
Number of Days to Update: 9	Next Scheduled EDR Contact: 09/07/2015
	Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009	Source: Los Angeles Water Quality Control Board
Date Data Arrived at EDR: 07/21/2009	Telephone: 213-576-6726
Date Made Active in Reports: 08/03/2009	Last EDR Contact: 06/22/2015
Number of Days to Update: 13	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/05/2015
Number of Days to Update: 12

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 08/10/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/22/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 12

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List
Cupa Facility List

Date of Government Version: 06/05/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/10/2015
Number of Days to Update: 31

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing
Cupa facility list.

Date of Government Version: 11/20/2014
Date Data Arrived at EDR: 11/24/2014
Date Made Active in Reports: 01/07/2015
Number of Days to Update: 44

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/11/2014
Date Data Arrived at EDR: 06/13/2014
Date Made Active in Reports: 07/07/2014
Number of Days to Update: 24

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 08/10/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/25/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 37

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 08/03/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 05/20/2015
Date Data Arrived at EDR: 08/03/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 31

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/26/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/05/2015
Number of Days to Update: 7

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 08/03/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 20

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/04/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 27

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 08/11/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 08/07/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/21/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 05/19/2015
Date Data Arrived at EDR: 06/18/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 34

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/07/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 34

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 08/11/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/20/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/24/2014
Date Data Arrived at EDR: 01/30/2015
Date Made Active in Reports: 03/04/2015
Number of Days to Update: 33

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/10/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/20/2015
Date Data Arrived at EDR: 07/21/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 13

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/21/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2015
Date Data Arrived at EDR: 07/27/2015
Date Made Active in Reports: 08/10/2015
Number of Days to Update: 14

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/20/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/15/2015
Date Data Arrived at EDR: 01/29/2015
Date Made Active in Reports: 03/10/2015
Number of Days to Update: 40

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/15/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 04/02/2015
Date Made Active in Reports: 04/13/2015
Number of Days to Update: 11

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/17/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/03/2015
Date Data Arrived at EDR: 05/26/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 16

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/27/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/03/2015
Date Data Arrived at EDR: 06/04/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 32

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 06/04/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/28/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/15/2015
Number of Days to Update: 17

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/22/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 10/08/2014
Date Data Arrived at EDR: 10/22/2014
Date Made Active in Reports: 12/15/2014
Number of Days to Update: 54

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 05/22/2015
Date Data Arrived at EDR: 05/26/2015
Date Made Active in Reports: 06/05/2015
Number of Days to Update: 10

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/22/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List

CUPA Facility List

Date of Government Version: 06/01/2015
Date Data Arrived at EDR: 06/03/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 33

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing

CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/30/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 07/16/2015
Number of Days to Update: 9

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 06/03/2015
Date Data Arrived at EDR: 06/04/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 48

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/10/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 24

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/06/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/10/2015
Date Made Active in Reports: 09/11/2015
Number of Days to Update: 32

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/06/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/11/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 23

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/11/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities

List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 07/01/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 08/05/2015
Number of Days to Update: 29

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites

Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 05/07/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 10

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/07/2015
Date Data Arrived at EDR: 07/27/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 7

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 06/30/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 7

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/10/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/23/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 23

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2014
Date Data Arrived at EDR: 11/21/2014
Date Made Active in Reports: 12/29/2014
Number of Days to Update: 38

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 06/03/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/06/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/06/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 10

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 34

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 07/20/2015
Date Data Arrived at EDR: 07/22/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 12

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/15/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 06/10/2015
Date Data Arrived at EDR: 06/16/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 28

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 06/29/2015
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/22/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 06/10/2015
Date Data Arrived at EDR: 06/16/2015
Date Made Active in Reports: 07/10/2015
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Annually

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/10/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/07/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List

CUPA facility listing.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List

Cupa Facility List.

Date of Government Version: 06/12/2015
Date Data Arrived at EDR: 06/16/2015
Date Made Active in Reports: 07/10/2015
Number of Days to Update: 24

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/19/2015
Date Data Arrived at EDR: 06/24/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 20

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/19/2015
Date Data Arrived at EDR: 06/30/2015
Date Made Active in Reports: 07/07/2015
Number of Days to Update: 7

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 18

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/01/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 7

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 06/05/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 27

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Semi-Annually

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/28/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 6

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/24/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 08/17/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 17

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 36

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/27/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/27/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 19

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 07/08/2015
Date Data Arrived at EDR: 07/13/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 9

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/04/2015	Source: Yuba County Environmental Health Department
Date Data Arrived at EDR: 08/07/2015	Telephone: 530-749-7523
Date Made Active in Reports: 09/03/2015	Last EDR Contact: 07/31/2015
Number of Days to Update: 27	Next Scheduled EDR Contact: 11/16/2015
	Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013	Source: Department of Energy & Environmental Protection
Date Data Arrived at EDR: 08/19/2013	Telephone: 860-424-3375
Date Made Active in Reports: 10/03/2013	Last EDR Contact: 05/18/2015
Number of Days to Update: 45	Next Scheduled EDR Contact: 08/31/2015
	Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2013	Source: Department of Environmental Protection
Date Data Arrived at EDR: 07/17/2015	Telephone: N/A
Date Made Active in Reports: 08/12/2015	Last EDR Contact: 07/13/2015
Number of Days to Update: 26	Next Scheduled EDR Contact: 10/28/2015
	Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 08/01/2015	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 08/06/2015	Telephone: 518-402-8651
Date Made Active in Reports: 08/24/2015	Last EDR Contact: 08/06/2015
Number of Days to Update: 18	Next Scheduled EDR Contact: 11/16/2015
	Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2014	Source: Department of Environmental Protection
Date Data Arrived at EDR: 07/24/2015	Telephone: 717-783-8990
Date Made Active in Reports: 08/18/2015	Last EDR Contact: 07/20/2015
Number of Days to Update: 25	Next Scheduled EDR Contact: 11/02/2015
	Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013	Source: Department of Environmental Management
Date Data Arrived at EDR: 06/19/2015	Telephone: 401-222-2797
Date Made Active in Reports: 07/15/2015	Last EDR Contact: 05/26/2015
Number of Days to Update: 26	Next Scheduled EDR Contact: 09/07/2015
	Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 03/19/2015
Date Made Active in Reports: 04/07/2015
Number of Days to Update: 19

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/11/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Telephone: 281-546-1505
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: 800-823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

ALTA CANAL BRIDGE
400 N FRANKWOOD AVE
SANGER, CA 93657

TARGET PROPERTY COORDINATES

Latitude (North):	36.7429 - 36˚ 44’ 34.44’’
Longitude (West):	119.4458 - 119˚ 26’ 44.88’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	281627.5
UTM Y (Meters):	4068938.8
Elevation:	423 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5619128 WAHTOKE, CA
Version Date:	2012
North Map:	5603200 PIEDRA, CA
Version Date:	2012

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

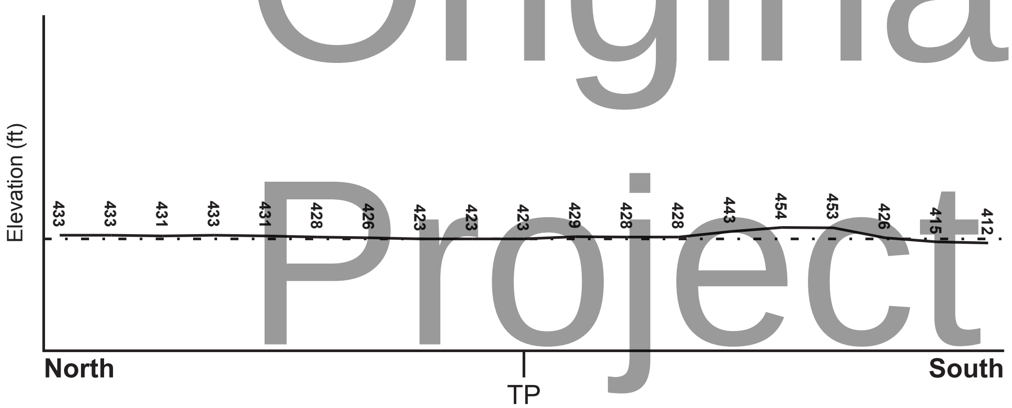
TOPOGRAPHIC INFORMATION

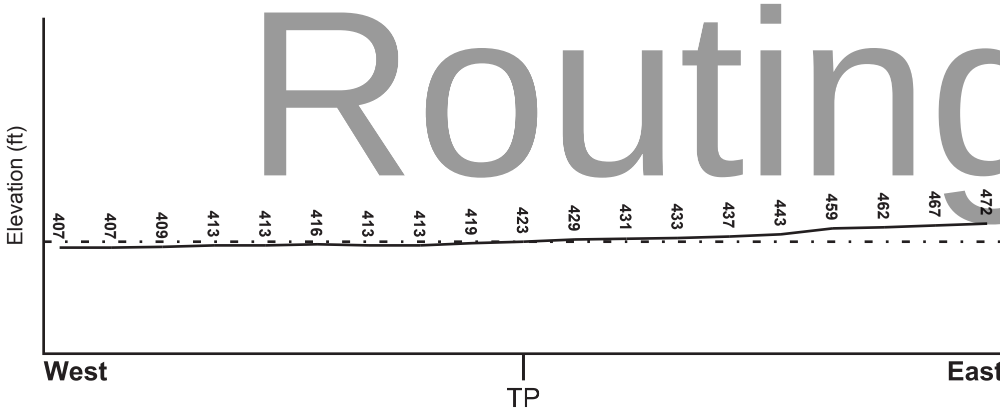
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General West

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 423 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
FRESNO, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06019C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
WAHTOKE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

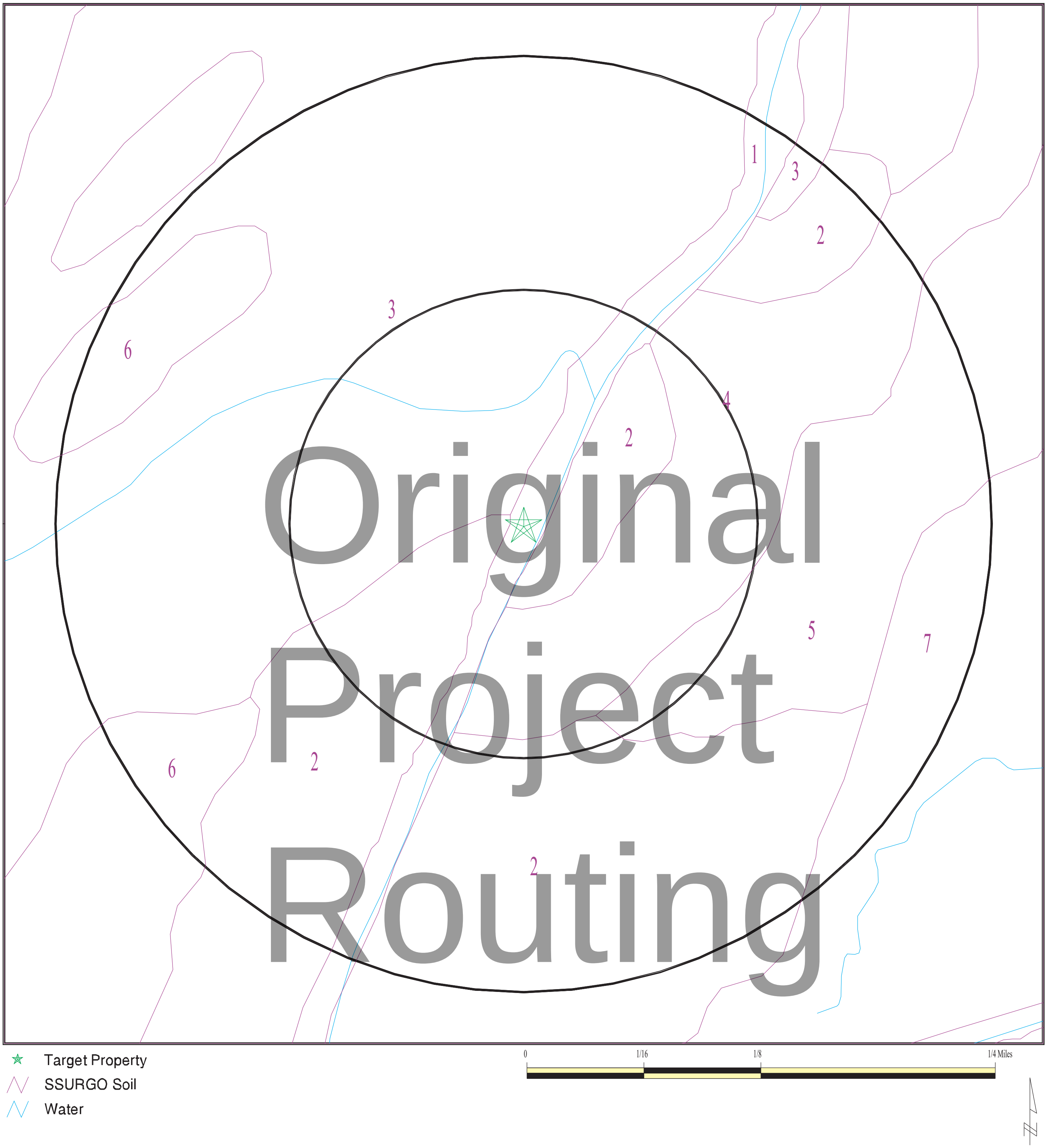
Era:	Mesozoic
System:	Cretaceous
Series:	Lower Cretaceous granitic rocks
Code:	Kg1 *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 4430670.2s



SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger CA 93657 LAT/LONG: 36.7429 / 119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY #: 4430670.2s DATE: October 06, 2015 4:24 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name:	Water
Soil Surface Texture:	
Hydrologic Group:	Not reported
Soil Drainage Class:	
Hydric Status: Not hydric	
Corrosion Potential - Uncoated Steel:	Not Reported
Depth to Bedrock Min:	> 0 inches
Depth to Watertable Min:	> 0 inches

No Layer Information available.

Soil Map ID: 2

Soil Component Name:	HESPERIA
Soil Surface Texture:	fine sandy loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained
Hydric Status: Not hydric	
Corrosion Potential - Uncoated Steel:	High
Depth to Bedrock Min:	> 0 inches
Depth to Watertable Min:	> 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 9 Min: 7.9
2	11 inches	31 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 9 Min: 7.9
3	31 inches	42 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 9 Min: 7.9
4	42 inches	59 inches	silt	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 1.4 Min: 0.42	Max: 9 Min: 7.9

Soil Map ID: 3

Soil Component Name: TUJUNGA

Soil Surface Texture: gravelly sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	gravelly sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1
2	3 inches	59 inches	stratified extremely gravelly sand to loamy sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1

Soil Map ID: 4

Soil Component Name: HANFORD

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
2	16 inches	35 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
3	35 inches	72 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1

Soil Map ID: 5

Soil Component Name: HESPERIA

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
2	11 inches	31 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6
3	31 inches	42 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
4	42 inches	59 inches	silt	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.4

Soil Map ID: 6

Soil Component Name: GRANGEVILLE

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 153 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.1
2	7 inches	59 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 7

Soil Component Name: PORTERVILLE

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	27 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.1 Min: 0.01	Max: 8.4 Min: 6.6

Soil Layer Information

	Boundary			Classification			
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**	**Saturated hydraulic conductivity micro m/sec**	**Soil Reaction (pH)**
2	27 inches	70 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.1 Min: 0.01	Max: 8.4 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CADW60000025028	0 - 1/8 Mile WNW

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
2	12273	0 - 1/8 Mile East
3	CADW60000025029	1/4 - 1/2 Mile East
4	CADW60000015357	1/2 - 1 Mile South
5	12274	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 4430670.2s

- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger CA 93657 LAT/LONG: 36.7429 / 119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY #: 4430670.2s DATE: October 06, 2015 4:24 pm

Map ID Direction Distance Elevation	Database	EDR ID Number
1 **WNW** **0 - 1/8 Mile** **Higher**	**CA WELLS**	**CADW60000025028**

Objectid:	25028
Latitude:	36.7433
Longitude:	-119.4466
Site code:	367433N1194466W001
State well numbe:	14S23E02E001M
Local well name:	'B009A'
Well use id:	3
Well use descrip:	Irrigation
County id:	10
County name:	Fresno
Basin code:	'5-22.08'
Basin desc:	Kings
Dwr region id:	80237
Dwr region:	South Central Region Office
Site id:	CADW60000025028

2 **East** **0 - 1/8 Mile** **Higher**	**CA WELLS**	**12273**

Water System Information:

Prime Station Code:	14S/23E-02E02 M	User ID:	10C
FRDS Number:	1000247001	County:	Fresno
District Number:	40	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	364435.0 1192637.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	71 N FRANKWOOD		
System Number:	1000247		
System Name:	SHERWOOD MHP		
Organization That Operates System:	Not Reported		
Pop Served:	Unknown, Small System	Connections:	Unknown, Small System
Area Served:	Not Reported		
Sample Collected:	09-APR-14	Findings:	. 0.397 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09-APR-14	Findings:	. 11. PCI/L
Chemical:	URANIUM (PCI/L)		
Sample Collected:	09-APR-14	Findings:	. 7.6 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09-APR-14	Findings:	. 1.16 PCI/L
Chemical:	GROSS ALPHA MDA95		
Sample Collected:	13-MAY-15	Findings:	. 450. US
Chemical:	SPECIFIC CONDUCTANCE		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	13-MAY-15	Findings:	. 7.9
Chemical:	PH, LABORATORY		
Sample Collected:	13-MAY-15	Findings:	. 180. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	13-MAY-15	Findings:	. 220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	13-MAY-15	Findings:	. 170. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	13-MAY-15	Findings:	. 43. MG/L
Chemical:	CALCIUM		
Sample Collected:	13-MAY-15	Findings:	. 16. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	13-MAY-15	Findings:	. 32. MG/L
Chemical:	SODIUM		
Sample Collected:	13-MAY-15	Findings:	. 2.4 MG/L
Chemical:	POTASSIUM		
Sample Collected:	13-MAY-15	Findings:	. 14. MG/L
Chemical:	CHLORIDE		
Sample Collected:	13-MAY-15	Findings:	. 0.14 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	13-MAY-15	Findings:	. 62. UG/L
Chemical:	ZINC		
Sample Collected:	13-MAY-15	Findings:	. 280. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	13-MAY-15	Findings:	. 0.25
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	13-MAY-15	Findings:	. 7.6 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	13-MAY-15	Findings:	. 12.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	02-APR-12	Findings:	280. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-APR-12	Findings:	0.5
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	02-APR-12	Findings:	7.2 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-APR-12	Findings:	12.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	01-APR-13	Findings:	11. PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01-APR-13	Findings:	0.539 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01-APR-13	Findings:	11. PCI/L
Chemical:	URANIUM (PCI/L)		

Sample Collected:	01-APR-13	Findings:	7.5 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-APR-13	Findings:	1.64 PCI/L
Chemical:	GROSS ALPHA MDA95		
Sample Collected:	09-APR-14	Findings:	. 440. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09-APR-14	Findings:	. 6.07 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	21-APR-11	Findings:	9. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	28-JUL-11	Findings:	6.4 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-APR-12	Findings:	450. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	02-APR-12	Findings:	8.1
Chemical:	PH, LABORATORY		
Sample Collected:	02-APR-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-APR-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-APR-12	Findings:	180. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-APR-12	Findings:	43. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-APR-12	Findings:	17. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-APR-12	Findings:	29. MG/L
Chemical:	SODIUM		
Sample Collected:	02-APR-12	Findings:	2.4 MG/L
Chemical:	POTASSIUM		
Sample Collected:	02-APR-12	Findings:	10. MG/L
Chemical:	CHLORIDE		
Sample Collected:	02-APR-12	Findings:	0.15 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-APR-12	Findings:	2.3 UG/L
Chemical:	ARSENIC		

3
East
1/4 - 1/2 Mile
Higher

CA WELLS **CADW60000025029**

Objectid:	25029
Latitude:	36.7432
Longitude:	-119.4404
Site code:	367432N1194404W001
State well numbe:	14S23E02F001M
Local well name:	’’
Well use id:	6
Well use descrip:	Unknown
County id:	10
County name:	Fresno

Basin code:	'5-22.08'
Basin desc:	Kings
Dwr region id:	80237
Dwr region:	South Central Region Office
Site id:	CADW60000025029

4
South
1/2 - 1 Mile
Lower

CA WELLS CADW60000015357

Objectid:	15357
Latitude:	36.7331
Longitude:	-119.4471
Site code:	367331N1194471W001
State well numbe:	14S23E11D001M
Local well name:	'2'
Well use id:	6
Well use descrip:	Unknown
County id:	10
County name:	Fresno
Basin code:	'5-22.08'
Basin desc:	Kings
Dwr region id:	80237
Dwr region:	South Central Region Office
Site id:	CADW60000015357

5
WSW
1/2 - 1 Mile
Lower

CA WELLS 12274

Water System Information:

Prime Station Code:	14S/23E-03L01 M	User ID:	10C
FRDS Number:	1000021001	County:	Fresno
District Number:	40	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	364418.0 1192735.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		
System Number:	1000021		
System Name:	FRESNO CSA #5		
Organization That Operates System:	Not Reported		
Pop Served:	Unknown, Small System	Connections:	Unknown, Small System
Area Served:	Not Reported		
Sample Collected:	28-APR-11	Findings:	280. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	28-APR-11	Findings:	7.3
Chemical:	PH, LABORATORY		
Sample Collected:	28-APR-11	Findings:	0.11 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	28-APR-11	Findings:	170. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	28-APR-11	Findings:	4.9 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	29-MAR-12	Findings:	5.5 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	27-APR-12	Findings:	120. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	27-APR-12	Findings:	150. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	27-APR-12	Findings:	130. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	27-APR-12	Findings:	28. MG/L
Chemical:	CALCIUM		
Sample Collected:	27-APR-12	Findings:	16. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	27-APR-12	Findings:	11. MG/L
Chemical:	SODIUM		
Sample Collected:	27-JUN-12	Findings:	0.1 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	28-JUN-12	Findings:	1. NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	11-OCT-12	Findings:	0.16 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	02-NOV-12	Findings:	130. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-NOV-12	Findings:	160. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-NOV-12	Findings:	30. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-NOV-12	Findings:	15. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-NOV-12	Findings:	11. MG/L
Chemical:	SODIUM		
Sample Collected:	02-NOV-12	Findings:	5.1 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-NOV-12	Findings:	0.74 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	04-DEC-12	Findings:	0.1 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	31-DEC-12	Findings:	0.13 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	01-FEB-13	Findings:	0.25 NTU
Chemical:	TURBIDITY, LABORATORY		

Sample Collected:	21-FEB-13	Findings:	0.16 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	20-MAR-13	Findings:	0.11 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	10-APR-13	Findings:	0.18 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	18-APR-13	Findings:	130. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	18-APR-13	Findings:	150. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	18-APR-13	Findings:	26. MG/L
Chemical:	CALCIUM		
Sample Collected:	18-APR-13	Findings:	14. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	18-APR-13	Findings:	11. MG/L
Chemical:	SODIUM		
Sample Collected:	18-APR-13	Findings:	4.8 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	18-JUN-13	Findings:	310. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	18-JUN-13	Findings:	7.9
Chemical:	PH, LABORATORY		
Sample Collected:	18-JUN-13	Findings:	140. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	18-JUN-13	Findings:	170. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	18-JUN-13	Findings:	140. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	18-JUN-13	Findings:	31. MG/L
Chemical:	CALCIUM		
Sample Collected:	18-JUN-13	Findings:	16. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	18-JUN-13	Findings:	11. MG/L
Chemical:	SODIUM		
Sample Collected:	18-JUN-13	Findings:	2.7 MG/L
Chemical:	POTASSIUM		
Sample Collected:	18-JUN-13	Findings:	10. MG/L
Chemical:	CHLORIDE		
Sample Collected:	18-JUN-13	Findings:	170. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	18-JUN-13	Findings:	0.12
Chemical:	LANGELIER INDEX AT SOURCE TEMP.		
Sample Collected:	18-JUN-13	Findings:	6.2 MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	18-JUN-13	Findings:	0.13 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	14-MAR-14	Findings:	. 5.5 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	17-MAR-15	Findings:	. 5.6 MG/L
Chemical:	NITRATE (AS NO3)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93657	13	0

Federal EPA Radon Zone for FRESNO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93657

Number of sites tested: 4

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.575 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.600 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5’ Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5’ Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW® Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture’s (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

Alta Canal Bridge
400 N Frankwood Ave
Sanger, CA 93657

Inquiry Number: 4430670.5
October 09, 2015

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	***Target Street***	***Cross Street***	***Source***
2013	☑	☐	Cole Information Services
2008	☑	☐	Cole Information Services
2003	☑	☐	Cole Information Services
1999	☑	☐	Cole Information Services
1995	☑	☐	Cole Information Services
1992	☑	☐	Cole Information Services
1990	☑	☐	Haines Criss-Cross Directory
1985	☑	☐	Haines Criss-Cross Directory
1980	☑	☐	Haines Criss-Cross Directory
1975	☑	☐	Haines Criss-Cross Directory

RECORD SOURCES

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FINDINGS

TARGET PROPERTY STREET

400 N Frankwood Ave
Sanger, CA 93657

Year	*CD Image*	*Source*

N FRANKWOOD AVE

Year	CD Image	Source
2013	pg A2	Cole Information Services
2008	pg A4	Cole Information Services
2003	pg A6	Cole Information Services
1999	pg A8	Cole Information Services
1995	pg A9	Cole Information Services
1992	pg A11	Cole Information Services
1990	pg A13	Haines Criss-Cross Directory
1985	pg A14	Haines Criss-Cross Directory
1980	pg A15	Haines Criss-Cross Directory
1975	pg A16	Haines Criss-Cross Directory
1975	pg A17	Haines Criss-Cross Directory

FINDINGS

CROSS STREETS

No Cross Streets Identified

Original

City Directory Images

Project

Routing

Target Street	Cross Street	Source
✓	-	Cole Information Services

N FRANKWOOD AVE 2013

79	SHERWOOD FOREST GOLF CLUB
104	NANCY WILL
339	ANN VANGORDER
	ANTHONY JANELLI
	CHARLOTTE MARRIOTT
	CLAUDE HILL
	DARRELL ROHM
	DAVID KIELLEY
	DOROTHY WHARFF
	GEORGE ZERTUCHE
	JAMES GAFFNEY
	JANET BRAY
	JANET FOOTE
	JOHNNY MESSER
	MIKE JAMES
	MORSE DOOLITTLE
	PHIL HARVEY
	RAMONA ATKINS
	RAYMOND CROUCH
	ROBERT DOMM
	ROBERT KUEBLER
	SEAN ARAGON
	VIRGINIA CASSLEY
340	CLARENCE HARVEY
	HARVEY SLATON
	JAMES FERRO
	JEAN COKE
	JOANN RESLER
	LARRY BUTLER
	MARGARET TARVIN
	RALPH BROWN
	ROBERT NELSON
	WALLACE ABBOTT
357	RON SUDERMAN
365	OCCUPANT UNKNOWN
367	OCCUPANT UNKNOWN
379	ROB PARRISH
381	STEVEN COMBS
393	WILLSON LANE
395	KENNETH MESSER
397	LEE ROBINSON
400	TRACY JAMES
420	MY CHANG
424	ANNA FELSTED
426	KATHRYN CROW
432	DAVID CARVER
438	DAVID TOPOLOVEC
440	OCCUPANT UNKNOWN
442	MICHAEL MULLIGAN
444	OCCUPANT UNKNOWN

Target Street	Cross Street	Source
✓	-	Cole Information Services

N FRANKWOOD AVE 2013 (Cont'd)

448	OCCUPANT UNKNOWN
476	DONALD MITCHELL
477	GARY GASKIN
486	TIOFILO ALCANTAR
512	ROBIN ROTAN
566	MIKE PADILLA
599	HENRY VASQUES
612	JOYCE VANCE
662	BILLY PREWITT
	LYLE CHRISTOFFERSON
692	AMANDA LINENBACH

Target Street	Cross Street	Source
✓	-	Cole Information Services

N FRANKWOOD AVE 2008

79	SHERWOOD FOREST GOLF CLUB PRO SHOP
104	DANIEL WILL
339	ANTHONY PICA
	CHARLOTTE MARRIOTT
	CLAUDE HILL
	DAVID KIELLEY
	GAIL FRIESEN
	JANET BRAY
	JOANN BATTAGLIA
	JOLEE BUTLER
	JOYCE VANCE
	LOREN FEENEY
	MIKE JAMES
	MORSE DOOLITTLE
	OLE MATHIASEN
	PHIL HARVEY
	ROBERT DOMM
	ROBERT KUEBLER
	VIRGINIA CASSLEY
340	CLARENCE HARVEY
	DENNIS HAAS
	HARVEY SLATON
	LARRY BUTLER
	LEO SCHEDLER
	MAURICE TARVIN
	ROBERT NELSON
357	RON SUDERMAN
365	KEVIN RIDGE
379	DAVID POWELL
381	CARMEN STONE
393	MADELEINE LANE
395	IRMA MESSENGER
397	LEROY ROBINSON
420	DANIEL SANDOVAL
424	OCCUPANT UNKNOWN
426	ANN BETTS
	WESTERN BLUE STEER
432	BARRY NOTTOLI
	CHEVAL NOIR RANCH LLC
438	DAVID TOPOLOVEC
442	MICHAEL MULLIGAN
444	OCCUPANT UNKNOWN
448	KENNITH COUCH
476	DONALD MITCHELL
477	SALLY DELAP
486	TIOFILO ALCANTAR
512	OCCUPANT UNKNOWN
566	OCCUPANT UNKNOWN
599	HENRY VASQUES
612	MARGARET SCHEDLER

N FRANKWOOD AVE 2008 (Cont'd)

662 BILLY PREWITT
692 LINDA FUNSTON

N FRANKWOOD AVE 2003

79	E HANSEN
104	DANIEL WILL
339	BONNIE HAEFNER
	CLYDE BOPP
	DAVID KIELLEY
	DENNIS HASS
	ELLERY KIRKBRIDE
	JEAN NELSON
	JOANN BATTAGLIA
	JOHN SHELLEY
	LEO SCHEDLER
	LYNN DAVIS
	ORVAL MARRIOTT
	ROBERT DRAKE
	ROBERT KUEBLER
	ROBERT SUBIA
	RUTHENE ROUSE
	STEVE HALL
	TERRY MCDIVITT
	VERNON KATEN
	VIRGINIA CASSLEY
340	CLIFFORD MEGERDIGIAN
	HARVEY SLATON
	JOHN OWEN
	LEAH HARVEY
	MICHAEL MCFERSON
	RALPH BRACKETT
	ROBERT NELSON
	VICTOR VOLPA
357	ALLAN PHILLIPS
365	JOSEPH COLWELL
379	ERIC REENDERS
	SEA OTTER ENTERPRISES
381	OCCUPANT UNKNOWN
393	MADELEINE LANE
400	OCCUPANT UNKNOWN
420	BETTY PABST
426	OCCUPANT UNKNOWN
432	DAVID CARVER
438	DAVID TOPOLOVEC
440	OCCUPANT UNKNOWN
442	MICHAEL MULLIGAN
448	LINDA LOMIER
476	DONALD MITCHELL
477	SALLY DELAP
486	TIOFILO ALCANTAR
512	BOBBY SOUTHERN
566	BRUCE LAZENBY
599	HENRY VASQUES
612	MARGARET SCHEDLER

N FRANKWOOD AVE 2003 (Cont'd)

662	BILLY PREWITT
692	FRED FUNSTON

N FRANKWOOD AVE 1999

79	SHERWOOD FOREST GOLF CLUB
104	NANCY WILL
339	ANTHONY JANELLI
	CLAUDE HILL
	DAVID KIELLEY
	JANET BRAY
	LOREN FEENEY
	MIKE JAMES
	MORSE DOOLITTLE
	ORVAL MARRIOTT
	RAYMOND CROUCH
	ROBERT DOMM
	ROBERT KUEBLER
	ROBERT MATTSON
	SEAN ARAGON
	V BURNS
340	HARVEY SLATON
	LARRY BUTLER
	MAURICE TARVIN
	MINA BROWN
	ROBERT NELSON
	THELMA JONES
357	RON SUDERMAN
365	KEVIN RIDGE
	OCCUPANT UNKNOWN
379	PETER NIEBLA
381	CARMEN STONE
	TOMMY MASI
393	MADELEINE LANE
395	IRMA MESSENGER
400	OCCUPANT UNKNOWN
432	MICHELLE NOTTOLI
438	DAVID TOPOLOVEC
442	MICHAEL MULLIGAN
444	OCCUPANT UNKNOWN
446	JEFFREY GOODWIN
476	DONALD MITCHELL
	OCCUPANT UNKNOWN
477	SALLY DELAP
486	TIOFILO ALCANTAR
512	OCCUPANT UNKNOWN
599	HENRY VASQUES
	OCCUPANT UNKNOWN
612	MARGARET SCHEDLER
662	BILLY PREWITT
692	OCCUPANT UNKNOWN
	WENDELL BERKE

Target Street	Cross Street	Source
✓	-	Cole Information Services

N FRANKWOOD AVE 1995

79	HANSEN, CAROL E
	SHERWOOD FOREST GOLF CLUB INC
104	JOHNSON, JEAN
308	SANI, GEORGE
339	ANDERSON, PAUL
	BEAKES, NORRIS W
	BEECH, JOHN
	BIERMANN, EUGENE B
	BOPP, CLYDE L
	BURNS, LAWEREN
	CRITZER, CHARLES
	DAVIS, LYNN
	DEMAREE, FRANK S
	HOPKINS, LEONARD
	JOHNSON, CHARLES W
	KIELLEY, DAVID M
	MATTSON, ROBERT H
	PHELAN, GORDON
	PICKERING, C N
	ROUSE, R
	ROWLAND, JACK
	SAWYER, THOMAS H
	SCHEDLER, LEO
	SHAFFER, ROBERT M
	THOMPSON, A
	WALDRON, JAMES M
340	AVILA, JOE
	BRACKETT, RALPH
	FORD, EARLE M
	HOOD, RALPH
	MEGERDIGIAN, C
	MESSERSMITH, CHARLES W
	OWEN, JOHN
	REIS, JACOB
	SAMPSELL, SAMUEL E
	SLATON, HARVEY A
	VOLPA, VICTOR J
357	ANDERSON, BARBARA
379	TODD, WALLY
381	MASI, TOMMY
393	LANE, WILLSON G SR
395	MESSENGER, KENNETH
397	SIROONIAN, EDDIE
	TURNER, TEDDY W
432	CARVER, DAVID N
438	TOPOLOVEC, DAVID
440	OCCUPANT UNKNOWNN
448	BRAKE, BILL
476	MITCHELL, DONALD A
477	DELAP, SALLY

N FRANKWOOD AVE 1995 (Cont'd)

486	ALCANTAR, TIOFILO
512	OCCUPANT UNKNOWNN
566	GARTIN, ERNEST

Target Street	Cross Street	Source
✓	-	Cole Information Services

N FRANKWOOD AVE 1992

79	HANSEN, CAROL E
	HANSEN, RUTH
	SHERWOOD FOREST GLF
104	WILL, DANIEL
308	SANI, GEORGE
339	ANDERSON, PAUL
	BEAKES, NORRIS W
	BEECH, JOHN
	BIERMANN, EUGENE B
	BOPP, CLYDE L
	BURNS, L
	CRITZER, CHARLES
	DAVIS, LYNN
	DEMAREE, FRANK S
	HOPKINS, LEONARD
	JOHNSON, CHARLES W
	KIELLEY, DAVID M
	KILLIAN, WALTER E
	MATTSON, ROBERT H
	OPPER, CECIL M
	PHELAN, GORDON
	PICKERING, C N
	ROUSE, R
	ROWLAND, JACK
	SCHEDLER, LEO
	SHAFFER, ROBERT M
	THOMPSON, CLAUDE
	WALDRON, JAMES M
340	ASHWORTH, JOE
	AVILA, JOE
	BRACKETT, RALPH
	BROWN, J G
	CASON, LEE
	CHO, PAUL H
	FAY, MARTIN L
	FORD, EARLE M
	HOOD, RALPH
	MESSERSMITH, CHARLES W
	REIS, JACOB
	ROSE, HAP
	SLATON, HARVEY A
	VOLPA, VICTOR J
379	TODD, WALLY
381	MASI, TOMMY
395	MESSENGER, KENNETH
397	COLVIN, THELMA
	SIROONIAN, EDDIE
420	HUNT, C A
	PABST, BETTY
438	FRISBIE, HERBERT L

N FRANKWOOD AVE 1992 (Cont'd)

438	JOHNS, HERBERT L
440	SANDNESS, DONALD L
448	BRAKE, BILL
476	MITCHELL, DOANLD A
477	DELAP, SALLY
486	ALCANTAR, TIOFILO
612	SCHEDLER, JAMES C

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N FRANKWOOD AVE 1990

FRANKWOOD AV N
93657 SANGER

79	HANSEN Carol E	787-2611	
	HANSEN Ruth	787-2247	
	★SHERWOOD FOREST GLF	787-2611	
104	WILL D A	787-2493	
	WILL Daniel	787-2743	
339	APARTMENTS		
	BEECH John	787-3230	
	BIERMANN Eugene B	787-2092	
	BOPP Clyde L	787-2805	
	BURNS Lawrence	787-2737	
	CRITZER Charles	787-2729	
	DAVIS Lynn	787-2668	
	DEMAREE Frank S	787-2576	
	FREEMAN Richard L	787-2866	9
	GARBER Hiram	787-3288	8
	GOODMAN M W	787-3126	+0
	HOPKINS Leonard	787-2498	
	HOPKINS Letha	787-2498	
	JOHNSON Charles W	787-2894	
	JONES Fred	787-2689	
	KIELLEY David M	787-2846	
	KUEBLER Robert H	787-2305	9
	MATTSON Robert H	787-2801	
	PALLOCH Larry	787-2262	2
	PETTIGREW O L	787-3474	5
	PHELAN Gordon	787-2378	
	PICKERING C N	787-2517	
	ROUSE R	787-3461	5
	SCHEDLER Leo	787-2470	
	SHAFFER Robert M	787-2665	
	STOREY Hardee E	787-2884	
	THOMPSON Claude	787-3131	4
	TUNNELL Bill	787-2786	6
	WALDRON James M	787-2189	
339			
340	APARTMENTS		
	ASHWORTH J T	787-3422	6
	BRACKETT Ralph	787-3147	
	BROWN J G	787-3297	2
	CASON Lee	787-3241	2
	CHO Paul H	787-2101	2
	FORD Earle M	787-3325	5
	HAP Rose	787-3285	+0
	HOOD Ralph	787-3103	1
	MESSERSMITH Charles	787-3179	1
	MOORHEAD R L	787-2371	
	REIS Jacob	787-3304	9
	SLATON Harvey A	787-3113	+0
	VOLPA Victor J	787-3574	3
340			
357	MURRAY James H	787-2159	
379	MASI Dorothy	787-3494	
	MASI Tommy	787-3494	
	TODD Sally	787-2345	
	TODD Wally	787-2345	
389	XXXX	00	
395	MESSENGER Kenneth	787-2692	
397	SIROONIAN Eddie	787-2658	
420	HUNT C A	787-2640	
	PABST Betty	787-3521	4
438	FRISBIE Herbert L	787-2407	8
444	MASON Kenneth	787-2157	2
448	BRAKE Bill	787-3491	5
476	MITCHELL Donald A	787-2128	
477	DELAP Sally	787-2872	
486	ALCANTAR Tiofilo	787-2614	5
512	XXXX	00	
566	GARTIN Ernest	787-2249	
612	SCHEDLER James C	787-2537	
662	MCHALEY Chester	787-2353	
717	STARK Artie	787-3460	8
720	AHEARN Arthur A	787-2426	
810	COSENTINO Joseph Jr	787-2468	
823	TORRES Amador	787-2236	5
882	MOORE Edward J	787-2055	
	STOVER Sandra L	787-3354	6
926	BEAS Pablo G	787-3345	9
	BRAME Samuel R	787-2462	
	HANDLEY Richard D	787-3483	9
★	1 BUS 74 RES	3 NEW	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N FRANKWOOD AVE 1985

FRANKWOOD N 93657 SANGER

79	HANSEN CAROL E	787-2611	
	HANSEN RUTH	787-2247	
	SHERWOOD FOREST GLF	**787-2611**	9
104	WILL D A	787-2493	6
	WILL DANIEL	787-2743	
339	APARTMENTS		
	ARROW ROBERT T	787-2891	9
	BEECH JOHN	787-3230	0
	BIERMANN EUGENE B	787-2092	9
	BOPP CLYDE L	787-2805	8
	BURNS LAWRENCE	787-2737	9
	CRITZER CHARLES	787-2729	6
	DAVIS LYNN	787-2668	
	DEMAREE FRANK S	787-2576	8
	DUNCAN BRUCE	787-2514	7
	EVATT PAUL	787-2085	9
	HOPKINS LEONARD	787-2498	8
	JOHNSON CHARLES W	787-2894	7
	JONES FRED	787-2689	8
	KIDDER CHARLES W	787-3265	2
	KIELLEY DAVID M	787-2846	8
	LUMSDEN WILLIAM C	787-3529	+5
	MARTIN CARTER R	787-3303	4
	MATTSON ROBERT H	787-2801	8
	PALLOCH LARRY	[illegible]	2
	PETTIGREW O L	787-3474	+5
	PHELAN GORDON	787-2378	7
	PICKERING C N	787-2517	
	ROUSE R	787-3461	+5
	SCHEDLER LEO	787-2470	8
	SCHUYLER J H	787-2317	7
	SHAFFER ROBERT M	787-2685	9
	SMITH GALE L	787-2001	0
	STOREY HARDEE E	787-2884	8
	SWAIN JACK E	787-2866	8
	THOMPSON CLAUDE	787-3131	4
	TUNNELL BILL	787-3271	+5
	WALDRON JAMES M	787-2189	6
339			
340	APARTMENTS		
	BRACKETT RALPH	787-3147	0
	BROWN J G	787-3297	2
	CASON LEE	787-3241	2
	CHO PAUL H	787-2101	2
	DOUGLAS JOHN	787-3495	4
	FORD EARLE M	787-3326	+5
	HOOD RALPH	787-3103	1
	MESSERSMITH CHARLES	787-3179	1
	MOORHEAD R L	787-2371	9
	POLLEY M V	787-3505	2
	ROSE HAP	787-3285	1
	SALGADO HENRY	787-3198	4
	SCHNEIDER CARL	787-2724	2
	VOLPA VICTOR J	787-3574	3
	WILDES RUSSELL R	787-2067	9
340			
357	MURRAY JAMES H	787-2159	7
379	TODD SALLY	787-2345	+5
395	MESSENGER KENNETH	787-2692	0
397	LOTSPEICH RALPH	787-3563	3
	SIROONIAN EDDIE	787-2658	
420	HUNT CA	787-2640	
	PABST BETTY	787-3521	4
444	MASON KENNETH	787-2167	2
448	BRAKE BILL	787-3491	+5
476	MITCHELL DONALD A	787-2128	
477	DELAP SALLY	787-2872	9
486	ALCANTAR TIOFILO	787-2614	+5
	MUNOZ IRENE	787-3428	+5
512	COWDREY GLENN R	787-2116	2
566	GARTIN ERNEST	787-2249	
612	SCHEDLER JAMES C	787-2537	6
662	MCHALEY CHESTER	787-2353	
717	MERRELL WILLARD	787-3503	
720	AHEARN ARTHUR A	787-2426	
810	COSENTINO JOSEPH JR	787-2468	
823	TORRES AMADOR	787-2236	
882	MOORE EDWARD J	787-2055	
926	BRAME SAMUEL R	787-2462	
★	1 BUS	74 RES	11 NEW

FRANKWOOD AV S 93654

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N FRANKWOOD AVE 1980

FRANKWOOD N 93657
SANGER

79	HANSEN CAROL E	787-2611	
	HANSEN RUTH	787-2247	3
	SHERWOOD F MBL HM	**787-2611**	9
	SHERWOOD FOREST GLF	**787-2611**	
	WIRE LEE	787-2316	3
104	WILL D A	787-2493	6
	WILL DANIEL	787-2743	
339	APARTMENTS		
	ARROW ROBERT T	787-2891	9
	BARTLETTE THOMAS	787-2617	7
	BEECH JOHN	787-3230	+0
	BIERMANN EUGENE B	787-2092	9
	BOPP CLYDE L	787-2805	8
	BURNS LAWERENCE	787-2737	9
	CRITZER CHARLES	787-2729	6
	DALE WADE M	787-2838	8
	DAVIS LYNN	787-2668	5
	DEMAREE FRANK S	787-2576	8
	DUNCAN BRUCE	787-2514	7
	EVATT PAUL	787-2085	9
	HOPKINS LEONARD	787-2498	8
	JOHNSON CHARLES W	787-2894	7
	JONES FRED	787-2689	8
	KIELLEY DAVID M	787-2846	8
	MATTSON ROBERT H	787-2801	8
	PHELAN GORDON	787-2378	7
	PICKERING C N	787-2517	5
	SANFORD C R	787-2822	8
	SCHEDLER LEO	787-2470	8
	SCHUYLER J H	787-2317	7
	SHAFFER ROBERT M	787-2685	9
	SMITH GALE L	787-2001	+0
	SNOW MURRAY	787-2888	9
	STOREY HARDEE E	787-2884	8
	SWAIN JACK E	787-2866	8
	TUNNELL BILL	787-2766	6
	WALDRON JAMES M	787-2189	6
	WALLACE W R	787-2245	8
339			
340	APARTMENTS		
	BAILEY T E	787-2006	9
	BECKTOLD WILLIAM	787-3273	+0
	BRACKETT RALPH	787-3147	+0
	CAMPBELL ISAIAH	787-3100	+0
	DOUGLAS JOHN T	787-2860	+0
	HERZOG MANUEL	787-3261	+0
	MCADAMS RAY E	787-2047	9
	MOORHEAD DAN H	787-2371	9
	PEREGRINE LEE	787-3260	+0
	WILDES RUSSELL R	787-2067	9
340			
357	MURRY JAMES H	787-2159	7
395	MESSENGER KENNETH	787-2692	+0
397	SIROONIAN EDDIE	787-2658	
420	HUNT C A	787-2640	
	SCHUCHMANN LES	787-2640	9
448	ANGLIN GARY	787-3150	+0
476	MITCHELL DONALD A	787-2128	5
477	DELAP SALLY	787-2872	9
486	ALCANTAR TIOFILO	787-2614	9
512	COWDREY GLENN R	787-2138	8
	LOUISES PAINTD FSHN	**787-2138**	+0
566	GARTIN ERNEST	787-2249	
612	SCHEDLER JAMES C	787-2537	6
662	MCHALEY CHESTER	787-2353	
717	MCKELLAR KENT	787-2626	+0
720	AHEARN ARTHUR A	787-2426	
810	COSENTINO JOSEPH JR	787-2468	8
823	CORN THOS E	787-2236	
882	BRYAN LLOYD	787-2800	8
	MOORE EDWARD J	787-2055	9
926	BRAME SAMUEL R	787-2462	
★	3 BUS	65 RES	12 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N FRANKWOOD AVE 1975

FRANKWOOD N 93657 SANGER

79	HANSEN CAROL E	787-2611	
	HANSEN RUTH	787-2247	3
	*SHERWOOD FOREST PRK	787-2611	4
	*SHERWOOD FORST GOLF	787-2611	
	WIRE LEE	787-2316	3
104	WILL DANIEL	787-2743	
339	....APARTMENTS		
	DAVIS LYNN	787-2668	+5
	FRANKS EUGENE	787-2446	+5
	GOERTZ WALTER R	787-2538	+5
	JAMES JUD	787-2369	+5
	PICKERING C N	787-2517	+5
339	....		
357	PRICE DONALD L	787-2159	
395	TODD E R	787-2692	
397	SIROONIAN EDDIE	787-2658	
420	HUNT C A	787-2640	
448	DECANIO ROLAND	787-2268	+5
476	MITCHELL DONALD A	787-2128	+5
477	DELAP LEE	787-2476	
486	ANDERSON ROBERT A	787-2349	3
512	SAFFELL T C	787-2651	
566	GARTIN ERNEST	787-2249	
612	COPE A G	787-2650	
662	MCHALEY CHESTER	787-2353	
717	SANI ANGELO	787-2648	
720	AHEARN ARTHUR A	787-2426	
810	ALGOTS JOHN	787-2629	4
823	CORN THOS E	787-2236	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N FRANKWOOD AVE 1975

1975

..FRANKWOOD N 93657 CONT..
926 BRAME SAMUEL R 787-2462
* 2 BUS 26 RES 7 NEW

Original Project Routing

APPENDIX B

INTERVIEW DOCUMENTATION

Original Project Routing

EXHIBIT 6-A PRELIMINARY ENVIRONMENTAL STUDY (PES)

Federal Project No.: BRLO-5942(247)
(Federal Program Prefix-Project No., Agreement No.)

Final Design: 2018
(Expected Start Date)

To: James Perrault
(District Local Assistance Engineer)

Caltrans District 6
(District)

855 M Street, Suite 200
Fresno, CA 93721
(Address)

James.Perrault@dot.ca.gov
(Email Address)

From: County of Fresno
(Local Agency)

Erin Haagenson, Senior Staff Analyst
(559) 600-4528
(Project Manager's Name and Telephone No.)

2220 Tulare Street, 6th Floor
Fresno, CA 93721
(Address)

ehaagenson@co.fresno.ca.us or
arutherford@co.fresno.ca.us
(Email Address)

Is this Project "ON" the State Highway System? ☐ Yes ☒ No

IF YES, STOP HERE and contact the District Local Assistance Engineer regarding the completion of other environmental documentation.

Federal State Transportation Improvement Program (FSTIP) http://www.dot.ca.gov/hq/transprog/fedpgm.htm; http://www.dot.ca.gov/hq/transprog/oftmp.htm

See Attachment A *(Currently Adopted Plan Date)*

See Attachment A *(Page No.___ attach to this form)*

Programming for FSTIP:

	Preliminary Engineering		Right of Way		Construction	
	(Fiscal Year)	*(Dollars)*	*(Fiscal Year)*	*(Dollars)*	*(Fiscal Year)*	*(Dollars)*
	Prior	40,000				
	15/16	$ 470,000	17/18	$ 60,000	18/19/ Beyond	$ 2,500,000

Project Description as Shown in RTP and FSTIP: BRIDGE NO. 42C0289, N Frankwood Avenue over Alta Main Canal, 1.15 MI S of Piedra Road. Replace two lane bridge with two lane bridge. Toll credits programmed for PE, ROW, and CON.

Detailed Project Description: *(Describe the following, as applicable: purpose and need, project location and limits, required right of way acquisition, proposed facilities, staging areas, disposal and borrow sites, construction activities, and construction access.)*
See Notes

(Continue description on "Notes" sheet, last page of this Exhibit, if necessary)

Preliminary Design Information:
Does the project involve any of the following? Please check the appropriate boxes and delineate on an attached map, plan, or layout including any additional pertinent information.

Yes	No	
☒	☐	Widen existing roadway
☐	☒	Increase number of through lanes
☒	☐	New alignment
☐	☒	Capacity increasing—other (e.g., channelization)
☐	☒	Realignment
☐	☒	Ramp or street closure
☒	☐	Bridge work
☒	☐	Vegetation removal
☒	☐	Tree removal

Yes	No	
☒	☐	Ground disturbance
☒	☐	Road cut/fill
☒	☐	Excavation: anticipated maximum depth 15' max
☐	☒	Drainage/culverts
☐	☒	Flooding protection
☒	☐	Stream channel work
☒	☐	Pile driving
☒	☐	Demolition

Yes	No	
☒	☐	Easements
☒	☐	Equipment staging
☐	☒	Temporary access road/detour
☒	☐	Utility relocation
☒	☐	Right of way acquisition (if yes, attach map with APN)
☐	☒	Disposal/borrow sites
☐	☒	Part of larger adjacent project
☐	☒	Railroad

Required Attachments:

☐ Regional map ☒ Project location map ☒ Project footprint map (existing/proposed right of way)
☐ Engineering drawings (existing and proposed cross sections), if available ☐ Borrow/disposal site location map, if applicable
(Note: all maps (except project location map and regional maps) should be consistent with the project description (minimum scale: 1" = 200').)

☒ Notes to support the conclusions of this checklist/project description continuation page (attached)

Examine the project for potential effects on the environment, direct or indirect and answer the following questions. The "construction area," as specified below, includes all areas of ground disturbance associated with the project, including staging and stockpiling areas and temporary access roads.

Each answer must be briefly documented on the "Notes" pages at the end of the PES Form.

A. Potential Environmental Effects	**Yes**	**To Be Determined**	**No**
General			
1. Will the project require future construction to fully utilize the design capabilities included in the proposed project?	☐	☐	☒
2. Will the project generate public controversy?	☐	☐	☒
Noise			
3. Is the project a Type I project as defined in 23 CFR 772.5(h); "construction on new location or the physical alteration of an existing highway, which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes"?	☐	☐	☒
4. Does the project have the potential for adverse construction-related noise impact (such as related to pile driving)?	☐	☐	☒
Air Quality			
5. Is the project in a NAAQS non-attainment or maintenance area?	☒	☐	☐
6. Is the project exempt from the requirement that a conformity determination be made? (If "Yes," state which conformity exemption in 40 CFR 93.126, Table 2 applies): <u>Widening narrow pavements or reconstructing bridges (no additional travel lanes).</u>"	☒	☐	☐
7. Is the project exempt from regional conformity? (If "Yes," state which conformity exemption in 40 CFR 93.127, Table 3 applies): _____	☐	☐	☐
8. If project is not exempt from regional conformity, (If "No" on Question #7)			
Is project in a metropolitan non-attainment/maintenance area?	☐	☐	☐
Is project in an isolated rural non-attainment area?	☐	☐	☐
Is project in a CO, PM10 and/or PM2.5 non-attainment/maintenance area?	☐	☐	☐
Hazardous Materials/Hazardous Waste			
9. Is there potential for hazardous materials (including underground or aboveground tanks, etc.) or hazardous waste (including oil/water separators, waste oil, asbestos-containing material, lead-based paint, ADL, etc.) within or immediately adjacent to the construction area?	☐	☒	☐
Water Quality/Resources			
10. Does the project have the potential to impact water resources (rivers, streams, bays, inlets, lakes, drainage sloughs) within or immediately adjacent to the project area?	☒	☐	☐
11. Is the project within a designated sole-source aquifer?	☒	☐	☐
Coastal Zone			
12. Is the project within the State Coastal Zone, San Francisco Bay, or Suisun Marsh?	☐	☐	☒
Floodplain			
13. Is the construction area located within a regulatory floodway or within the base floodplain (100-year) elevation of a watercourse or lake?	☐	☒	☐
Wild and Scenic Rivers			
14. Is the project within or immediately adjacent to a Wild and Scenic River System?	☐	☐	☒

Biological Resources			
15. Is there a potential for federally listed threatened or endangered species, or their critical habitat or essential fish habitat to occur within or adjacent to the construction area?	☐	☒	☐
16. Does the project have the potential to directly or indirectly affect migratory birds, or their nests or eggs (such as vegetation removal, box culvert replacement/repair, bridge work, etc.)?	☒	☐	☐
17. Is there a potential for wetlands to occur within or adjacent to the construction area?	☐	☒	☐
18. Is there a potential for agricultural wetlands to occur within or adjacent to the construction area?	☐	☐	☒
19. Is there a potential for the introduction or spread of invasive plant species?	☐	☒	☐
Sections 4(f) and 6(f)			
20. Are there any historic sites or publicly owned public parks, recreation areas, wildlife or waterfowl refuges (Section 4[f]) within or immediately adjacent to the construction area?	☐	☐	☒
21. Does the project have the potential to affect properties acquired or improved with Land and Water Conservation Fund Act (Section 6[f]) funds?	☐	☐	☒
Visual Resources			
22. Does the project have the potential to affect any visual or scenic resources?	☐	☒	☐
Relocation Impacts			
23. Will the project require the relocation of residential or business properties?	☐	☐	☒
Land Use, Community, and Farmland Impacts			
24. Will the project require any right of way, including partial or full takes? Consider construction easements and utility relocations.	☒	☐	☐
25. Is the project inconsistent with plans and goals adopted by the community?	☐	☐	☒
26. Does the project have the potential to divide or disrupt neighborhoods/communities?	☐	☐	☒
27. Does the project have the potential to disproportionately affect low-income and minority populations?	☐	☐	☒
28. Will the project require the relocation of public utilities?	☐	☒	☐
29. Will the project affect access to properties or roadways?	☐	☐	☒
30. Will the project involve changes in access control to the State Highway System (SHS)?	☐	☐	☒
31. Will the project involve the use of a temporary road, detour, or ramp closure?	☐	☐	☒
32. Will the project reduce available parking?	☐	☐	☒
33. Will the project construction encroach on state or federal lands?	☐	☐	☒
34. Will the project convert any farmland to a different use or impact any farmlands?	☐	☐	☒
Cultural Resources			
35. Is there National Register listed, or potentially eligible historic properties, or archaeological resources within or immediately adjacent to the construction area? *(Note: Caltrans PQS answers question #35)*	☐	☐	☐
36. Is the project adjacent to, or would it encroach on Tribal land?	☐	☐	☒

For Sections B, C, and D, check appropriate box to indicate required technical studies, coordination, permits, or approvals.

B. Required Technical Studies and Analyses	C. Coordination	D. Anticipated Actions/Permits/Approvals
☐ **Traffic**		
Check one:		
☐ Traffic Study	☐ Caltrans	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
☒ **Noise**		
Check as applicable:		

☐ Traffic Related ☒ Construction Related		
Check one:		
☐ Noise Study Report	☐ Caltrans	☐ Approval
☐ NADR	☐ Caltrans	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☒ Discussion in ED Only	☒ Caltrans	☒ Approval
☒ **Air Quality**		
Check as applicable: ☒ Traffic Related ☒ Construction Related		
Check one:		
☐ Air Quality Report	☐ Caltrans	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☒ Discussion in ED Only	☒ Caltrans	☒ Approval
	☐ FHWA	☐ Conformity Finding (23 USC 327 CEs, EAs, EISs)
	☐ Caltrans	☐ Conformity Finding (23 USC 326 CEs)
	☐ Regional Agency	☐ PM10/PM2.5 Interagency Consultation
☒ **Hazardous Materials/ Hazardous Waste**		
Check as applicable:		
☒ Initial Site Assessment (Phase 1)	☒ Caltrans	☒ Approval
☐ Preliminary Site Assessment (Phase 2)	☐ Caltrans	☐ Approval
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
	☐ Cal EPA DTSC	☐ Review Database
	☐ Local Agency	☐ Review Database
☒ **Water Quality/Resources**		
Check as applicable:		
☐ Water Quality Assess. Report	☐ Caltrans	☐ Approval
☒ Technical Memorandum	☒ Caltrans	☒ Approval
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
☐ **Sole-Source Aquifer (Districts 5, 6 and 11)**	☐ EPA (S.F. Regional Office)	☐ Approval of Analysis in ED
☐ **Coastal Zone**	☐ CCC	☐ Coastal Zone Consistency Determination

B. Required Technical Studies and Analyses	C. Coordination	D. Anticipated Actions/Permits/Approvals
☒ **Floodplain**		
Check as applicable:		
☒ Location Hydraulic Study	☒ Caltrans	☒ Approval
☐ Floodplain Evaluation Report	☐ Caltrans	☐ Approval
☒ Summary Floodplain Encroachment Report	☒ Caltrans	☒ Approval
	☐ Caltrans	☐ Only Practicable Alternative Finding
	☐ FHWA	☐ Approves significant encroachments and concurs in Only Practicable Alternative Findings
☐ **Wild and Scenic Rivers**	☐ River Managing Agency	☐ Wild and Scenic Rivers Determination
☒ **Biological Resources**		
Check as applicable:		
☒ NES, Minimal Impact	☒ Caltrans	☒ Approval
☐ NES		
☐ BA	☐ Caltrans	☐ Approves for Consultation
	☐ USFWS ☐ NOAA Fisheries	☐ Section 7 Informal/Formal Consultation
☐ EFH Evaluation	☐ NOAA Fisheries	☐ MSA Consultation
☐ Bio-Acoustic Evaluation	☐ NOAA Fisheries	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☒ **Wetlands**		
Check as applicable:		
☒ WD and Assessment	☒ Caltrans	☒ Approval
	☐ ACOE	☐ Wetland Verification
	☐ NRCS	☐ Agricultural Wetland Verification
	☐ Caltrans	☐ Wetlands Only Practicable Alternative Finding
☐ **Invasive Plants**		
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
☐ **Section 4(f)**		
Check as applicable:	☐ Caltrans	☐ Determine Temporary Occupancy
☐ De minimis	☐ Caltrans	☐ De minimis finding
☐ Programmatic 4(f) Evaluation Type: ______________	☐ Caltrans	☐ Approval
☐ Individual 4(f) Evaluation	☐ Caltrans	☐ Approval
	☐ Agency with Jurisdiction ☐ SHPO ☐ DOI ☐ HUD ☐ USDA	

B. Required Technical Studies and Analyses	C. Coordination	D. Anticipated Actions/Permits/Approvals
☐ **Section 6(f)**		
	☐ Agency with Jurisdiction	
	☐ NPS	☐ Determines Consistency with Long-Term Management Plan
	☐ NPS	☐ Approves Conversion
☒ **Visual Resources**		
☒ Technical Memorandum	☒ Caltrans	☒ Approval
☐ Minor VIA	☐ Caltrans	☐ Approval
☐ Moderate VIA	☐ Caltrans	☐ Approval
☐ Advance/Complex VIA	☐ Caltrans	☐ Approval
☐ **Relocation Impacts**		
Check one:		
☐ Relocation Impact Memo	☐ Caltrans	☐ Approval
☐ Relocation Impact Study	☐ Caltrans	☐ Approval
☐ Relocation Impact Report	☐ Caltrans	☐ Approval
☐ **Land Use and Community Impacts**		
Check one:		
☐ CIA	☐ Caltrans	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
☐ **Construction/Encroachment on State Lands**		
Check as applicable:		
☐ SLC Jurisdiction	☐ SLC	☐ SLC Lease
☐ Caltrans Jurisdiction	☐ Caltrans	☐ Encroachment Permit
☐ SP Jurisdiction	☐ SP	☐ Encroachment Permit
☐ **Construction/Encroachment on Federal Lands**	☐ Federal Agency with Jurisdiction	☐ Encroachment Permit
☐ **Construction/Encroachment On Indian Trust Lands**	☐ Bureau of Indian Affairs	☐ Right of Way Permit
☐ **Farmlands**		
Check one:		
☐ CIA	☐ Caltrans	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
Check as applicable:		
☐ Form AD 1006	☐ NRCS	☐ Approves Conversion
	☐ CDOC	☐ Approves Conversion
☐ Conversion to Non-Agri Use	☐ ACOE	

B. Required Technical Studies and Analyses	C. Coordination	D. Anticipated Actions/Permits/ Approvals
☐ **Cultural Resources** (PQS completes this section) ***Check as applicable:***	☐ Caltrans PQS	☐ Screened Undertaking
☐ APE Map	☐ Caltrans PQS and DLAE	☐ Approves APE Map
	☐ Local Preservation Groups and/or Native American Tribes	☐ Provides Comments Regarding Concerns with Project
☐ HPSR ☐ ASR ☐ HRER	☐ Caltrans	☐ Approves for Consultation
☐ Finding of Effect Report	☐ Caltrans	☐ Concurs on No Effect, No Adverse Effect with Standard Conditions
	☐ SHPO	☐ Letter of Concurrence on Eligibility, No Adverse Effect without Standard
☐ MOA	☐ Caltrans	☐ Approves MOA
	☐ SHPO	☐ Approves MOA
	☐ ACHP (if requested)	☐ Approves MOA
☒ **Permits** Copies of permits and a list of mitigation commitments are mandatory submittals following NEPA approval.	☒ ACOE	☒ Section 404 Nationwide Permit
	☐ ACOE	☐ Section 404 Individual Permit
	☐ Caltrans/ACOE/EPA	☐ NEPA/404 Integration MOU
	☐ USFWS	
	☐ NOAA Fisheries	
	☐ ACOE	☐ Rivers and Harbors Act Section 10 Permit
	☐ USCG	☐ USCG Bridge Permit
	☒ RWQCB	☒ Section 401 Water Quality Certification
	☒ CDFG	☒ Section 1602 Streambed Alteration Agreement
	☒ RWQCB	☒ NPDES Permit
	☐ CCC	☐ Coastal Zone Permit
	☐ Local Agency	
	☐ BCDC	☐ BCDC Permit

Notes: Additional studies may be required for other federal agencies.

ACHP	=	Advisory Council on Historic Preservation
ACOE	=	U.S. Army Corps of Engineers
ADL	=	Aerially Deposited Lead
APE	=	Area of Potential Effect
APN	=	Assessor Parcel Number
ASR	=	Archaeological Survey Report
BA	=	Biological Assessment
BCDC	=	Bay Conservation and Development Commission
BE	=	Biological Evaluation
BO	=	Biological Opinion
Cal EPA	=	California Environmental Protection Agency
CCC	=	California Coastal Commission
CDFG	=	California Department of Fish and Game
CDOC	=	California Department of Conservation
CE	=	Categorical Exclusion
CIA	=	Community Impact Assessment
CWA	=	Clean Water Act
DLAE	=	District Local Assistance Engineer
DOI	=	U.S. Department of Interior
DTSC	=	Department of Toxic Substances Control
EA	=	Environmental Assessment
ED	=	Environmental Document
EFH	=	Essential Fish Habitat
EIS	=	Environmental Impact Statement
EPA	=	U.S. Environmental Protection Agency
FEMA	=	Federal Emergency Management Agency
FHWA	=	Federal Highway Administration
FONSI	=	Finding of No Significant Impacted
FTIP	=	Federal Transportation Improvement Program
HPSR	=	Historic Property Survey Report
HRER	=	Historical Resources Evaluation Report
HUD	=	U.S. Housing and Urban Development
MOA	=	Memorandum of Agreement
MSA	=	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	=	National Environmental Policy Act
NADR	=	Noise Abatement Decision Report
NES	=	Natural Environment Study
NHPA	=	National Historic Preservation Act
NOAA	=	National Oceanic and Atmospheric Administration
NMFS		National Marine Fisheries Service
NPDES	=	National Pollutant Discharge Elimination System
NPS	=	National Park Service
NRCS	=	Natural Resources Conservation Service
PM10	=	Particulate Matter 10 Microns in Diameter or Less
PM2.5	=	Particulate Matter 2.5 Microns in Diameter or Less
PMP	=	Project Management Plan
PQS	=	Professionally Qualified Staff
ROD	=	Record of Decision
RTIP	=	Regional Transportation Improvement Program
RTP	=	Regional Transportation Plan
RWQCB	=	Regional Water Quality Control Board
SER	=	Standard Environmental Reference
SEP	=	Senior Environmental Planner
SHPO	=	State Historic Preservation Officer
SLC	=	State Lands Commission
SP	=	State Parks
TIP	=	Transportation Improvement Program
USCG	=	U.S. Coast Guard
USDA	=	U.S. Department of Agriculture
USFWS	=	U.S. Fish and Wildlife Service
WD	=	Wetland Delineation

E. Preliminary Environmental Document Classification (NEPA)

Based on the evaluation of the project, the environmental document to be developed should be:

Check one:

- ☐ Environmental Impact Statement (*Note: Engagement with participating agencies in accordance with 23 USC 139 required)*
  - ☐ Compliance with 23 USC 139 regarding Participating Agencies required
- ☐ Complex Environmental Assessment
- ☐ Routine Environmental Assessment
- ☐ Categorical Exclusion without required technical studies.
- ☒ Categorical Exclusion with required technical studies

(if Categorical Exclusion is selected, check one of the following):

- ☒ Section 23 USC 326
  - ☒ 23 CFR 771 activity (c)(28)
  - ☐ 23 CFR 771 activity (d) ()
  - ☐ Activity _____ listed in the Section 23 USC 326
- ☐ Section 23 USC 327

F. Public Availability and Public Hearing

Check as applicable:

- ☒ Not Required
- ☐ Notice of Availability of Environmental Document
- ☐ Public Meeting
- ☐ Notice of Opportunity for a Public Hearing
- ☐ Public Hearing Required

G. Signatures

Local Agency Staff and/or Consultant Signature

(Signature of Preparer)	9/30/15 (Date)	559-600-4530 (Telephone No.)

Alexis Rutherford
(Name)

Local Agency Project Engineer Signature

This document was prepared under my supervision, according to the *Local Assistance Procedures Manual,* Exhibit 6-B, "Instructions for Completing the Preliminary Environmental Study Form."

(Signature of Local Agency)	9/30/15 (Date)	600-4505 (Telephone No.)

Caltrans District Professionally Qualified Staff (PQS) Signature

☐ Project does not meet definition of an "undertaking"; no further review is necessary under Section 106 ("No" Section A, #35).

☐ Project is limited to the type of activity listed in Attachment 2 of the Section 106 PA and based on the information provided in the PES Form, the project does not have the potential to affect historic properties ("No" Section A, #35).

☐ Project is limited to the type of activity listed in Attachment 2 of the Section 106 PA, but the following additional procedures or information is needed to determine the potential for effect ("To Be Determined" Section A, #35):
☐ Records Search ☐ ____________ ☐ ____________ ☐ ____________

☐ Project meets the definition of an "undertaking"; all properties in the project area are exempt from evaluation per Attachment 4 of the Section 106 PA ("No" Section A, #35).

☐ The proposed undertaking is considered to have the potential to affect historic properties; further studies for 106 compliance are indicated in Sections B, C, and D of this PES Form ("Yes" Section A, #35).

________________________________ ____________ ____________
(Signature of Professionally Qualified Staff) *(Date)* *(Telephone No.)*

The following signatures are required for all CEs, routine and complex EAs, and EISs:

Caltrans District Senior Environmental Planner (or Designee) and DLAE Signatures

I have reviewed this Preliminary Environmental Study (PES) Form and determined that the submittal is complete and sufficient. I concur with the studies to be performed and the recommended NEPA Class of Action.

________________________________ ____________ ____________
(Signature of Senior Environmental Planner or Designee) *(Date)* *(Telephone No.)*

____
(Name)

________________________________ ____________ ____________
(Signature of District Local Assistance Engineer or Designee) *(Date)* *(Telephone No.)*

____
(Name)

☐ HQ DEA Environmental Coordinator concurrence ____________________. Email concurrence attached.
(*date*)

Preliminary Environmental Investigation
Notes to Support the Conclusions of the PES Form
(May Also Include Continuation of Detailed Project Description)

Brief Explanation of How Project Complies, or Will Comply with Applicable Federal Mandate (Part A):

The proposed project consists of replacing the Alta Main Canal Bridge on Frankwood Avenue, 1.15 miles south of Piedra Road (See Attachment B). The County of Fresno is proposing to replace the existing two lane bridge with a new bridge built to current standards on a new alignment. The existing bridge is integrated with a fully operational weir structure owned by Alta Irrigation District which stretches the full length of the bridge. It is anticipated the existing bridge would remain in place and continue to serve as an irrigation control structure and also function as an on-site detour during construction. Once the project is complete, access to the existing bridge will be limited to Alta Irrigation District. Further investigation is needed to determine the replacement bridge type, location of the new alignment, and the scope of work, if any, on the existing structure; however, the County has prepared a project footprint drawing which establishes the maximum extent of the project (See Attachment C). Potential bridge designs and new alignment options, channel work, approach work, as well as possible permanent and temporary right of way needs and the contractor's access way to the channel would be accomplished within the proposed project footprint.

1. The proposed project would not require future construction to fully utilize the design capabilities.

2. The new bridge will be constructed on a new alignment downstream from the existing bridge. It is anticipated the existing bridge will function as an onsite detour during construction. Public controversy is not anticipated.

3. The proposed bridge replacement project is not a Type 1 project as defined in 23 CFR 772.5(h).

4. The project could involve pile driving; structure demolition, excavation and stream channel work. See Attachment C for the location of residences in relation to the proposed project. No adverse noise impacts from construction are anticipated. All noise generating construction activities shall be limited to traditional working hours; Monday through Friday from 7:00 am to 6:00 pm. The Fresno County Noise Ordinance specifically exempts construction-related noise impacts associated with the maintenance of public utilities conducted between the hours of 6:00 a.m. and 9:00 p.m. In addition, construction would be conducted in accordance with Caltrans Standard Specifications Section 14-8.02 and construction noise associated with this project would be short term and intermittent.

5. Fresno County is listed in the Table of Conformity Areas.

6. The proposed project type is listed in 40 CFR, Part 93, Section 93.126 Table 2.0 Exempt Projects as "Widening narrow pavements or reconstructing bridges (no additional travel lanes)."

7. According to the Transportation Air Quality Conformity Findings Checklist, the project is exempt from all project-level conformity requirements (40 CFR 93.126) and all air quality conformity requirements have been met.

8. See #7.

9. According to the Geotracker database, there are no cleanup sites in the vicinity of the project (See Attachment D). The County will prepare an Initial Site Assessment for the project.

10. It is anticipated the proposed project would replace the Alta Main Canal Bridge on Frankwood Avenue on a new alignment downstream from the existing bridge. Further investigation is needed to determine the bridge type and final alignment. The bridge could span the entire channel or require work in the channel. The project could require a 1602 Streambed Alteration Agreement from DFW, Section 404 Nationwide Permit from the ACOE, a Section 401 Water Quality Certification and an NPDES Permit from the RWQCB.

11. The proposed project is within the Fresno Sole Source Aquifer. However, the project does not involve a well or sewage disposal and would not result in a threat of aquifer contamination or a hazard to public health. The project will be processed as a CE and is therefore exempt from a project-by-project review by the EPA.

12. The proposed project is not within the State Coastal Zone.

13. The project may be located within Flood Zone A according to FEMA FIRM Map No. 06019C2180H (See Attachment E). A Location Hydraulic Study and a Summary Floodplain Encroachment Report will be prepared for the project.

14. The project is not within ¼ mile of a Wild and Scenic River System according the National Wild and Scenic Rivers website.

15. The IPaC Trust Resource Report from USFWS and GIS mapping of CNDDB data points are provided as Attachment F. The Caltrans biologist requested the preparation of an NESMI in preparation for the 2014 field review.

16. The new bridge will be constructed on a new alignment downstream from the existing bridge. Trees and other vegetation will be removed to accommodate the realignment. It is anticipated that construction will commence in Fall and continue through Spring. Swallow and Migratory Bird Contract Provisions would be included in the construction specifications.

17. The Alta Main Canal is identified as Riverine according to the National Wetlands Inventory. (See Attachment G).

18. Impacts to agricultural wetlands are not anticipated.

19. Any required hydroseeding would be conducted per Caltrans requirements.

20. The surrounding land is privately owned.

21. No.

22. The project scored a 12 on the Questionnaire to Determine Visual Impact Assessment Level (See Attachment H). A technical memorandum will be prepared.

23. The proposed project would not require relocation of a residence or business.

24. Further investigation is required; however acquisition is anticipated. The project footprint identified in Attachment C includes potential permanent and temporary right of way needs. See Attachment I for Assessor Parcel Maps.

25. The project is consistent with community plans and goals.

26. The project does not have the potential to divide or disrupt neighborhoods or communities.

27. The project would not disproportionately affect low-income or minority populations.

28. Utility relocation is anticipated. Further investigation is required.

29. It is anticipated that the existing bridge would be used to route traffic through the project site during construction.

30. Access control to the State Highway System would not change.

31. It is anticipated that the existing bridge would be used to route traffic through the project site during construction.

32. The project would not affect available parking.

33. The project would not encroach on state or federal lands.

34. Conversion of farmland is not anticipated.

35. To be screened by Caltrans PQS.

36. The project is not adjacent to and will not encroach on Tribal Land.

Distribution 1) Original - DLAE, 2) Local Agency Project Manager, 3) DLA Environmental Coordinator 4) Senior Environmental Planner (or designee), 5) District PQS

Updated: 05/15/08

Attachment A

Fresno Council of Governments
2015 Federal Transportation Improvement Program
Fresno County Region

Lead Agency: Fresno County

LSTMP420 **AMENDMENT: 14-02**

Project Title:FRE040501 - Replace Bridge No. 42C0289-N Frankwood Over Alta Main Canal
Project Description: BRIDGE NO. 42C0289, N FRANKWOOD AVENUE OVER ALTA MAIN CANAL, 1.15 MI S OF PIEDRA ROAD. Replace two lane bridge with two lane bridge. Toll credits programmed for PE, ROW, and CON.

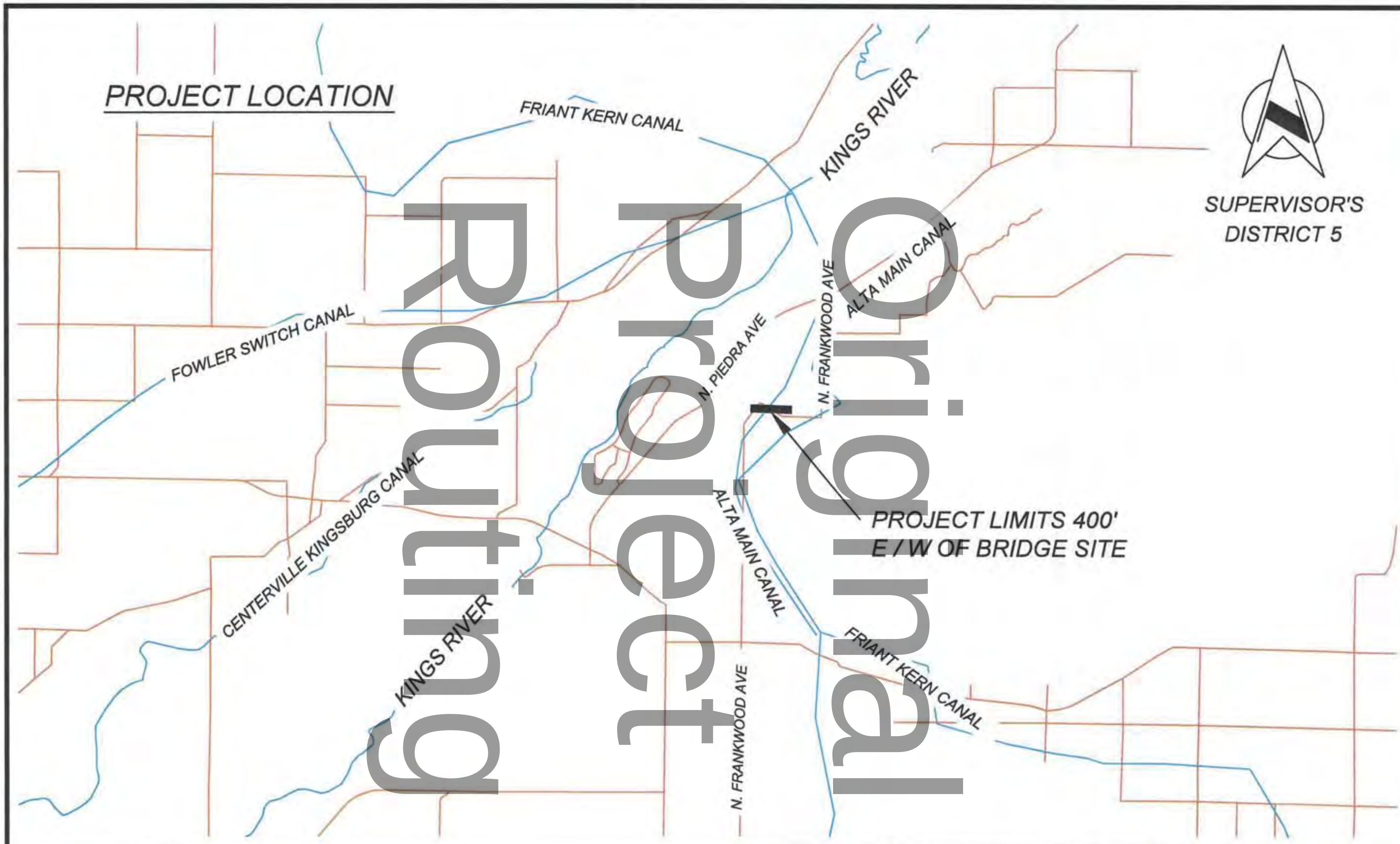
CALTRANS_FED_ID:5942 (247)

Sys: Local Rt: TCM: No Model #: CI:N Exempt Category: Safety - Non capacity widening or bridge reconstruction.

Cost Difference: $370,000 Est Total Cost: $3,070,000 Open to Traffic:

	Phase	PRIOR	14/15	15/16	16/17	17/18	18/19	BEYOND	TOTAL
Local HBRR - Highway Bridge Program	PE	$40,000		$470,000					$510,000
	RW					$60,000			$60,000
	CON						$2,500,000		$2,500,000
	TOTAL	$40,000		$470,000		$60,000	$2,500,000		$3,070,000
	TOTAL PE	$40,000	$0	$470,000	$0	$0	$0	$0	$510,000
	TOTAL RW	$0	$0	$0	$0	$60,000	$0	$0	$60,000
	TOTAL CON	$0	$0	$0	$0	$0	$2,500,000	$0	$2,500,000
	TOTAL TOTAL	$40,000		$470,000		$60,000	$2,500,000		$3,070,000

Attachment B



		DATE		
DESIGNED	M.Y.S.	01/14	SCALE	NONE
DRAWN	J.M.	01/14		

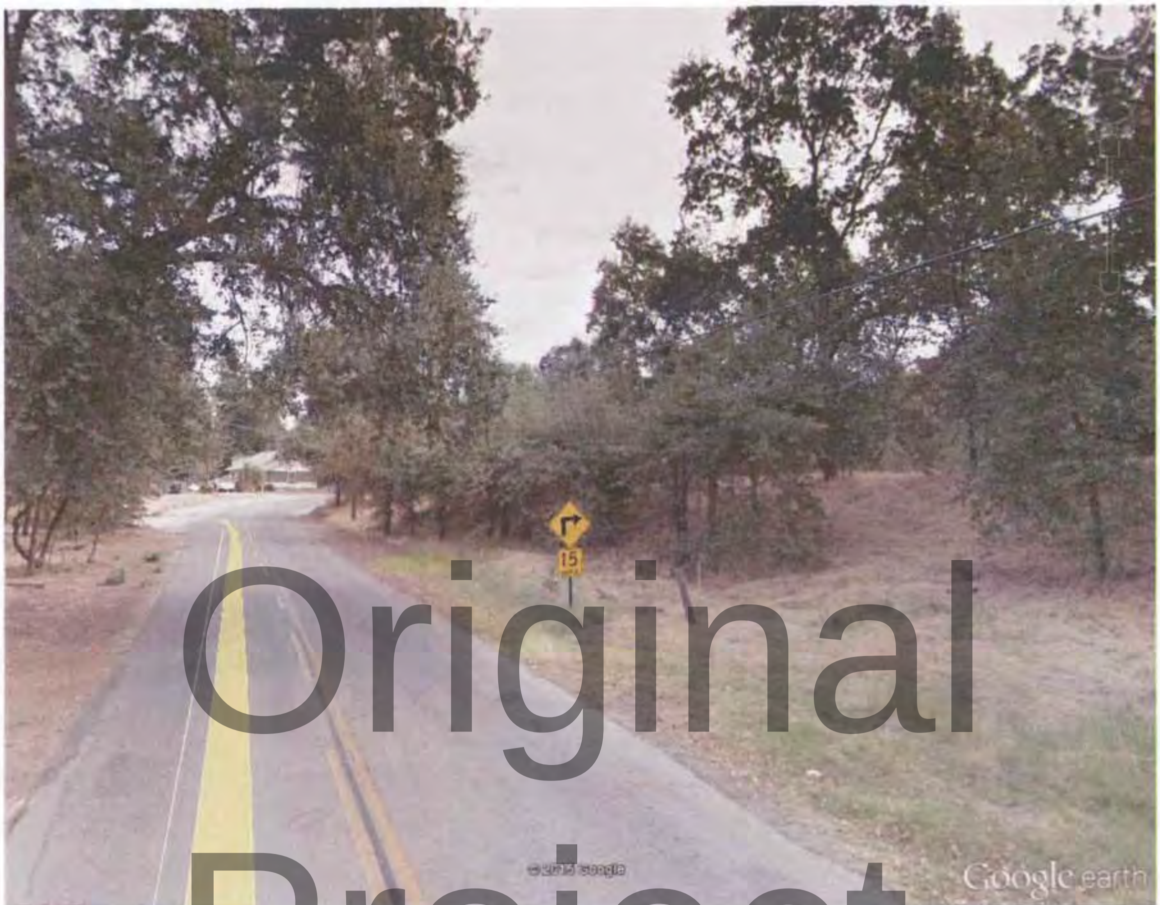
BRIDGE NO. 42C0289 / 09-048

THE COUNTY OF FRESNO 1856

DEPARTMENT OF PUBLIC WORKS AND PLANNING

ALTA CANAL BRIDGE
REPLACEMENT ON FRANKWOOD AVE

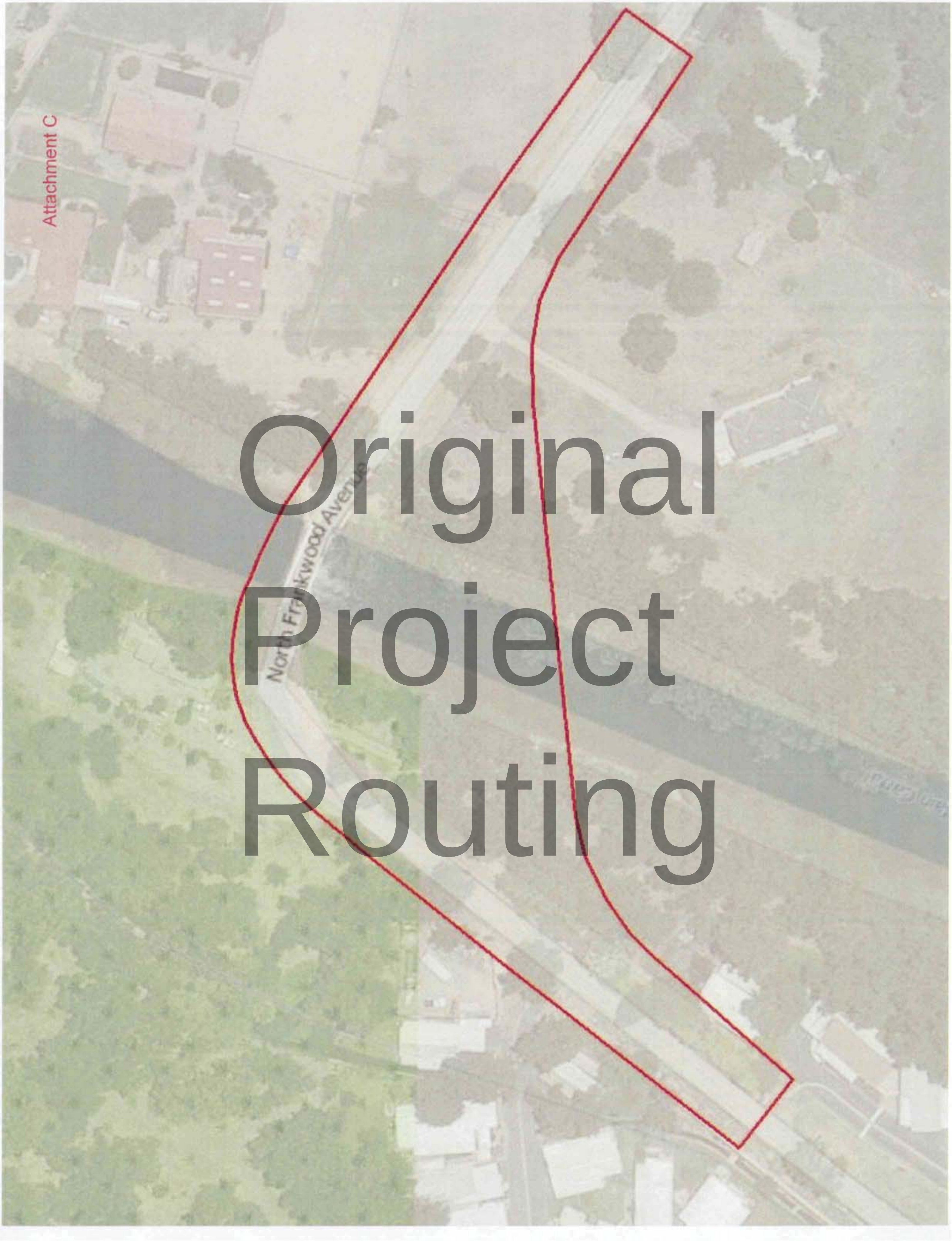
Attachment B
Photos

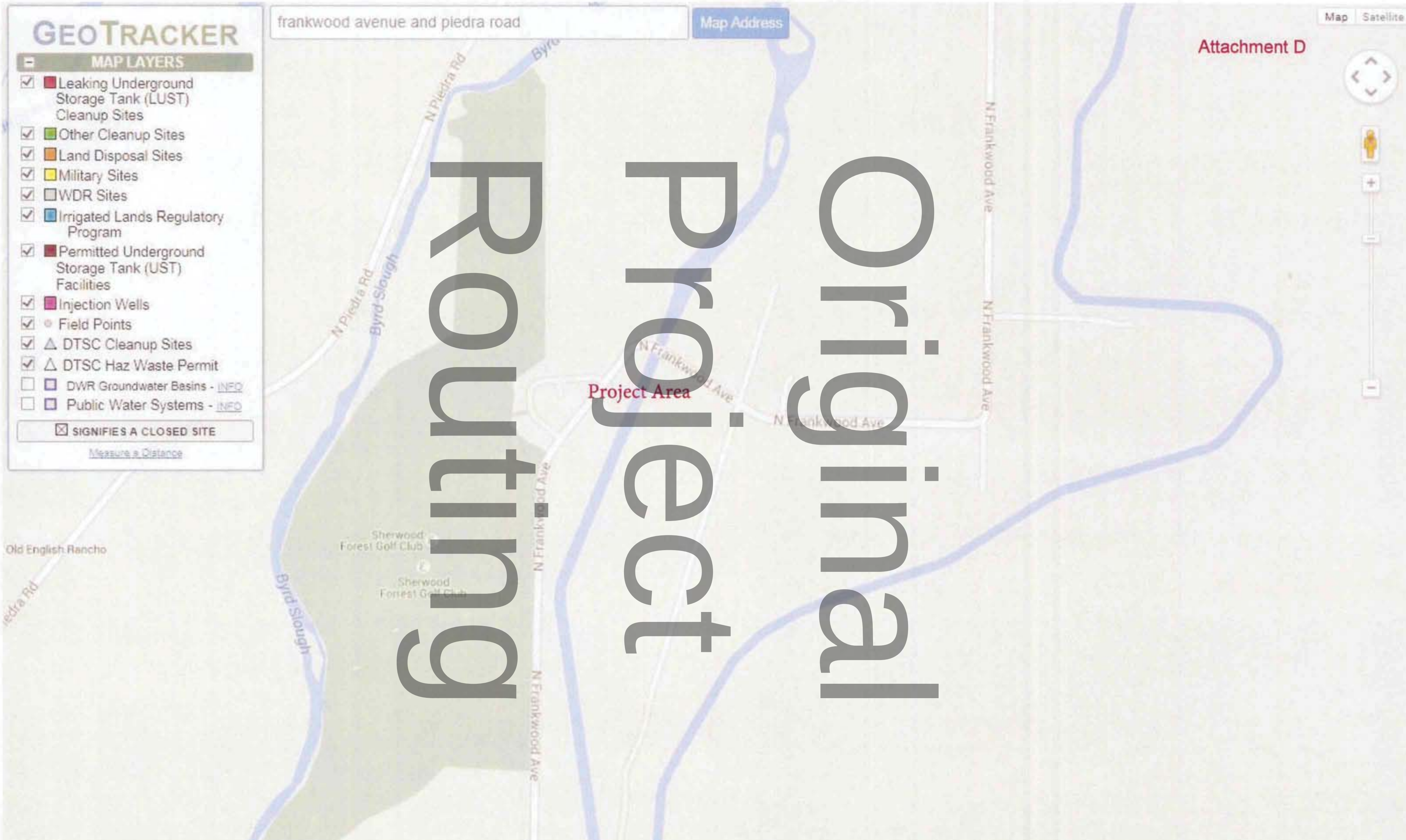


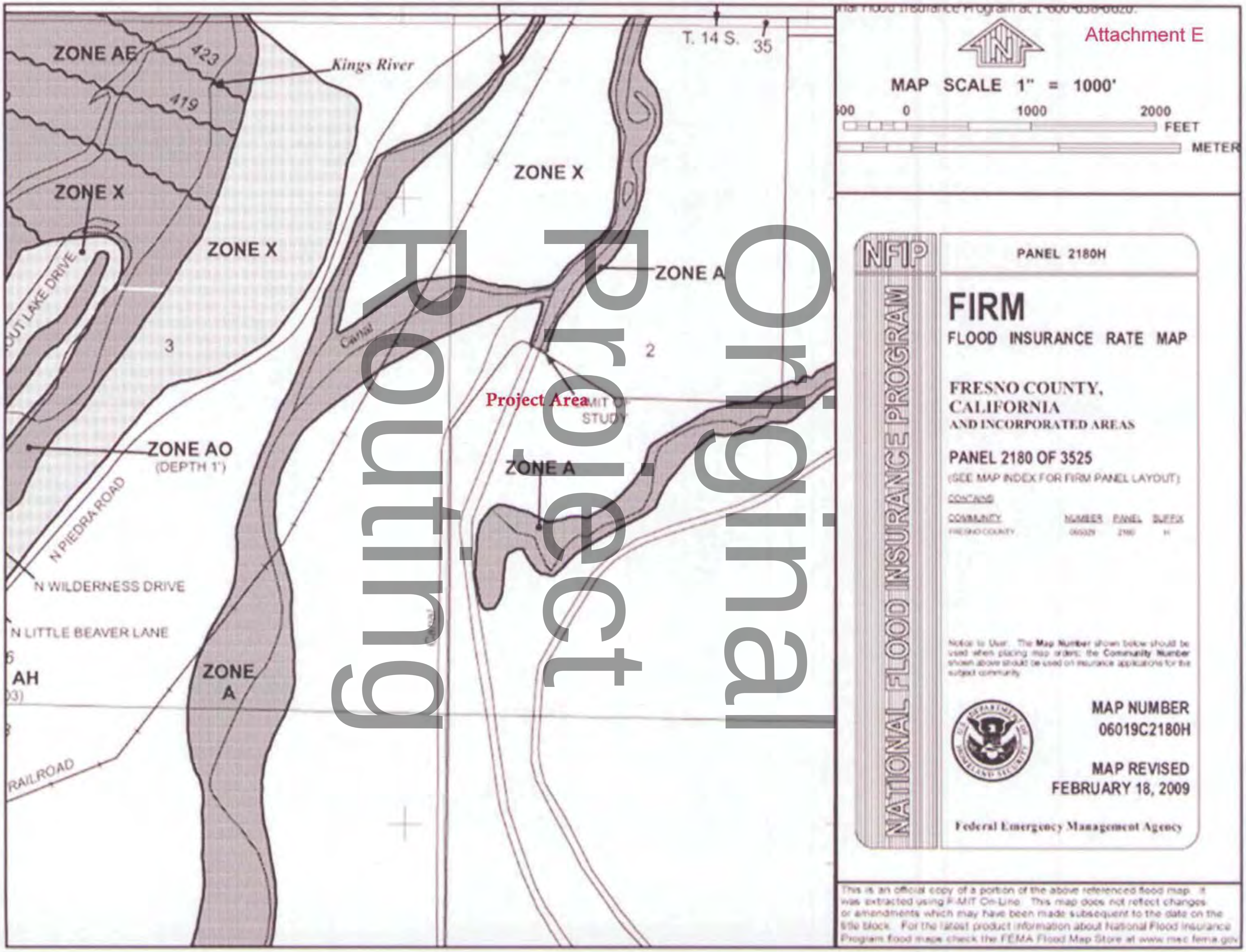
The newly realigned Frankwood Avenue will reconnect to the existing roadway west of the canal at approximately this location.

Attachment B
Photos

The newly realigned Frankwood Avenue will reconnect to the existing roadway east of the canal at approximately this location.


Attachment C
North Frankwood Avenue
Original
Project
Routing


Attachment D
Original
Project
Routing
GEOTRACKER
MAP LAYERS
Leaking Underground Storage Tank (LUST) Cleanup Sites
Other Cleanup Sites
Land Disposal Sites
Military Sites
WDR Sites
Irrigated Lands Regulatory Program
Permitted Underground Storage Tank (UST) Facilities
Injection Wells
Field Points
DTSC Cleanup Sites
DTSC Haz Waste Permit
DWR Groundwater Basins - INFO
Public Water Systems - INFO
SIGNIFIES A CLOSED SITE
Measure a Distance
frankwood avenue and piedra road
Map Address
Map
Satellite
Project Area
N Frankwood Ave
N Piedra Rd
Byrd Slough
Sherwood Forest Golf Club
Old English Rancho


Attachment E
MAP SCALE 1" = 1000'
0
1000
2000
FEET
METER
T. 14 S.
35
ZONE AE
423
419
Kings River
ZONE X
ZONE X
ZONE X
ZONE A
ZONE A
ZONE A
ZONE AO
(DEPTH 1')
Canal
Canal
Project Area
LIMIT OF STUDY
2
3
N PIEDRA ROAD
N WILDERNESS DRIVE
N LITTLE BEAVER LANE
AH
RAILROAD
NFIP
NATIONAL FLOOD INSURANCE PROGRAM
PANEL 2180H
FIRM
FLOOD INSURANCE RATE MAP
FRESNO COUNTY, CALIFORNIA
AND INCORPORATED AREAS
PANEL 2180 OF 3525
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
MAP NUMBER
06019C2180H
MAP REVISED
FEBRUARY 18, 2009
Federal Emergency Management Agency

Attachment F

U.S. Fish & Wildlife Service

Alta Main Canal Bridge Replacement

IPaC Trust Resource Report

Generated September 14, 2015 04:46 PM MDT

Attachment F

US Fish & Wildlife Service

IPaC Trust Resource Report

Project Description

NAME

Alta Main Canal Bridge Replacement

PROJECT CODE

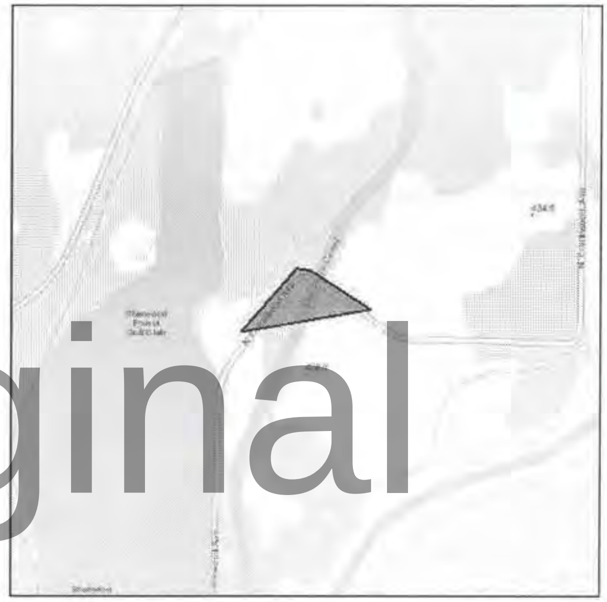
PSKBV-BYKEB-E6VIT-CANTN-7UAJRU

LOCATION

Fresno County, California

DESCRIPTION

Replace existing two-lane bridge with a new two-lane bridge on a new alignment. Existing bridge to remain in place and continue to function as irrigation control.



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Sacramento Fish And Wildlife Office
Federal Building
2800 COTTAGE WAY, ROOM W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Attachment F

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the Endangered Species Program and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under Section 7 of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an Official Species List from the regulatory documents section.

Amphibians

California Red-legged Frog Rana draytonii Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D02D

California Tiger Salamander Ambystoma californiense Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D01T

Crustaceans

Vernal Pool Fairy Shrimp Branchinecta lynchi Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=K03G

Fishes

Delta Smelt Hypomesus transpacificus Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E070

Flowering Plants

San Joaquin Adobe Sunburst Pseudobahia peirsonii — Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q1K3

San Joaquin Orcutt Grass Orcuttia inaequalis — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q1ZP

Mammals

Fresno Kangaroo Rat Dipodomys nitratoides exilis — **Endangered**

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A08O

San Joaquin Kit Fox Vulpes macrotis mutica — **Endangered**

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A006

Reptiles

Blunt-nosed Leopard Lizard Gambelia silus — **Endangered**

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C001

Giant Garter Snake Thamnophis gigas — Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C057

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Attachment F

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

Bald Eagle Haliaeetus leucocephalus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008

Burrowing Owl Athene cunicularia — **Bird of conservation concern**
Year-round

Costa's Hummingbird Calypte costae — **Bird of conservation concern**
Season: Breeding

Flammulated Owl Otus flammeolus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0DK

Fox Sparrow Passerella iliaca — **Bird of conservation concern**
Season: Wintering

Lewis's Woodpecker Melanerpes lewis — **Bird of conservation concern**
Season: Wintering

Loggerhead Shrike Lanius ludovicianus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY

Nuttall's Woodpecker Picoides nuttallii — **Bird of conservation concern**
Year-round

Oak Titmouse Baeolophus inornatus — **Bird of conservation concern**
Year-round

Peregrine Falcon Falco peregrinus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU

Short-eared Owl Asio flammeus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD

Snowy Plover Charadrius alexandrinus — **Bird of conservation concern**
Season: Breeding

Tricolored Blackbird Agelaius tricolor — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06P

Attachment F

White Headed Woodpecker Picoides albolarvatus **Bird of conservation concern**

Year-round

Williamson's Sapsucker Sphyrapicus thyroideus **Bird of conservation concern**

Year-round

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FX

Yellow-billed Magpie Pica nuttalli **Bird of conservation concern**

Year-round

Refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to NWI wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

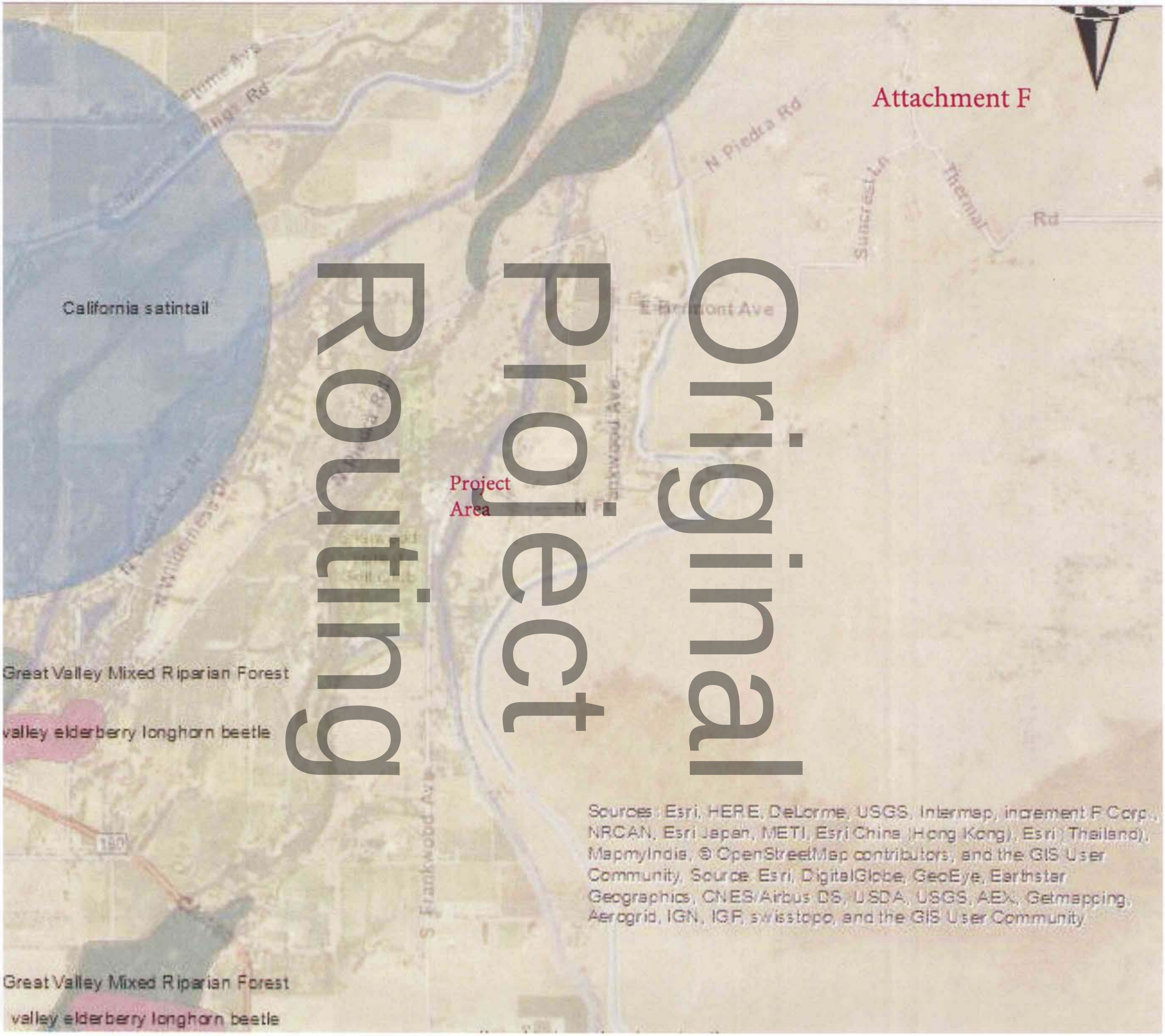
DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Riverine

R2UBH 25.2 acres

R2UBKx 21.3 acres

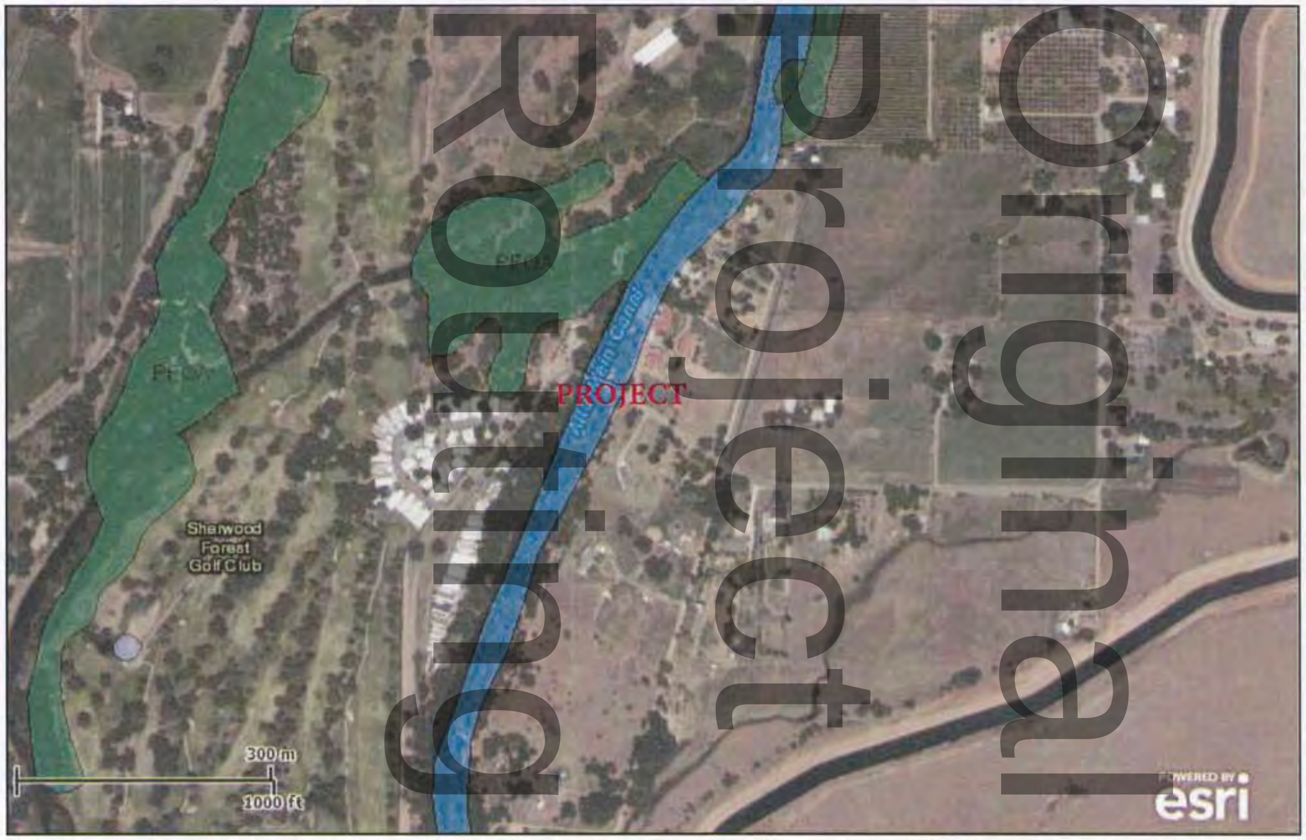

Attachment F
N Piedra Rd
Suncrest Ln
Thermal Rd
E Belmont Ave
Project Area
California satintail
Great Valley Mixed Riparian Forest
valley elderberry longhorn beetle
S Frankwood Ave
180
Great Valley Mixed Riparian Forest
valley elderberry longhorn beetle
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

U.S. Fish and Wildlife Service

National Wetlands Inventory

Alta Main Canal at Frankwood Avenue

Sep 15, 2014



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

Riparian Status

- Digital Data

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

BRLO-5942(247)

Attachment H

Questionnaire to Determine Visual Impact Assessment (VIA) Level

Use the following questions and subsequent score as a guide to help determine the appropriate level of VIA documentation. This questionnaire assists the VIA preparer (i.e. Landscape Architect) in estimating the probable visual impacts of a proposed project on the environment and in understanding the degree and breadth of the possible visual issues. The goal is to develop a suitable document strategy that is thorough, concise and defensible.

Enter the project name and consider each of the ten questions below. Select the response that most closely applies to the proposed project and corresponding number on the right side of the table. Points are automatically computed at the bottom of the table and the total score should be matched to one of the five groups of scores at the end of the questionnaire that include recommended levels of VIA study and associated annotated outlines (i.e., minor, moderate, advanced/complex).

This scoring system should be used as a preliminary guide and should not be used as a substitute for objective analysis on the part of the preparer. Although the total score may recommend a certain level of VIA document, circumstances associated with any one of the ten question-areas may indicate the need to elevate the VIA to a greater level of detail. For projects done by others on the State Highway System, the District Landscape Architect should be consulted when scoping the VIA level and provide concurrence on the level of analysis used.

Calculate VIA Level Score

PROJECT NAME: Alta Main Canal Bridge Replacement on Frankwood Avenue	
CHANGE TO VISUAL ENVIRONMENT	
1. Will the project result in a noticeable change in the physical characteristics of the existing environment? *Consider all project components and construction impacts - both permanent and temporary, including landform changes, structures, noise barriers, vegetation removal, railing, signage, and contractor activities.*	Low Level of Change (1 point)
2. Will the project complement or contrast with the visual character desired by the community? Evaluate the scale and extent of the project features compared to the surrounding scale of the community. Is the project likely to give an urban appearance to an existing rural or suburban community? Do you anticipate that the change will be viewed by the public as positive or negative? Research planning documents, or talk with local planners and community representatives to understand the type of visual environment local residents envision for their community.	High Compatibility (1 point)
3. What level of local concern is there for the types of project features (e.g., bridge structures, large excavations, sound barriers, or median planting removal) and construction impacts that are proposed? Certain project improvements can be of special interest to local citizens, causing a heightened level of public concern, and requiring a more focused visual analysis.	Low Concern (1 point)
4. Will the project require redesign or realignment to minimize adverse change or will mitigation, such as landscape or architectural treatment, likely be necessary? Consider the type of changes caused by the project, i.e., can undesirable views be screened or will desirable views be permanently obscured so a redesign should be considered?	Mitigation Likely (1 point)
5. Will this project, when seen collectively with other projects, result in an aggregate adverse change (cumulative impacts) in overall visual quality or character? Identify any projects (both Caltrans and local) in the area that have been constructed in recent years and those currently planned for future construction. The window of time and the extent of area	Cumulative Impacts Unlikely to Occur (1 point)

applicable to possible cumulative impacts should be based on a reasonable anticipation of the viewing public's perception.	
VIEWER SENSITIVITY	
1. What is the potential that the project proposal will be controversial within the community, or opposed by any organized group? This can be researched initially by talking with Caltrans and local agency management and staff familiar with the affected community's sentiments as evidenced by past projects and/or current information.	Low Potential (1 point)
2. How sensitive are potential viewer-groups likely to be regarding visible changes proposed by the project? Consider among other factors the number of viewers within the group, probable viewer expectations, activities, viewing duration, and orientation. The expected viewer sensitivity level may be scoped by applying professional judgment, and by soliciting information from other Caltrans staff, local agencies and community representatives familiar with the affected community's sentiments and demonstrated concerns.	Low Sensitivity (1 point)
3. To what degree does the project's aesthetic approach appear to be consistent with applicable laws, ordinances, regulations, policies or standards? Although the State is not always required to comply with local planning ordinances, these documents are critical in understanding the importance that communities place on aesthetic issues. The Caltrans Environmental Planning branch may have copies of the planning documents that pertain to the project. If not, this information can be obtained by contacting the local planning department. Also, many local and state planning documents can be found online at the California Land Use Planning Network.	High Compatibility (1 point)
4. Are permits going to be required by outside regulatory agencies (i.e., Federal, State, or local)? Permit requirements can have an unintended consequence on the visual environment. Anticipated permits, as well as specific permit requirements - which are defined by the permitted, may be determined by talking with the project Environmental Planner and Project Engineer. Note: coordinate with the Caltrans representative responsible for obtaining the permit prior to communicating directly with any permitting agency.	Yes (3 points)
5. Will the project sponsor or public benefit from a more detailed visual analysis in order to help reach consensus on a course of action to address potential visual impacts? Consider the proposed project features, possible visual impacts, and probable mitigation recommendations.	No (1 point)
Calculate Total It is recommended that you print a copy of these calculations for the project file.	
PROJECT SCORE: 12	

Select An Outline Based Upon Project Score

The total score will indicate the recommended VIA level for the project. In addition to considering circumstances relating to any one of the ten questions-areas that would justify elevating the VIA level, also consider any other project factors that would have an effect on level selection.

SCORE 6-9

No noticeable visual changes to the environment are proposed and no further analysis is required. Print out a copy of this completed questionnaire for your project file or Preliminary Environmental Study (PES).

SCORE 10-14

Negligible visual changes to the environment are proposed. A brief Memorandum (see sample) addressing visual issues providing a rationale why a technical study is not required.

SCORE 15-19

Noticeable visual changes to the environment are proposed. An abbreviated VIA is appropriate in this case. The assessment would briefly describe project features, impacts and any avoidance and minimization measures. Visual simulations would be optional. Go to the Directions for using and accessing the Minor VIA Annotated Outline.

SCORE 20-24

Noticeable visual changes to the environment are proposed. A fully developed VIA is appropriate. This technical study will likely receive public review. Go to the Directions for using and accessing the Moderate VIA Annotated Outline.

SCORE 25-30

Noticeable visual changes to the environment are proposed. A fully developed VIA is appropriate that includes photo simulations. It is appropriate to alert the Project Development Team to the potential for highly adverse impacts and to consider project alternatives to avoid those impacts. Go to the Directions for using and accessing the Advanced/Complex VIA Annotated Outline.

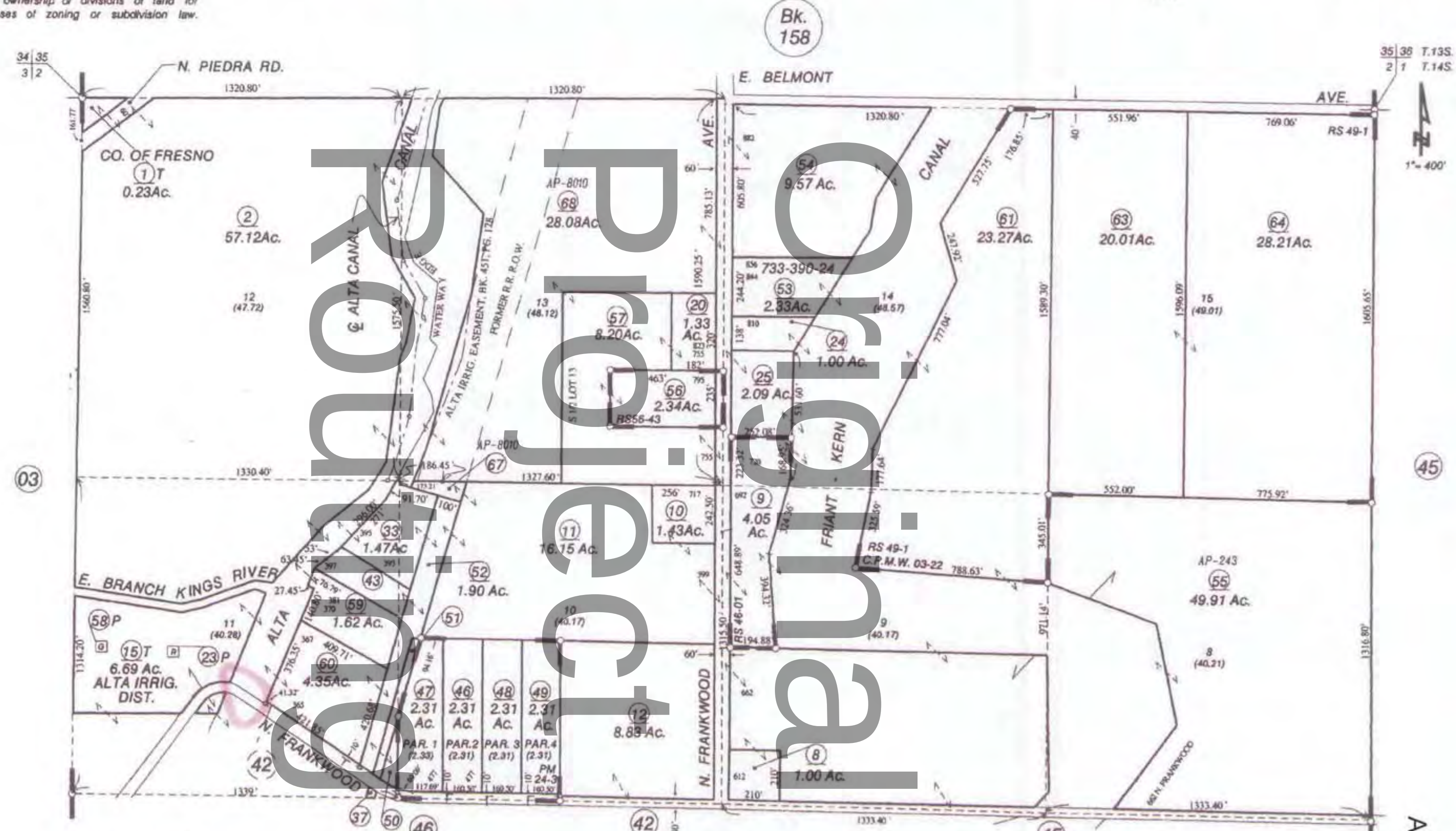
Attachment I

--- NOTE ---
This map is for Assessment purposes only. It is not to be construed as portraying legal ownership or divisions of land for purposes of zoning or subdivision law.

SUBDIVIDED LAND IN POR. SEC. 2, T. 14 S., R. 23 E., M.D.B. & M.

Tax Rate Area
71-004
71-006

333-43



Agricultural Preserve
Kings River Thermal Tract No. 1 - R.S. Bk. 5, Pg. 30
Parcel Map No. 3357 - Bk. 24, Pg. 3
Record of Survey - Bk.46, Pg.01
Record of Survey - Bk. 49, Pg. 01

Certificte of Parcel Map Waiver, No. 03-22, #61940, 03-21-05
Record of Survey - Bk. 56, Pg. 43

NOTE - Assessor's Block Numbers Shown in Ellipses.
Assessor's Parcel Numbers Shown in Circles.

Assessor's Map Bk. 333 - Pg. 43
County of Fresno, Calif.

02-22-2013 RKV

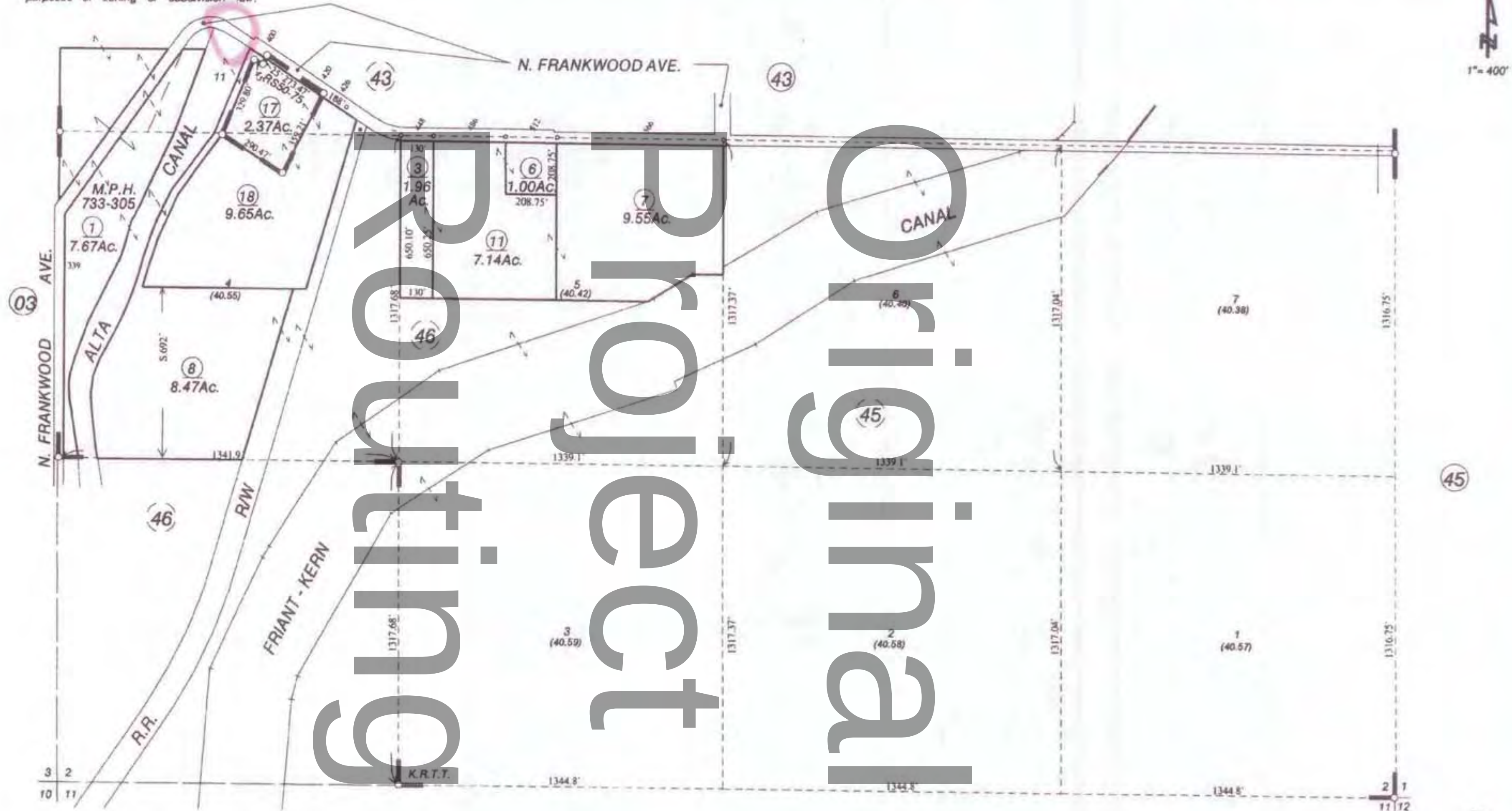
--- NOTE ---

This map is for Assessment purposes only. It is not to be construed as portraying legal ownership or divisions of land for purposes of zoning or subdivision law.

SUBDIVIDED LAND IN POR. SEC. 2, T.14S., R.23E. M.D.B. & M.

Tax Rate Area
71-004
71-006

333-42



Agricultural Preserve
Kings River Thermal Tract No. 1 - R.S. Bk. 5, Pg. 30
Record of Survey - Bk. 50, Pg. 75

Assessor's Map Bk. 333 - Pg. 42
County of Fresno, Calif.

NOTE - Assessor's Block Numbers Shown in Ellipses.
Assessor's Parcel Numbers Shown in Circles.

02-25-2013 RKV

Attachment I

APPENDIX C

PHOTO LOG

Original Project Routing

Initial Site Assessment – Haro Environmental, Inc.
Alta Main Canal Bridge, Fresno County, CA
Date Photos Taken: October 19, 2015

Photo #1 View of the south side of Alta Main Canal Bridge, facing north.

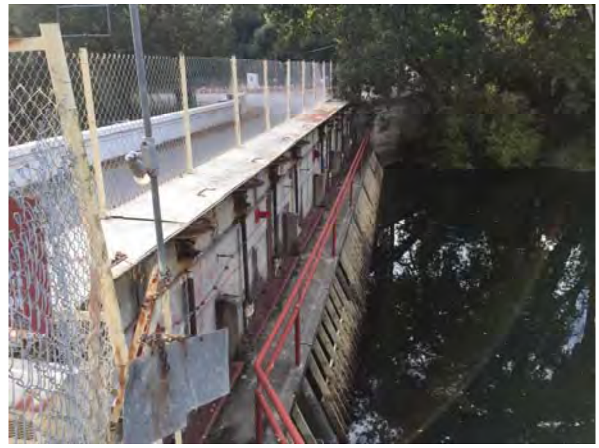


Photo #2 View of the north side of Alta Main Canal Bridge, facing southwest.

Photo #3 View of the Alta Main Canal Bridge, facing north.

Photo #4 View of the weir gate controller (small shed) on the west side of the Alta Main Canal Bridge, facing east.

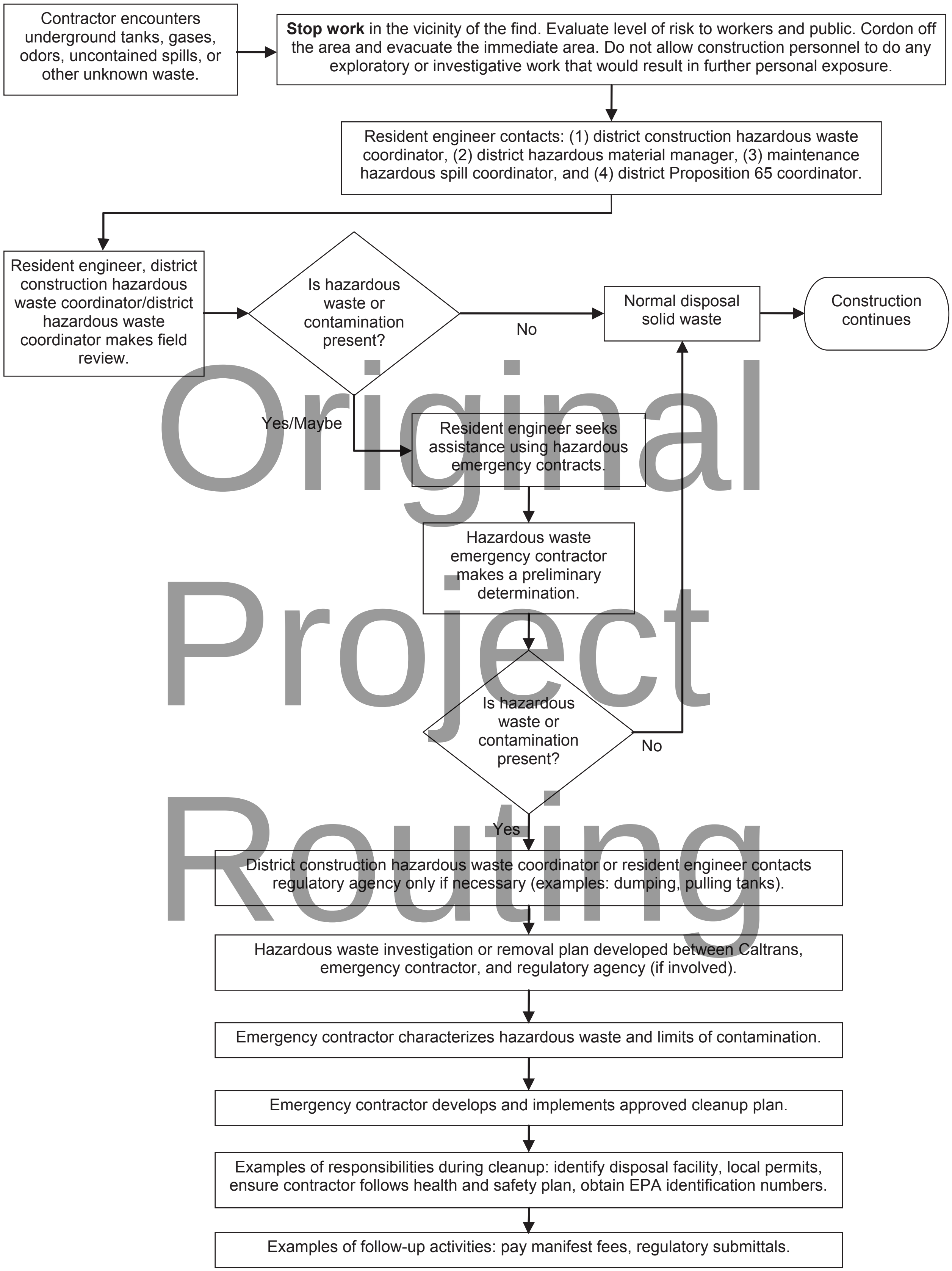
Photo #5 View of the pole-mounted transformer on the west side of Alta Main Canal Bridge, facing north.

APPENDIX D

CALTRANS UNKNOWN HAZARDS PROCEDURES

Original Project Routing

Figure 7-1.1. Unknown Hazards Procedure



APPENDIX E

QUALIFICATIONS

Original Project Routing

HARO ENVIRONMENTAL

ELLIOT R. HARO
Principal Scientist

Mr. Haro is the founding principal of Haro Environmental, Inc. With over 14 years of experience in the environmental field, Mr. Haro has directed, managed and performed environmental site assessments and remediation activities. Mr. Haro's project management experience includes proposal and cost estimate preparation for site assessments and remediation projects, design of soil and groundwater remediation systems, in-house staff and subcontractor coordination, technical report preparation, and permit acquisition. Mr. Haro has managed and performed numerous Phase I and Phase II Environmental Site Assessments (ESAs) as well as site investigation and remediation field activities including air, soil, groundwater, and surface water sampling, groundwater monitoring well installations, and remediation system operations and maintenance. He has prepared various environmental reports including site assessment reports, feasibility studies, remedial/corrective action plans, remedial work plans and health-based risk evaluations. Mr. Haro is familiar with the regulatory process and has consulted with both local and regional agencies on Client's behalf for work plan approvals and modifications. Mr. Haro's technical expertise includes evaluation, design and implementation of innovative in-situ groundwater treatment technologies including enhanced bioremediation and in-situ chemical oxidation.

EXPERTISE

- Phase I and II Environmental Site Assessments
- Soil and Groundwater Investigations
- Soil and Groundwater Remediation
- Project Management
- Remediation Technology Evaluation
- Site Characterization
- Remediation System Operations and Maintenance
- Health Risk Evaluations
- Feasibility Studies
- Data Analysis and Management
- Construction Oversight
- Permitting – Environmental and Construction

WORK HISTORY

• Haro Environmental, Inc.	2013 to Present
• Equipoise Corporation	2007 to 2013
• Rincon Consultants, Inc.,	2004 to 2007
• TN & Associates	2003 to 2004
• Environmental Biotechnology Inst.	2002 to 2004
• Creek Environmental Laboratory	1999 to 2002

EDUCATION AND CERTIFICATIONS

- Registered Environmental Assessor I (REA I), California, No. 30228 (Former; DTSC discontinued the REA program effective July1, 2012)
- M.S., Agriculture – Soil Science Specialization, California Polytechnic State University, San Luis Obispo, CA
- B.S., Soil Science, California Polytechnic State University, San Luis Obispo, CA
- OSHA and EPA 40-hour safety training and 8-hour hazardous materials refresher courses

PROJECT DESCRIPTIONS

Retail Service Station Portfolio, Various Locations, CA

- Groundwater Monitoring and Sampling Management
- In-Situ Bioremediation
- Permitting
- Regulatory Agency Negotiations
- Quarterly Reporting
- Target compounds: Hydrocarbons and MTBE
- Interim Remedial Action Plans
- Remedial and Corrective Action Plans
- Health and Safety
- Remediation System Design
- Multiphase and Dual Phase Extraction Systems

Managed project activities for monitoring and cleanup of multiple gas station facilities throughout Northern, Central and Southern California. Evaluated in-situ and ex-situ treatment options for source zone reduction and off-site containment of contaminants. Performed and managed operations and maintenance activities on remediation systems and prepared quarterly remediation reports. Prepared quarterly groundwater monitoring reports for agency submittal and approval. Prepared corrective actions plans and remedial action plans for implementation of mobile high vacuum dual phase extraction, multi-phase extraction, and dual-phase extraction systems. Designed and permitted innovative groundwater remediation approaches including enhanced aerobic bioremediation using ORC®. Negotiated with overseeing agencies for acceptance of proposed remedial actions.

Phase I Environmental Site Assessment, Remediation Engineering Evaluation, & Indoor Air Quality Assessment, Former Aircraft Manufacturing Facility, Playa Vista, CA

- Phase I ESA
- Remediation System Performance Evaluation
- Historic Chlorinated VOC and Hydrocarbon Use
- 550,000 Square Feet of Building Space

Performed a Phase I ESA for an approximately 38-acre site developed with 8 historic structures totaling approximately 550,000 square feet. Historic aircraft manufacturing resulted in chlorinated VOCs and petroleum hydrocarbon impacts to soil and groundwater. Identified recognized environmental conditions (RECs) at 11 source areas. Consulted client on extent of environmental liabilities and potential environmental costs. Evaluated the performance of the on-site dual-phase extraction system targeting identified source areas. Developed potential life-cycle costs for the existing remediation system, and costs for remediation of metals contaminated soil. Performed an indoor air survey to assess potential impacts from the historic aircraft manufacturing operations on indoor air quality. Indoor air study results were compared to published regulatory thresholds and calculated site-specific health risks.

Soil and Groundwater Remediation of Chlorinated Solvents using Chemical Oxidation, Former Aerospace Manufacturing Facility, Newbury Park, CA

- Groundwater Monitoring and Sampling Management
- In-Situ Chemical Oxidation using Potassium Permanganate
- Injection and Monitoring Well Installations
- Quarterly WDR Reporting
- Target compounds: Chlorinated VOCs
- Health and Safety Plan Preparation
- Lead Agency Negotiations

Managed in-situ chemical oxidation injections for remediation of soil and groundwater impacted with the chlorinated solvents TCE and PCE. Negotiated with the lead agency (LARWQCB) for revised Waste Discharge Requirements (WDR) and amendments to the original work plan. Developed and implemented a site-specific health and safety plan to protect the health and safety of workers and the environment from accidental exposure to the chemical oxidant. Oversaw the installation of 35 injection wells and 14 dual-nested monitoring wells, and the injection of approximately 12,000 pounds of potassium permanganate. Conducted performance evaluation sampling per WDR requirements, and prepared and submitted quarterly WDR monitoring reports to the regulatory agency.

Soil and Groundwater Remediation of Chlorinated Solvents, Soil Source Zone Removal and In-Situ Bioremediation, Former Industrial Facility, Los Angeles, CA.

- Groundwater Monitoring and Sampling Management
- Large Diameter Auger Excavation
- Enhanced Anaerobic Bioremediation
- Soil Vapor Survey
- Injection and Monitoring Well Installations
- Quarterly WDR Reporting
- Target compounds: Chlorinated VOCs
- Health and Safety Plan Preparation
- Lead Agency Negotiations

Managed soil and groundwater investigation and remediation activities for a site with soil and perched groundwater water zone with chlorinated hydrocarbons present. A Remedial Action Plan (RAP) was developed and approved by the LARWQCB to remediate soil and groundwater at the site. Because site constraints precluded the use of conventional excavation approaches without extensive shoring requirements, soil remediation activities included the design and implementation of source area soil removal using large diameter augers. Groundwater remediation activities included acquisition of a Waste Discharge Requirement (WDR) permit from the LARWQCB for injection of HRC® into the perched zone, injection design, and implementation of an Enhanced Anaerobic Biodegradation approach to stimulate by injecting HRC®.

RCRA Facility Closure, Former Hazardous Waste Handling Facility, Wilmington, CA

- Lead Agency: DTSC
- RCRA Hazardous Waste Permit Closure
- Port of Los Angeles Permitting
- Health and Safety Plan Preparation
- DTSC Approval of Work Plan Updates and Modifications

Managed work plan modification/updating and permitting for a closure of a RCRA hazardous waste permit under DTSC oversight. This former hazardous waste handling facility was the subject of an enforcement action by the lead regulatory agency and resulted in the conviction of the former operator. The chemicals associated with the facility included VOCs and petroleum hydrocarbons. Negotiated with DTSC for work plan modification resulting in a reduction of $70,000 in the sampling costs.

Feasibility Study, Former Aerospace Testing Facility, CA

- Chlorinated VOCs
- Emergent Compounds 1,4-dioxane and NDMA
- In-Situ and Ex-Situ Treatment Options
- Conforming to Lead Agency Requirements

Provided technical assistance for preparation of a feasibility study for remediation of a 2,800-acre former test site facility being closed after 50 years of storied operations. The feasibility study in part addressed the emergent chemicals 1,4-dioxane and N-nitrosodimethylamine (NDMA). These chemicals are somewhat recalcitrant in the environment and are the subject of research at many DOD-sponsored projects. Evaluated innovative remedial alternatives including enhanced aerobic bioremediation and in-situ chemical oxidation. Prepared a bench-scale work plan and reported the findings evaluating sodium persulfate and propane to reduce NDMA concentrations in groundwater.

Former Oil Field Sumps Assessment and Remediation, Santa Maria Valley, CA

- Sump Assessment and Remediation
- Remediation construction
- Target compounds: Metals, volatile and semi-volatile organics, hydrocarbons,
- Soil Excavation
- Health and Safety Plan Preparation

Project manager for sump assessment and remediation activities for multiple land leases within the Santa Maria Valley. Former oil field features were identified by reviewing historic maps and aerial photographs. The lateral and vertical limits of identified features were assessed in the field using direct push technology. Non-hazardous sump material was excavated and transported to a local landfill for reuse. Confirmation samples were collected and based on the results, closure reports were prepared and submitted to the lead oversight agency (County Santa Barbara Fire Prevention Division).

Operations and Maintenance, Ex-situ Bioremediation, San Luis Obispo, CA

- Groundwater monitoring well installation
- Groundwater sampling
- Remediation construction
- Vapor extraction system O&M
- Soil Excavation
- Field safety coordinator

Feasibility Study and Remedial Action Plan, Thousand Oaks, CA

- Project Coordinator
- Oversee field activities
- Permitting
- Conducted dual phase extraction events
- Managed and performed O & M

Site Investigations, Multiple Clients

- Oversee well installation
- Oversee boring installation
- Remediation construction
- Perform Monitoring and Optimization.
- Soil and Soil Vapor Sampling
- Risk Analysis
- Managed Subcontractors
- Construction

Publications

Roth, A. E., Lingle, E. L., Haro, E. R., Stark, J. M., Unkefer, P. J. and Kitts, C. L. 2005. *Sample Preservation Method and Storage Time Can Affect 16S rRNA Terminal Restriction Fragment Patterns Made From Soil DNA.* Soil Biology and Biochemistry.

HARO ENVIRONMENTAL

TIMOTHY E. NELLIGAN
Principal Engineer

Mr. Nelligan has professional experience in the areas of environmental compliance, permitting, and remedial design engineering. He has conducted remedial investigations (RIs), feasibility studies (FSs), remedial design/remedial action (RD/RA), corrective action plans (CAPs) at several California State and Federal Superfund site, oil refineries, and other industrial facilities. He has also prepared Storm Water Pollution Prevention Plans (SWPPPs), Spill Prevention Containment and Countermeasures (SPCCs), Hazardous Materials Business Plans (HMBPs), and Wastewater Surcharge Statements. Mr. Nelligan has conducted various field activities including air, soil, groundwater, and surface water sampling; well design, installation, and development; and vapor extraction tests. He has designed, installed, operated, and conducted performance monitoring of in-situ and above ground soil-vapor extraction systems, and groundwater extraction and treatment systems. Mr. Nelligan has assisted in the design and implementation of innovative in situ technologies such as dual phase (air and groundwater) extraction, enhanced bioremediation using HRC and chemical oxidation systems using sodium permanganate to remediate sites. He has also designed vapor control systems for use in production facilities and assisted in managing a major coke disposal and lead fixation project.

EXPERTISE

- Project Management
- Soil and Groundwater Investigations
- Data Analysis and Management
- Remediation Technology Evaluation
- Engineering Design
- Construction Oversight
- Operation and Maintenance
- Cost Analysis
- Soil and Groundwater Remediation - Petroleum Hydrocarbons
- Soil and Groundwater Remediation - Metals
- Soil and Groundwater Remediation -Chlorinated Hydrocarbons
- Major Project Oversight
- Permitting - Environmental and Construction
- Feasibility Study/RAP Preparation

WORK HISTORY

• Haro Environmental, Inc.	2013 to Present
• Katahdin Environmental	2007 to Present
• Equipoise Corporation	1999 to 2007
• Harding Lawson Associates	1998 to 1999
• Chemical Data Management Systems	1997 to 1998

EDUCATION AND CERTIFICATIONS

- Registered Professional Engineer, California 2005, No. C68666
- B.S., Civil and Environmental Engineering, California Polytechnic State University, San Luis Obispo, 1998
- OSHA and EPA 40-hour safety training and 8-hour hazardous materials refresher courses

PROJECT DESCRIPTIONS

Superfund Site, Pesticide Reformulator, Bakersfield, CA

- Design Engineer
- Design Treatment System
- 250,000 Gal Wastewater and 4,000 Gal Sludge
- Oversee Treatment of Tank Contents
- Pesticides, Metals, and Semi-volatiles
- Lead Agency: US EPA

Soil remediation and FHP recovery system operation, Marine Terminal, Los Angeles Harbor, CA.

- Project Engineer
- Free Hydrocarbon Product (FHP)
- Petroleum Hydrocarbons/ BTEX in soil and groundwater
- MTBE in groundwater
- Lead in soil
- SVE with Offgas Treatment
- Thermal Oxidation of Offgas
- FHP Recovery with Pneumatic Pumps in 40 wells
- On-Site Soil Fixation of Lead
- Lead Agency: RWQCB – Los Angeles
- SCAQMD Compliance
- Recovered over 355,200 gallons of FHP to date.

Soil and Groundwater Remediation of Solvents. Excavation and InSitu BioRemediation, Former Dean Alco Site, Los Angeles, CA

- TCE and 1,1,1-TCA Source Area
- Soil Remediation through Excavation using Large Diameter Augers
- Source Area Tank Removal
- Perched Groundwater Remediation using HRC
- Implementation of InSitu BioRemediation Monitoring Program
- Permitting – Waste Discharge Requirement, Grading Permit, UST Removal Permit
- Lead Agency: RWQCB – Santa Ana
- SCAQMD Compliance
- UST Closure – LA Fire Department
- Assistant Project Manager

Coke Removal and Groundwater Extraction System O&M, Oil Refinery, Torrance, CA –

- Assistant Program Manager
- Free Hydrocarbon Product (FHP)
- Petroleum Hydrocarbons/ BTEX in groundwater
- MTBE in groundwater
- Coke Material in Soil
- Offsite Disposal of 60,000 tons of Coke Material
- Groundwater Extraction of 1200 gallons per minute
- FHP Recovery with Pneumatic Pumps
- Lead Agency: RWQCB – Los Angeles
- SCAQMD Compliance
- Groundwater treatment using Envirex - Fluidized Bed Reactor

Groundwater Remediation Using In-Situ Chemical Oxidation, Dry Cleaning Facility, Washington

- PCE in formation water
- Formation – Fractured Bedrock
- MTBE in groundwater
- Sodium Permanganate Injections
- Feasibility Study
- Remedial Action Plan
- Lead Agency – Department of Ecology, WA

Jurisdictional Determination

for

Alta Main Canal Bridge Replacement Project

BRLO – 5942(247)

Fresno County, California

County of Fresno
2220 Tulare Street, 7th Floor
Fresno, CA 93721
Contact: Alexis Rutherford
(559) 600-4530
e-mail: arutherford@co.fresno.ca.us

October 2016

Original
Project
Routing

TABLE OF CONTENTS

Figures, Appendices, and Exhibits

Figures

Appendices and Exhibits

List of Acronyms

AWE	Area West Environmental, Inc.
CFR	Code of Federal Regulations
CWA	Clean Water Act
FAC	facultative plants
FACU	facultative upland plants
FACW	facultative wetland plants
GIS	Geographic Information System
GPS	Global Positioning System
HUC	USGS Hydrologic Unit Code
JD	Jurisdictional Determination
NHSL	National Hydric Soil List
NRCS	Natural Resources Conservation Service
NL	not listed
NWI	National Wetland Inventory
NWPL	National Wetlands Plant List
OBL	obligate wetland plants
OHWM	ordinary high water mark
Project	Alta Main Canal Bridge Replacement
TNW	Traditional Navigable Water
UPL	obligate upland plants
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WRCC	Western Regional Climate Center
WGS84	World Geodetic System 1984 WGS84
WRMS	Western Regional Monitoring Station

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Original Project Routing

1.0 SUMMARY OF FINDINGS

This Jurisdictional Determination (JD) report summarizes the results of a delineation to determine potential waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (CWA) for the Alta Main Canal Bridge Replacement (Project). This JD indicates that no waters of the U.S., including wetlands, are present in the Project area. Although aquatic features are present in the Project area, they were formed as the result of excavation conducted in uplands, and the hydrology of the features is artificially maintained through a system of weirs. Therefore, they are not considered USACE-jurisdictional waters of the U.S. and are not subject to the CWA. The findings of this report are considered preliminary, subject to review by the USACE during the verification process.

2.0 INTRODUCTION

Area West Environmental, Inc. (AWE) was retained by the County of Fresno (County) to conduct a delineation of waters of the U.S., including wetlands, for the proposed Project area outside the unincorporated community of Centerville, Fresno County, California and prepare a JD report.

The County, with support from the California Department of Transportation (Caltrans) Local Assistance Program, is proposing to replace an existing 2-lane bridge on North Frankwood Avenue over the Alta Main Canal with the construction of a new bridge built to current standards on a new alignment. Construction of the new bridge would require realignment and widening of North Frankwood Avenue, which would "soften" the bridge approach curve and improve overall sight distance.

The proposed Project will be funded by the Federal Highway Bridge Program and therefore requires both compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The lead agency for CEQA compliance is the County; the federal lead agency for NEPA compliance is Caltrans, as authorized under the NEPA Assignment Memorandum of Agreement between Caltrans and Federal Highway Administration.

2.1 Project Location

The Project is located approximately 9 miles east of the City of Sanger, California and 2.5 miles east of the unincorporated community of Centerville, California (Figure 1). Specifically, the Project is located in Section 2, Range 23 East, and Township 14 South of the Wahtoke U.S. Geological Survey (USGS) 7.5-minute quadrangle map (Figure 2). The approximate center coordinates of the site are Longitude -119.446041 east and Latitude 36.742444 north of the World Geodetic System 1984 (WGS84) datum (Figure 2).

2.2 Site Description

The Project area consists of North Frankwood Avenue where it crosses over the Alta Main Canal on the existing 2-lane bridge/weir structure. The existing bridge is integrated with a controlled weir structure that stretches the full length of the bridge and is owned and operated by the Alta Irrigation District. Bisected by the Alta Main Canal, an artificial channel that diverts water from the Kings River, the Project area consists mainly of riparian vegetation, the road, and private residences. Surrounding land uses include agriculture, low-density rural housing, a mobile home park, and a golf course (Figure 3).

2.3 Driving Directions

From Highway 99 South in Fresno, California: take the exit for Highway 180 East. Continue on Highway 180 East for 23 miles, and turn north onto South Frankwood Avenue. Continue on South Frankwood Avenue for 1.6 miles until the road curves sharply to the east and crosses the Alta Main Canal.

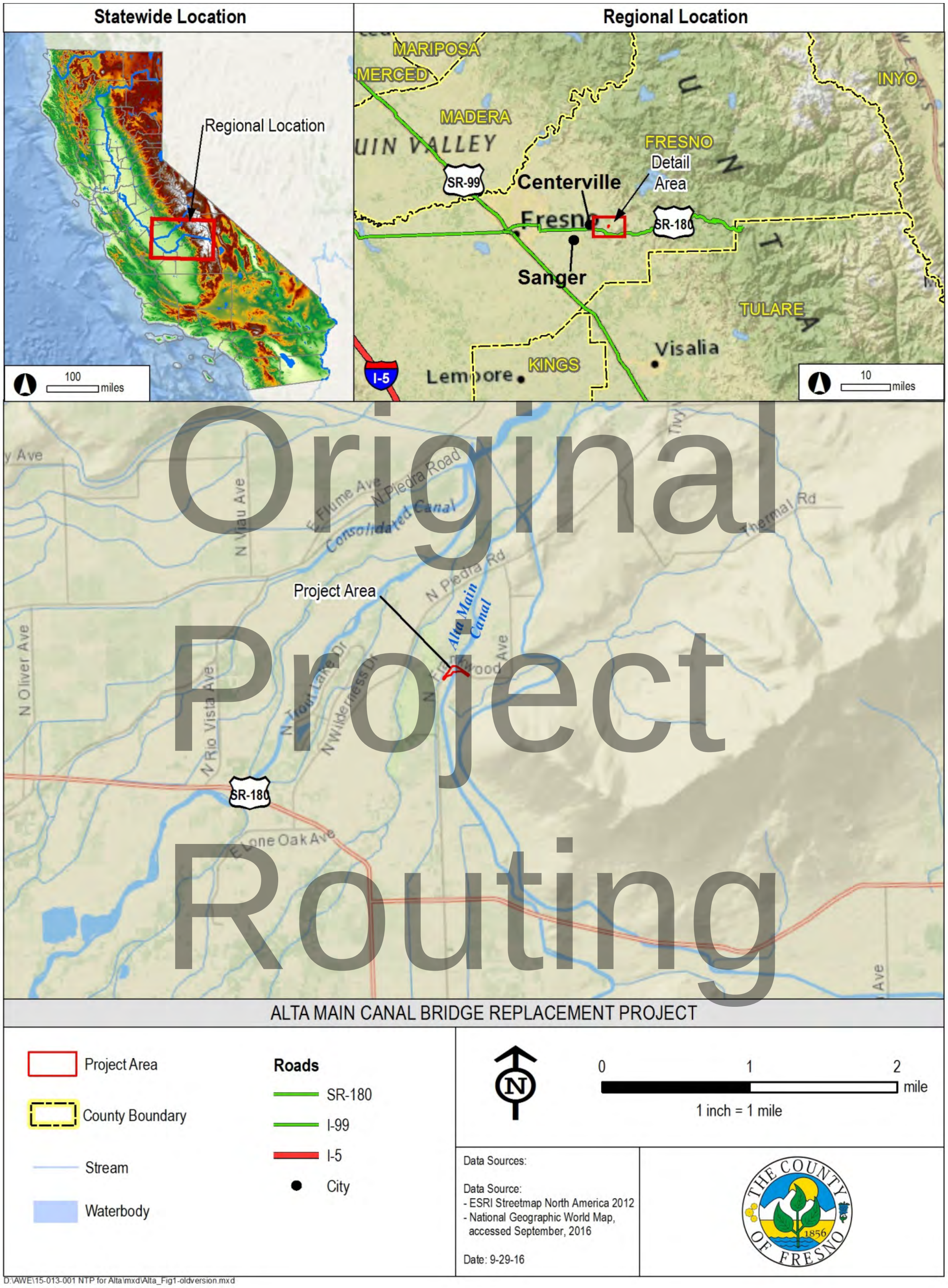

Figure 1. Project Vicinity

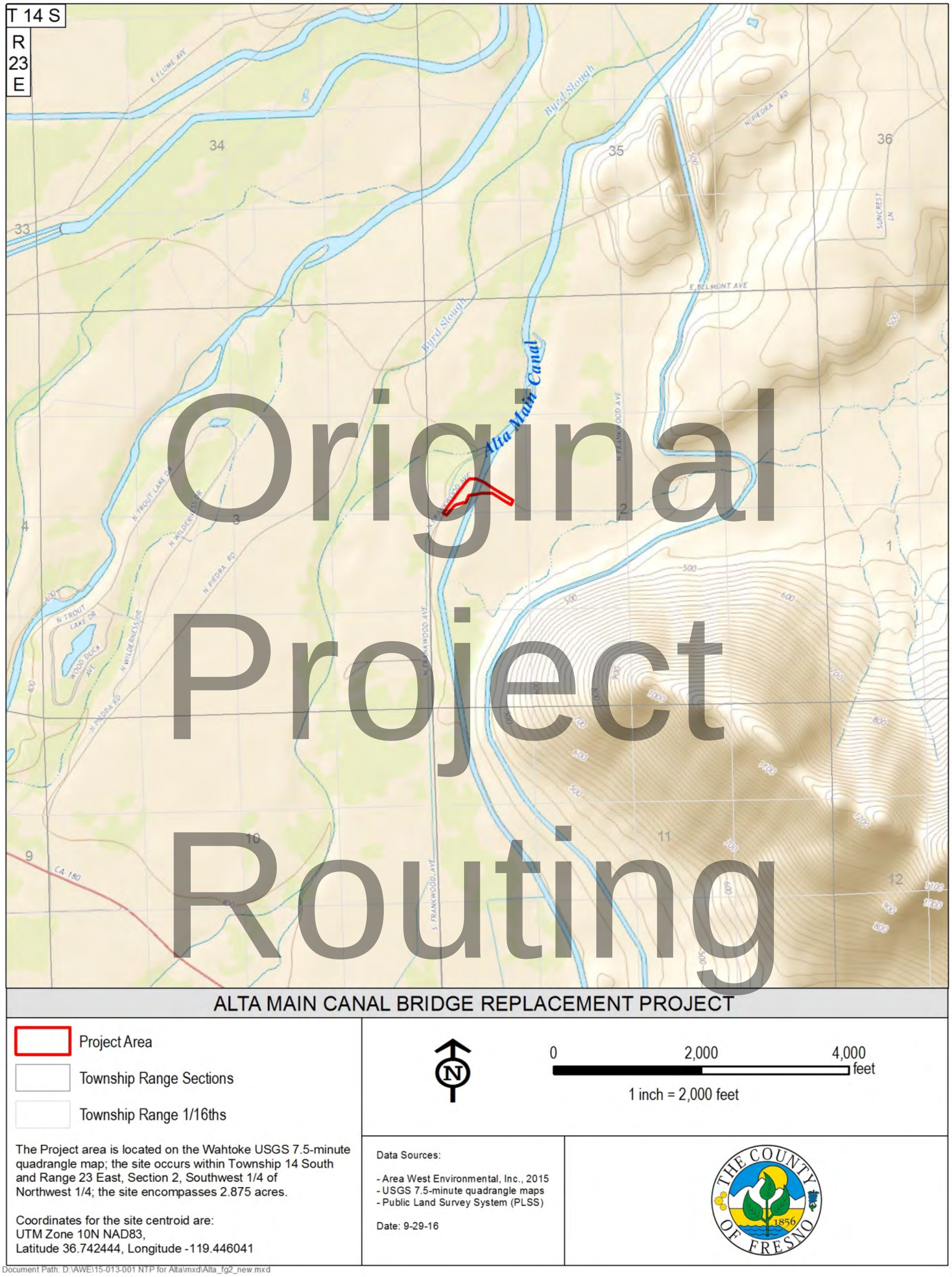

Figure 2. Project Location

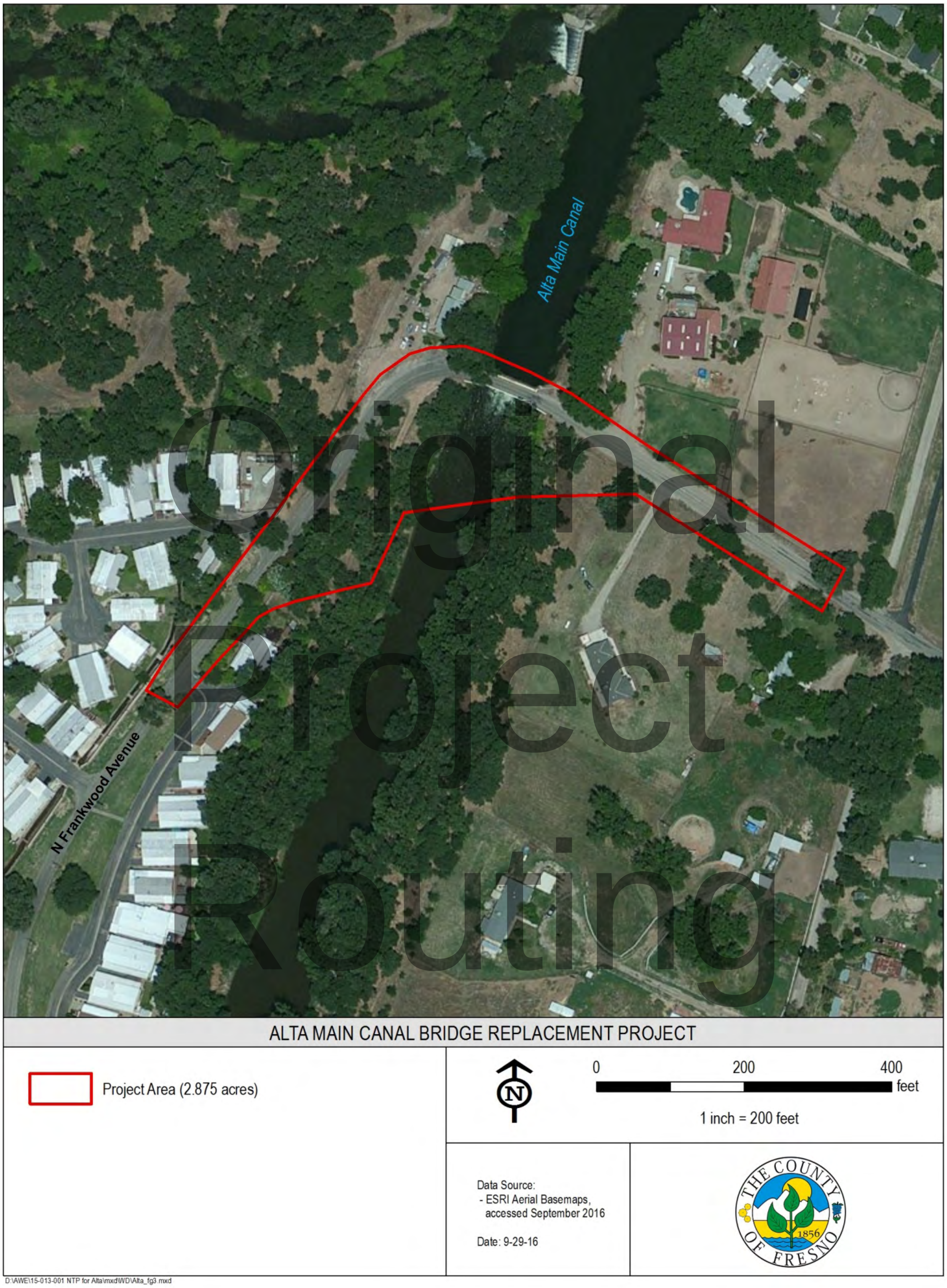

Figure 3. Project Overview

3.0 DEFINITIONS

Certain terms used throughout this report have specific meanings that relate to the wetland delineation process, as specified by the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a). These terms are described briefly below.

3.1 Waters of the U.S.

"Waters of the U.S." is the encompassing term for areas that qualify for federal regulation under Section 404 of the CWA. Waters of the U.S. include "wetlands" and "other waters of the U.S." For regulatory purposes, wetlands are defined as:

> Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (Code of Federal Regulations [CFR] 328.3, 230.3).

3.2 Wetlands

Wetlands under USACE jurisdiction must have the following field indicators:

1. A prevalence of hydrophytic vegetation (i.e., "water loving" species with "obligate," "facultative wetland," or "facultative" wetland indicator status [Lichvar et al. 2016]);

   Plant wetland indicator statuses from *The National Wetland Plant List: 2016 Update of Wetland Ratings* (NWPL) (Lichvar, et al. 2016) are abbreviated as follows:

   - OBL = Obligate wetland plants. Almost always occur in wetlands.
   - FACW = Facultative wetland plants. Usually occur in wetlands, but may occur in non-wetlands.
   - FAC = Facultative plants. Occur in wetlands and non-wetlands.
   - FACU = Facultative upland plants. Usually occur in non-wetlands, but may occur in wetlands.
   - UPL = Obligate upland plants. Almost never occur in wetlands.
   - For species not listed in the NWPL, "NL" is used to indicate their absence in the list. These species can be assumed to be upland species.

2. Hydric soils (i.e., hydric soils listed by the U.S. Department of Agriculture Natural Resources Conservation Service [NRCS] and unclassified soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part) (NRCS 2010); and

3. Wetland hydrology (evidence that episodes of inundation or soil saturation lasting more than a few days during the growing season have occurred repeatedly over a period of years and that the timing, duration, and frequency of wet conditions have been sufficient to produce a characteristic wetland plant community and hydric soil morphology).

In the Arid West Region, growing season dates are determined through onsite observations of the following indicators of biological activity in a given year: (1) above-ground growth and development of vascular plants, and/or (2) soil temperatures. Season dates may be approximated by using WETS tables available from NRCS National Water and Climate Center to determine the median dates of 28 degree F (-2.2 degree C) air temperatures in spring and fall based on long-term records gathered at the nearest appropriate National Weather Service meteorological station (USACE 2008a).

3.3 Other Waters of the U.S.

For this report, other waters of the U.S. refer to waterways and other water bodies with a defined bed and bank, such as drainages, ditches, creeks, rivers, and lakes. This translates to the bank-to-bank portion of water bodies, up to the “ordinary high-water mark” (OHWM). Other waters of the U.S. may lack hydrophytic vegetation and/or evidence of hydric soils.

In 33 CFR Part 329.1, the OHWM for non-tidal rivers is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; and the presence of litter and debris. The OHWM for a stream is usually determined through an examination of the recent physical evidence of surface flow in the stream channel. In dry land fluvial systems typical of the desert areas, the most common physical characteristics indicating the OHWM for a channel usually include, but are not limited to, a clear, natural scour line impressed on the bank; recent bank erosion; destruction of native terrestrial vegetation; and the presence of litter and debris (USACE 2008b, 2010).

4.0 METHODS

Wetlands were delineated using the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a). An area must meet criteria for hydrophytic vegetation, hydric soils, and wetland hydrology to be identified as a potential wetland under USACE jurisdiction.

Water bodies that did not meet the wetland criteria were reviewed to determine if they met the definition of other waters of the U.S. (i.e., had evidence of an OHWM) (USACE 2008b, USACE 2010).

Specific details of the delineation methods are described below.

4.1 Preliminary Review

Before field surveys were conducted, the following information was reviewed:

- General topography from the *Wahtoke*, California USGS 7.5-minute topographic quadrangle map (Figure 2);
- Soils information from the NRCS Web Soil Survey 2016 (Figure 4, Appendix A);
- Site hydrology from visual interpretations of aerial photographs and topography at a scale of 1 inch = 100 feet (Exhibit A);
- National Wetland Inventory (NWI) maps (Figure 5) (U.S. Fish and Wildlife Service [USFWS] 2016);
- Regional hydrology data from visual observations and aerial photographic evidence of hydrologic connections to Traditional Navigable Waters (TNW) (Figure 6); and
- USGS Hydrologic Unit Code (HUC) data for California watershed boundaries (Figure 7).

4.2 Field Survey Dates and Methods

Wetland delineation fieldwork was conducted by AWE biologists Mark Noyes and Samuel Price on June 10, 2016. The purpose of the fieldwork was to gather data on the vegetation, soils, and hydrology of the Project area to determine what areas; if any, met the USACE three mandatory criteria for wetlands (i.e., exhibited positive indicators of wetland vegetation, soils, and hydrology).

4.2.1 Vegetation

Vegetation within potential waters of the U.S. was recorded on Wetland Determination Data Forms (Arid West Region, Version 2) which are provided in Appendix B. Plant species not readily identifiable in the field were determined based on the *Jepson Manual: Vascular Plants of*

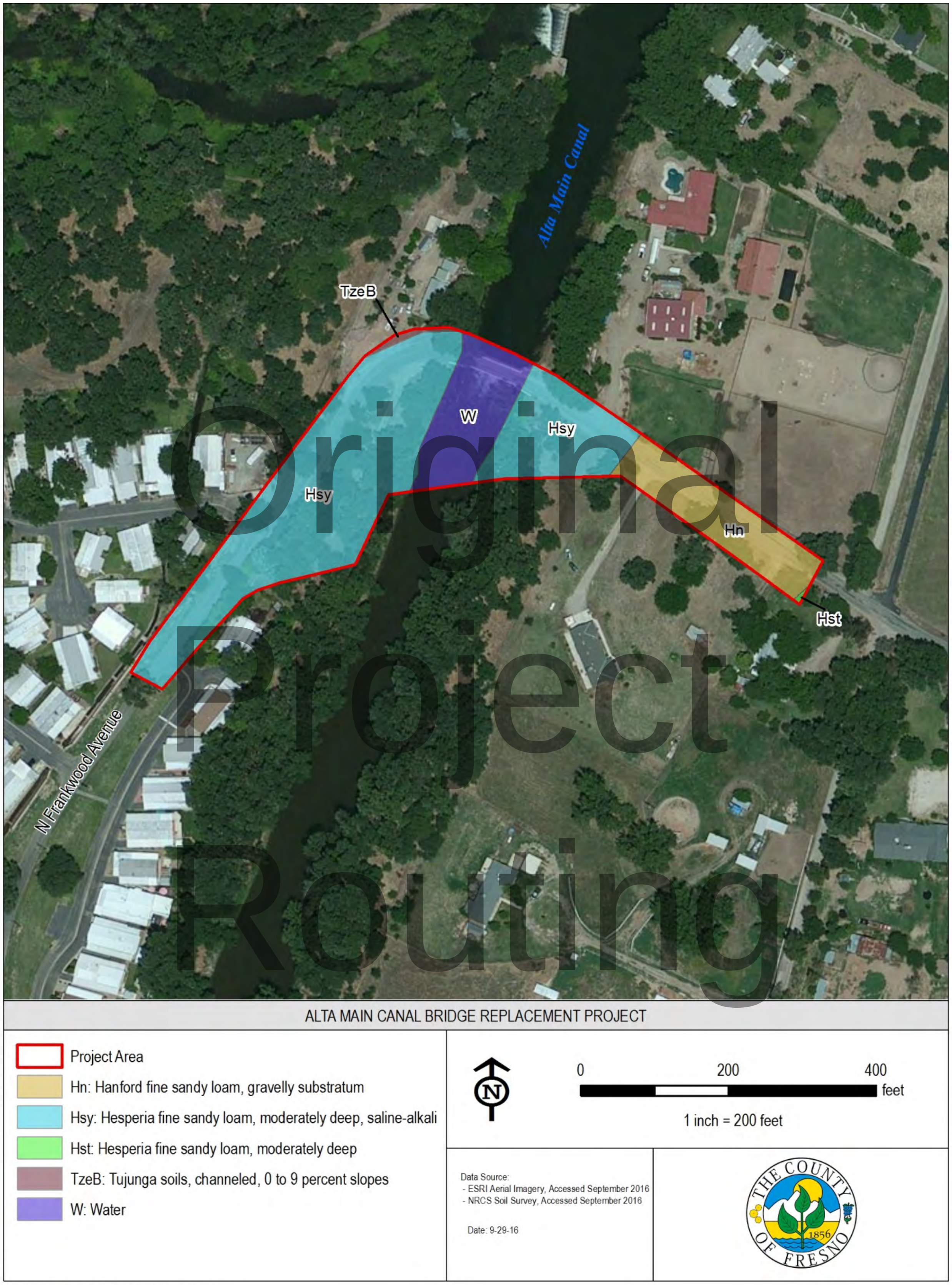

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Figure 4. Project Soils

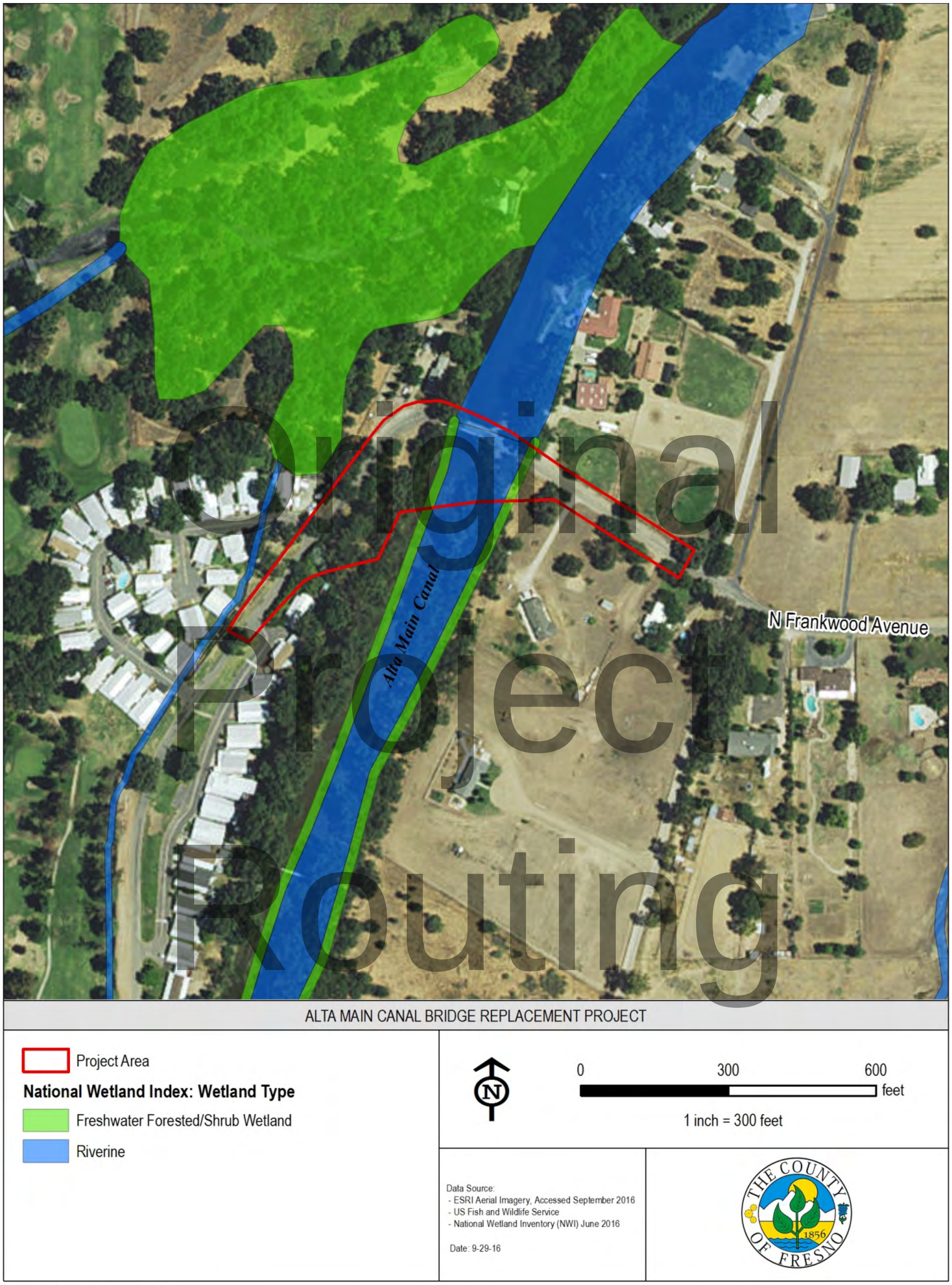

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Figure 5. National Wetlands Inventory

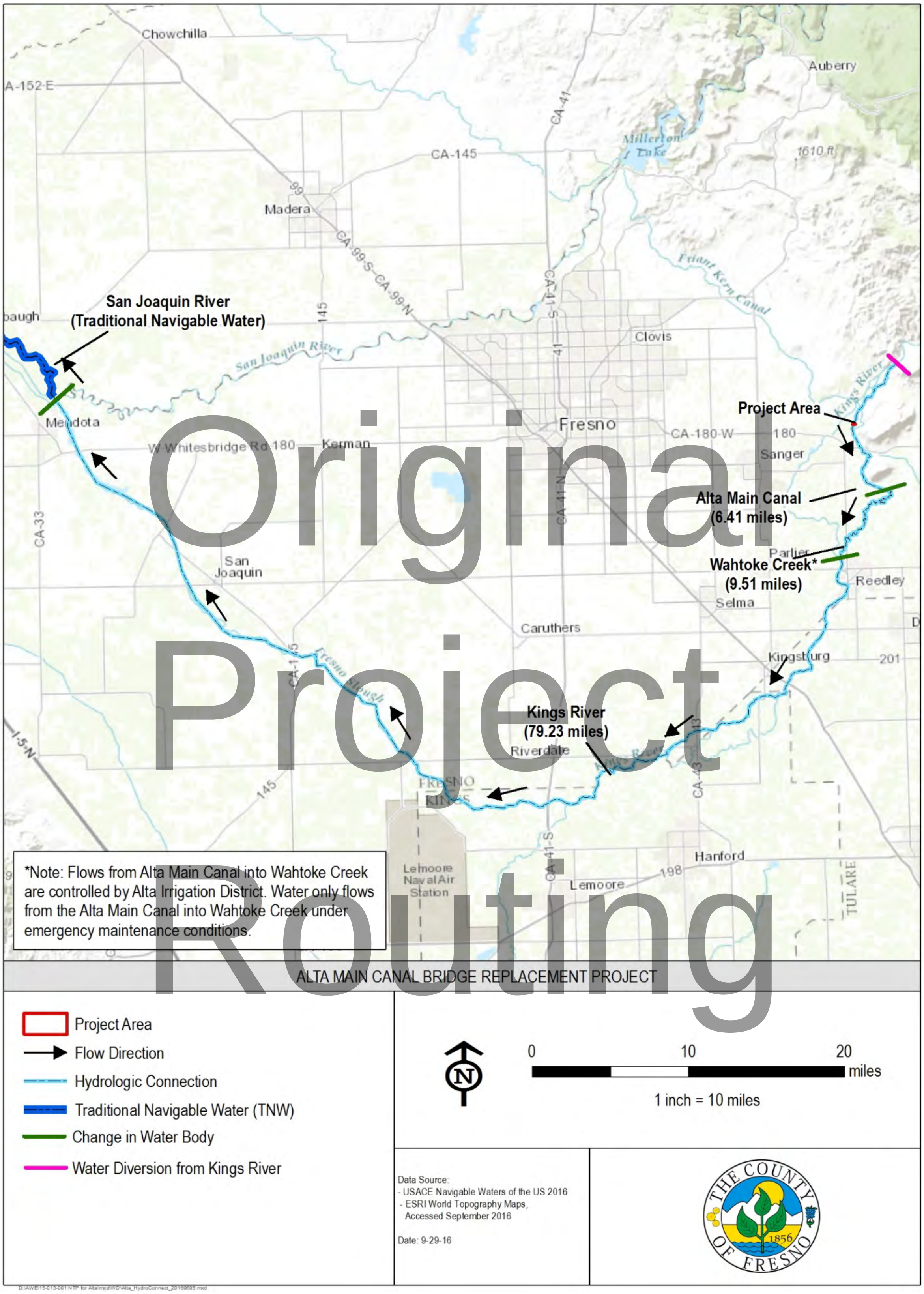

Figure 6. Project Distance to Traditional Navigable Water

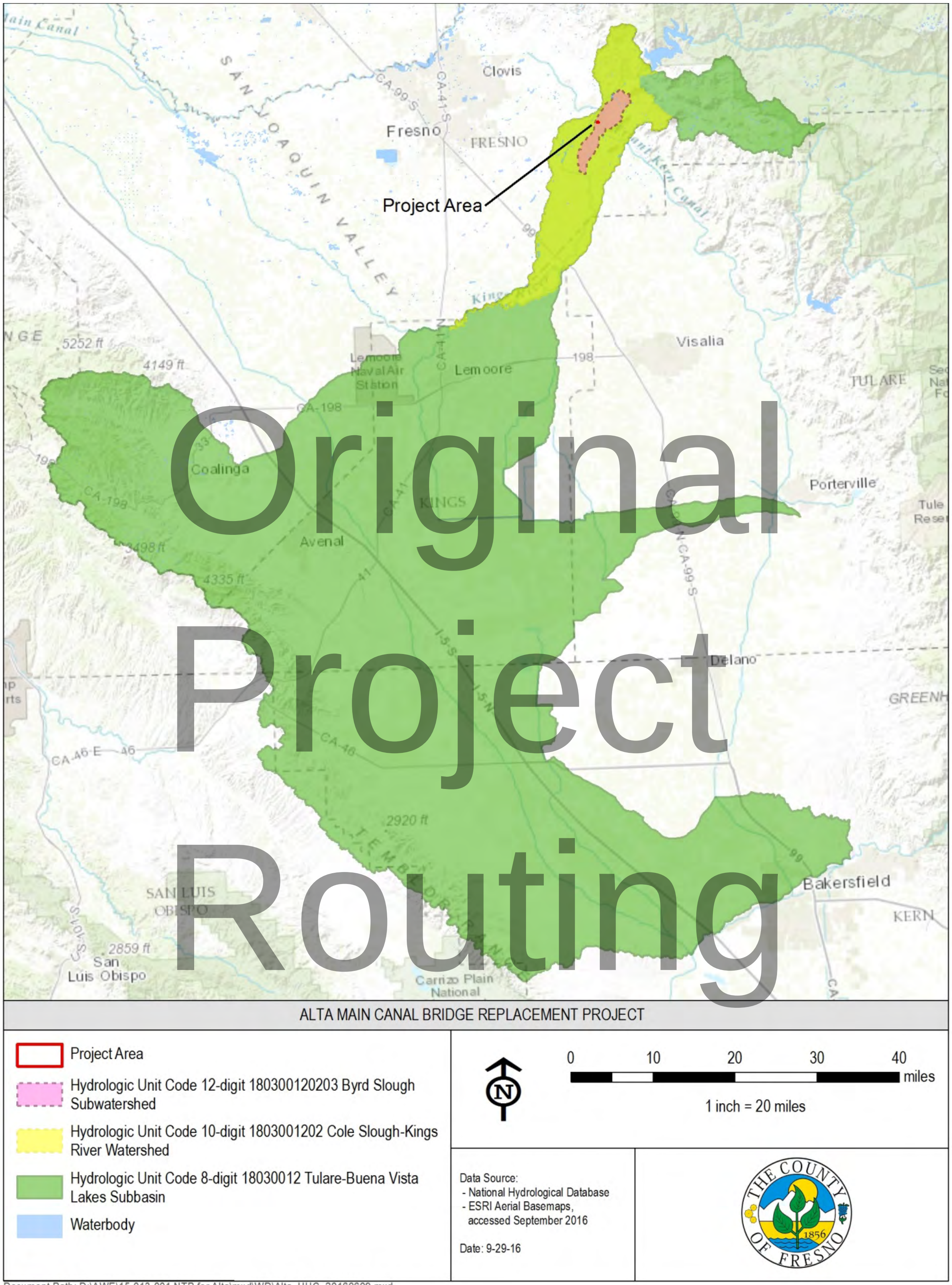

Figure 7. Project Hydrologic Unit

California (Second Edition) (Baldwin et al. 2012). The wetland indicator status of plant species was based on *The National Wetland Plant List: 2016 Update of Wetland Ratings* (Lichvar et al. 2016).

The wetland vegetation criterion was considered met when more than 50 percent of the dominant plant species across all strata were rated OBL, FACW, or FAC or if the aerial cover of hydrophytic plant species resulted in a prevalence rating of 3.0 or less. The USACE defines "dominant" plant species as those with at least 20 percent coverage of the total canopy. The USACE defines an area to be vegetated if it has 5 percent or more total plant cover at the peak of the growing season. Those sites supporting either a dominance or prevalence of hydrophytes were further examined for indicators of wetland hydrology and hydric soils.

4.2.2 Soils

Soil texture, matrix and mottle colors, and the presence of subsoil layers impervious to water infiltration were documented from hand-excavated soil pits. Soil pits were excavated to 18 inches, where possible. Soil pits not excavated to this depth encountered restrictions to hand excavations such as dry/hard soil conditions, rock, or concrete. Soils were examined for positive hydric soil indicators such as low chromas, mottles, histic epipedons, organic layers, manganese concretions, gleization, and sulfidic odor. The color and texture of the soil layers encountered were recorded. Soil color was determined from moist soil peds using *Munsell Soil Color Charts* (Munsell 2009). Alphanumeric soil descriptions provided on the field data forms are based on those in the Munsell soil color charts.

Paired upland and wetland soil pits were evaluated in order to determine and delineate an abrupt wetland/upland boundary. Hydric soil assessments were predominately based on the guidance provided in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a) and the *Field Indicators of Hydric Soils in the U.S., Version 7.0* (NRCS 2010). Supplemental soil information for the regional area was also evaluated from the Web Soil Survey (NRCS 2016). Specific pit depths, soil color/texture, and other soil data obtained at each soil sample location are provided on the data forms found within Appendix B.

4.2.3 Hydrology

Areas supporting a prevalence of hydrophytic vegetation and hydric soils were further evaluated for indicators of wetland hydrology. Hydrology information was determined through field observations in order to determine the presence/absence of primary and/or secondary hydrological indicators (i.e., surface water, saturation, sediment debris or drift deposits, watermarks, soil cracks, oxidized root channels, biotic or salt crusts, or other hydrologic indicators). Wetland hydrology was also determined based on the presence of ponding (inundation) or saturation, aerial photographic signature, landscape positions, or the presence of other field indicators such as scour marks.

The site was also surveyed for water bodies (e.g., streams and ponds). A "water body" is defined as any area that in a normal year has water flowing or standing above ground to the extent that evidence of an OHWM is established (Federal Register Volume 67, Number 10, Tuesday

January 15, 2002). Water bodies are not required to be dominated by hydrophytic vegetation or to have positive hydric soil indicators to be considered USACE-jurisdictional.

4.3 Data Collection

Data was collected on the general vegetation communities within the Project area, categorized by the dominant vegetation. Drainages exhibiting an OHWM were further characterized using forms provided in the *Updated Datasheet for Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010) (Appendix B). Representative photographs of the site and the features are provided in Appendix C.

The Project consists of the following vegetation community types: developed, annual grassland, valley oak woodland, valley oak riparian, artificial seasonal wetland, and canal. Two paired data points were collected to document wetland and upland boundaries for the mapped potential wetland features.

4.4 Mapping and Acreage Calculations

The boundaries of potential wetland features were recorded using a handheld Trimble GeoXT 6000 Global Positioning System (GPS) unit with sub-meter accuracy. Data was collected in latitude/longitude in the WGS84 datum. Acreages for these features within the Project were calculated using polygon size in ArcView Geographic Information System (GIS).

5.0 RESULTS

Although aquatic features were encountered in the field, they were determined to be artificially supported. As a result, no waters of the U.S. are located within the Project area (Exhibit A). Vegetation communities in the Project area are discussed further in Section 5.3, "Vegetation Communities."

The findings of this delineation are preliminary and subject to review and modification by the USACE. Data forms are included in Appendix B. Representative photographs are provided in Appendix C. A list of vascular plant species observed at the Project area is included in Appendix D. A signed statement allowing USACE staff to access the Project area for the purpose of verifying the delineation is provided in Appendix E.

5.1 Limitations to Surveys

Limitations to this survey included:

1) Survey date outside of the bloom period for some common wetland plants; due to the delineation being conducted in the early summer, some of the herbaceous cover was desiccated and difficult to identify. However, enough vegetation was identifiable to determine feature boundaries and types.

2) Survey date was within the annual delivery period when the Alta Irrigation District releases water through the segment of the Alta Main Canal within the Project area. As a result of the flowing water within the canal, a data point could not be taken within the feature. For this reason, portions of the Freshwater Forested/Shrub Wetland polygons from the NWI were classified as canal (Section 5.4.5) as these areas were underwater during the field survey.

5.2 Overview of Site Conditions

The Project is located in Fresno County with an elevation of approximately 425 feet above mean sea level.

Freshwater Forested/Shrub Wetland and Riverine wetland types were identified within the Project area in the NWI (Figure 5).

Climate details for the BSA are based on historical data collected by a Western Regional Climate Center (WRCC) at the monitoring station at Fresno 5 Northeast, located approximately 13.5 miles west of the Project area. The WRCC station at Fresno 5 Northeast has records from 1999-2016, and collects data on daily temperature (minimum and maximum), precipitation, snowfall, and snow depth. Temperatures range from an average high in July of 98.1 degrees Fahrenheit (°F) to an average low in January of 37.7 °F (WRCC 2016). The average annual temperature in is approximately 66 °F, and an average of 10.63 inches of precipitation falls annually. Precipitation occurs throughout the year, with the least occurring from July through September. Precipitation falls primarily in the form of rain (WRCC 2016).

The Project area is located within the HUC 8-digit Tulare Lake Bed subbasin (HUC 18030012), the HUC 10-digit Cole Slough-Kings River watershed (HUC 1803001202), and the 12-digit Byrd Slough subwatershed (180300120203) (Figure 6).

The Alta Main Canal, an artificial irrigation canal that diverts flows from the Kings River, bisects the Project area. The Alta Irrigation District transports surface and ground water through the Alta Main Canal for irrigation deliveries, typically from May through August. Downstream of the Project area, water from the Alta Main Canal is diverted through a series of canals and weirs for irrigation. However, flows can be diverted into Wahtoke Creek during emergency canal and levee repairs. During these unscheduled events, water diverted into the creek flows 9.5 miles before reaching the Kings River, which must flow for 79.2 miles before reaching the San Joaquin River, a TNW. Surface waters from the Kings River and Tulare Lake Basin only drain into the San Joaquin River during extreme rainfall years (CVRWQCB 2015). In most years, water from the Alta Main Canal is used entirely for irrigation water delivery and does not reach downstream waters.

Formed in 1882, the 76 Land and Water Company (currently the Alta Irrigation District) began construction on the 76 Channel (now the Alta Main Canal) in 1882 (Mead and Smythe 1901). The 76 Channel diverts flows from the Kings River via the Cobbles Weir, approximately 2.75 miles upstream of the Project area. Between the Cobbles Weir and the Frankwood bridge/weir within the Project area, the canal consists of channelized portions of natural accessory channels of the Kings River. Although the first few miles of the 76 Channel downstream of Cobbles Weir were constructed by modifying a natural waterway, aerial photographs, topographical mapping (including historic maps), and a historical account of the 76 Land and Water Company (now Alta Irrigation District) from 1898 indicate that the canal at Frankwood Avenue is an engineered ditch that was built in 1882-1884 (McMorris pers comm). Historical topographic maps and aerial photos of the Project area are provided in Appendix F. Therefore, within the Project area, the Alta Main Canal is completely artificial, having been excavated within uplands. Due to the system of weirs and control structures upstream, within, and downstream from the Project area, the hydrology of the Alta Main Canal within the Project area is entirely artificially maintained.

5.3 Soils

Five soil map units are present within the Project area (Figure 4) and include:

- Hanford fine sandy loam, gravelly substratum;
- Hesperia fine sandy loam, moderately deep, saline-alkali;
- Hesperia fine sandy loam, moderately deep;
- Tujunga soils, channeled, 0 to 9 percent slopes; and
- Water.

Each soil map unit present in the Project area is described in detail in the NRCS Web Soil Survey, including landform position, horizon textures, depth to restrictive layer, and drainage class (Appendix A). The Hanford fine sandy loam, gravelly substratum and Tujunga soils, channeled, 0 to 9 percent slopes soil map units are listed in the National Hydric Soil List (NHSL) (NRCS 2015). No other soil map units within the Project area are listed in the NHSL.

5.4 Vegetation Communities

A total of six vegetation communities were identified at the Project area, including:

- developed/ornamental;
- annual grassland;
- valley oak woodland;
- valley oak riparian;
- artificial seasonal wetland; and
- canal.

The boundaries of the OHWM of the Alta Main Canal are mapped in Exhibit A, and the following sections describe all vegetation communities observed at the Project area.

5.4.1 Developed/Ornamental

This vegetation community includes private residences and associated landscaping and driveways, roads, and the existing bridge. North Frankwood Avenue, a paved road, runs through the Project area and crosses the Alta Main Canal over the existing bridge/weir. Unpaved shoulders run along both sides of the road, and appear to be regularly mowed and/or sprayed with herbicides. Near private residences in the southern portion of the Project area, landscaped ornamental vegetation is present, and appears to be regularly irrigated and mowed/trimmed. The Alta Irrigation District maintains (with mowing) an unpaved dirt access road along the western side of the Alta Main Canal. The road continues south out of the Project area, but only the portion of the road outside of the riparian tree canopy was classified as developed/ornamental.

Vegetation. Roadside vegetation consisted almost entirely of non-native annual grasses, including ripgut brome (*Bromus diandrus*) (NL), soft chess brome (*Bromus hordeaceus*) (FACU), and poverty brome (*Bromus sterilis*) (NL). Within the landscaped portions of the vegetation community, Bermuda grass (*Cynodon dactylon*) (FACU) and tall fescue (ornamental variety) (*Festuca arundinacea*) were common as well as ornamental shrubs and trees including oleander (*Nerium oleander*) (NL) and weeping cherry (*Prunus subhirtella*) (NL). Portions of this vegetation community were adjacent to valley oaks (*Quercus lobata*) (FACU).

Soils. Due to the dominance and prevalence of upland vegetation in this vegetation community, soils were not examined for indicators of hydric soils.

Hydrology. No indicators of hydrology were observed in this vegetation community.

Justification for Non-jurisdictional Status. The developed/ornamental vegetation community represents an upland type, and does not support hydrophytic vegetation. Furthermore, no indicators of hydrology were observed in this vegetation community. This vegetation community is not considered a wetland or an other waters of the U.S., and is not subject to jurisdiction by the USACE.

5.4.2 Annual Grassland

Annual grassland consists primarily of non-native annual grasses with a small forb component. Present within private property in the southwestern and eastern portions of the Project area outside of the narrow riparian band flanking each side of the Alta Main Canal, this vegetation community was mowed in most areas, with the exception of the east side of the eastern levee of the canal.

Vegetation. Plants in this vegetation community were entirely herbaceous and consisted mainly of non-native annual grasses including ripgut brome, soft chess brome, and wild oats. When present, forbs included sunflower (*Helianthus annuus*) (FACU), prickly lettuce (*Lactuca serriola*) (FACU), common mallow (*Malva neglecta*) (NL), and Spanish lotus (*Acmispon americanus*) (UPL). Forbs were higher in abundance and cover within the portions of the annual grassland that were mowed.

Soils. Due to the dominance and prevalence of upland vegetation in this vegetation community, soils were not examined for indicators of hydric soils.

Hydrology. No indicators of hydrology were observed in this vegetation community.

Justification for Non-jurisdictional Status. Annual grassland represents an upland vegetation community dominated by upland herbaceous species. Furthermore, no indicators of hydrology were observed in this vegetation community. This vegetation community is not considered a wetland or an other waters of the U.S., and is not subject to jurisdiction by the USACE.

5.4.3 Valley Oak Woodland

Valley oak woodland is present along the sides of North Frankwood Avenue in the northwestern and eastern portions of the Project area. While similar to the valley oak riparian vegetation community (Section 5.4.4), this vegetation community is located outside of the levees along the Alta Main Canal. As a result of being along the road, portions of the understory are mowed periodically.

Vegetation. The overstory of this vegetation community consists entirely of valley oaks, while the understory contains the same species as the annual grassland community, although ripgut brome is more prevalent. Additionally, the patch of valley oak woodland along the western edge of the Project area contains California blackberry (*Rubus ursinus*) (FAC), which is located just outside of a large swale than runs behind the nearby mobile home park and is outside the Project area.

Soils. Due to the dominance and prevalence of upland vegetation in this vegetation community, soils were not examined for indicators of hydric soils.

Hydrology. No indicators of hydrology were observed in this vegetation community.

Justification for Non-jurisdictional Status. Valley oak woodland represents an upland vegetation community dominated by valley oaks and upland herbaceous species.

Furthermore, no indicators of hydrology were observed in this vegetation community. This vegetation community is not considered a wetland or an other waters of the U.S., and is not subject to jurisdiction by the USACE.

5.4.4 Valley Oak Riparian

This vegetation community occurs on the levees that flank the Alta Main Canal. While dominated by valley oaks, this vegetation community type is more structurally diverse than the valley oak woodland vegetation community, with small midstory component of black willows (*Salix gooddingii*) (FACW) in low-lying areas near the edge of the canal. A vine stratum of Japanese honeysuckle (*Lonicera japonica*) (NL) is also present. Due to the steeper slope of the eastern levee, the valley oak riparian vegetation community along the eastern side appears more xeric, and more closely resembles the valley oak woodland vegetation community. Along the eastern edge of the canal, sporadic hydrophytes are present, including Himalayan blackberry (*Rubus armeniacus*) (FAC) and Fremont cottonwood (*Populus fremontii*) (FAC).

Data Point B in Appendix B is representative of the vegetation, soils, and hydrologic indicators of valley oak riparian vegetation community.

Vegetation. Within this vegetation community, the overstory is dominated by valley oak and the midstory is dominated by black willow (within the less steep areas closer to the Alta Main Canal). Occasional Japanese honeysuckle vines are also present. In the herbaceous layer, low-growing Himalayan berry, common horsetail (*Equisetum arvense*) (FAC), mugwort (*Artemesia douglasii*) (FAC), and vetch (*Vicia* sp.) (NL) are also present.

Soils. No indicators of hydric soils were observed within this vegetation community (Appendix B).

Hydrology. No indicators of hydrology were observed within this (Appendix B).

Justification for Non-Jurisdictional Status. Although a prevalence and dominance of hydrophytic species were observed in this vegetation community, this vegetation community does not meet the three mandatory wetland criteria due to a lack of hydric soil indicators and indicators of hydrology. Therefore, this vegetation community is not considered a wetland or an other waters of the U.S., and is not subject to jurisdiction by the USACE.

5.4.5 Artificial Seasonal Wetland

This vegetation community occurs along the western fringe of the Alta Main Canal above the OHWM where the gradual slope of the levee creates saturated soil conditions via capillary rise. Due to the release schedule of the Alta Main Canal, soils within this vegetation community remain saturated for up to 4 months (typically May through August) of the growing season. Overlying large cobbles, this vegetation community has relatively shallow soil (less than 8 inches) that supports primarily herbaceous hydrophytes with occasional Himalayan blackberry plants. Further upslope from the edge of the canal, this vegetation community transitions to valley oak riparian, where the deeper soils support perennial woody vegetation. During the remainder of the year when water is not being released into the portion of the Alta Main Canal within the Project area, this habitat type does not receive any additional hydrologic inputs.

Data Point A is representative of the vegetation, soils, and hydrologic indicators of artificial seasonal wetland vegetation community.

Vegetation. Vegetation in this vegetation community is mostly herbaceous and includes Mexican rush (*Juncus mexicanus*) (FACW), mugwort (*Artemsia douglasiana*) (FAC), Santa Barbara sedge (*Carex barbarae*) (FAC), mullein (*Verbascum* sp.) (NL), Kentucky blue grass (*Poa pratensis*) (FAC), sweet clover (*Melilotus indicus*) (FACU), and Himalayan berry. At the base of the bridge, this vegetation community also supports common buttonwillow (*Cephalanthus occidentalis*) (OBL).

Soils. Although no indicators of hydric soils were directly observed, based on the release schedule of the Alta Main Canal, soils within this vegetation community remain artificially saturated for approximately 4 months at a depth of 8 inches. Therefore, the presence of hydric soils was inferred based on the artificial release schedule of the Alta Main Canal.

Hydrology. At Data Point A, observed hydrologic indicators included Saturation (A3) and the Oxidized Rhizospheres along Living Roots (C3). These indicators were present based on the artificial release schedule of the canal, and otherwise would not be present within this vegetation community.

Justification for Non-Jurisdictional Status. Although this vegetation community type meets the three USACE mandatory wetland criteria, this community would not be considered USACE-jurisdictional because the source of the hydrology is artificially maintained through the use of a series of weirs. Furthermore, this vegetation community does not pond water, and is formed as a result of the artificial hydrology of the canal, as described in Section 5.4.5.

5.4.6 Canal

During the time of the wetland delineation, the segment of the Alta Main Canal within the Project area consisted of open, flowing water. As observed during a previous site visit on April 29, 2016, the lining of the Alta Main Canal consists of large cobble covered with a sparse layer of herbaceous hydrophytes. Flanking a low-flow channel approximately 80 feet wide, each side of the Alta Main Canal consists of a shallow bench 9 feet wide that is under approximately 1 foot of water during scheduled water releases (Appendix B).

Based on the results of the prior site visit (before water was released), the Alta Irrigation District sprays herbicide within the Alta Main Canal, likely to prevent the establishment of emergent vegetation (e.g., cattails [*Typha* spp.] [OBL] and tules [*Schoenoplectus* spp.] [OBL]). Due to the controlled release of water within the Alta Main Canal, canal vegetation community exhibited a defined OHWM based on a change in vegetation cover, species composition, and substrate. This vegetation community encompasses the areas defined as Freshwater Forested/Shrub Wetland in the NWI (Figure 5, Exhibit A).

Vegetation. Based on the plants that were growing along the shallow rip-rap benches that were visible, vegetation consists primarily of western panicum (*Panicum acuminatum*) (NL) and Mexican rush (*Juncus mexicanus*) (FACW). During the wetland delineation, these plants comprised less than five percent aerial cover of the vegetation community. The vegetation likely established prior to the release of water and is not characteristic of submergent or emergent plant species.

Soils. As a result of water flowing through the Alta Main Canal, a soil sample was not taken in this vegetation community. The bottom of the canal that was visible during the wetland delineation, however, appeared to consist entirely of cobbles. Based on the presence of flowing water, soils, if present, were assumed to be hydric. Due to the series of weirs along the Alta Main Canal between the Project area and the point of diversion along the Kings River, the hydroperiod of this vegetation community is artificial, and any hydric soils that formed within this portion of the Project area formed under artificial conditions.

Hydrology. During the wetland delineation survey, the vegetation community consisted of flowing water, and an OHWM was clearly defined by a lack of soil and an abrupt change in vegetation species composition and cover. Based on historic records, the portion of the Alta Main Canal in the Project area was excavated in uplands outside of any historic drainages or accessory channels to the Kings River. The OHWM formed as a result of historic grading within uplands and the artificially-maintained hydrology of the portion of the Alta Main Canal within the Project area.

Justification for Non-Jurisdictional Status. Canal vegetation community is assumed to contain hydric soils and displays indicators of wetland hydrology. The vegetation community does not however, contain a minimum of five percent hydrophytic plant cover, and does not meet the three mandatory wetland criteria. Although the canal vegetation community does exhibit an OWHM, it is not considered USACE-jurisdictional due to its artificially maintained hydrology in the constructed Alta Main Canal. The canal is not a tributary (i.e., does not regularly contribute flow to downstream waters), was not excavated in a tributary, and does not drain wetlands. Although the Alta Main Canal does intercept natural flows downstream of the Project area, including Wahtoke Creek, these areas are located outside of the Project area. As a result, the canal vegetation community is not considered USACE-jurisdictional.

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WRCC. See Western Regional Climate Center.

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Original Project Routing

7.0 REPORT PREPARERS

This report was prepared by AWE under contract to the County of Fresno. Report contributors are listed below.

Individual	Years of Experience	Qualifications
Becky Rozumowicz, Senior Reviewer	21	B.S., Soil and Water Science
Aimee Dour-Smith, Environmental Analyst	22	B.S., Environmental Policy and Planning
Mark Noyes, Biologist	8	B.S., Biology with Plant Biology emphasis, minor in Land Restoration; M.S., Ecology with Restoration emphasis
Samuel Price, Biologist	6	B.S., Wildlife Management and Conservation; M.S., Geographic Information Science and Technology

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Original Project Routing

Exhibit A.
Delineation Results

Original Project Routing

Original Project Routing

ALTA MAIN CANAL BRIDGE REPLACEMENT PROJECT

Preliminary Jurisdictional Determination

- Project Area (2.875 acres)
- Open Water (OW; 0.657 acre)
- Ordinary High Water Mark (OHWM)
- Photo Point and Direction (PP-1)
- Wetland Data Points (DP-A)
- Elevation Contours (feet)

N

0 100 200 feet

1 inch = 100 feet

Data Source:
- ESRI Aerial Basemaps, June 18, 2014

Date: 7-6-16
Revised Date: 4-21-17

AREA WEST ENVIRONMENTAL, INC.

THE COUNTY OF FRESNO 1856

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Original Project Routing

Appendix A.
National Resource Conservation Service Web Soil Survey

Original Project Routing

Original
Project
Routing

United States Department of Agriculture

NRCS

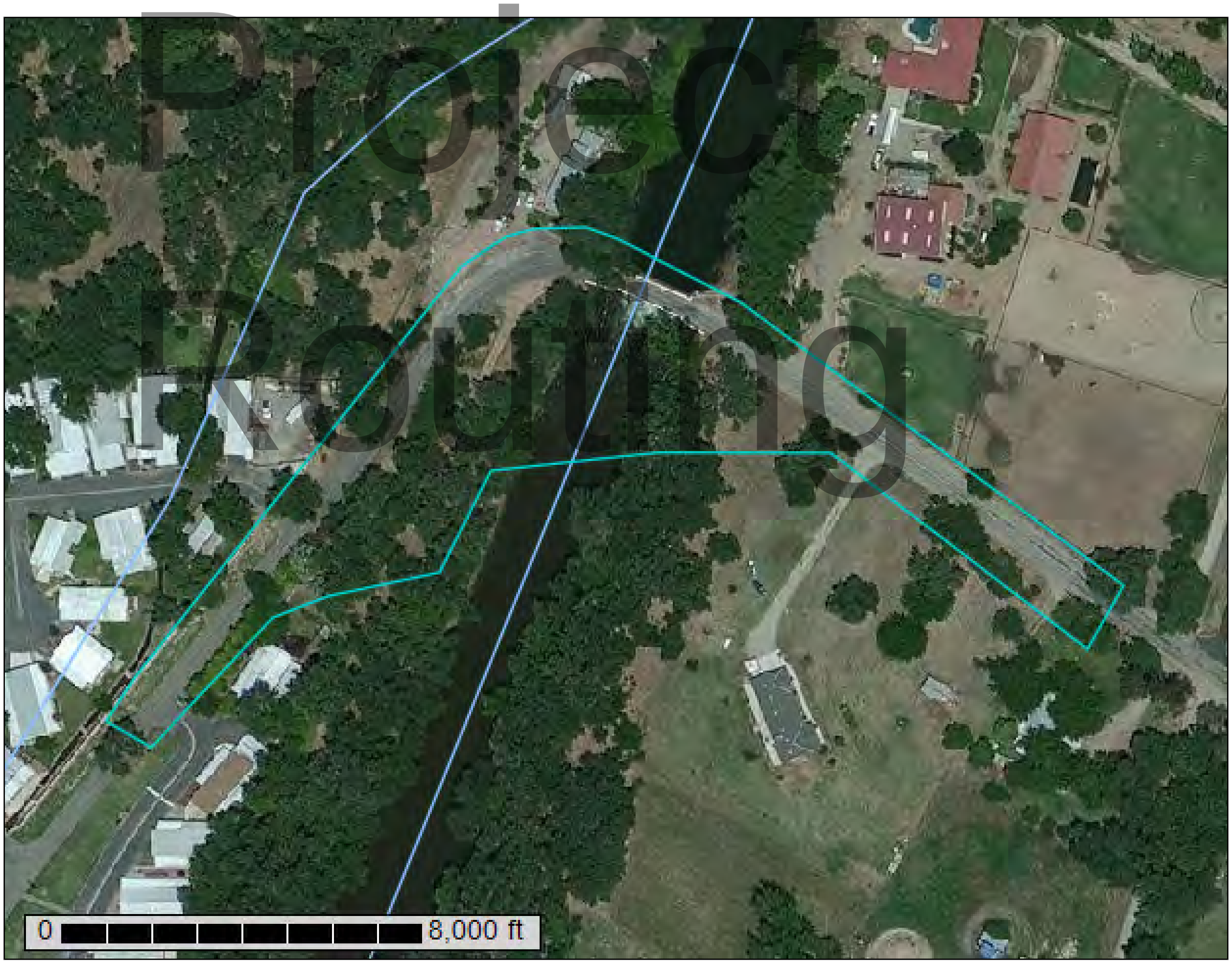
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Eastern Fresno Area, California

Original Project Routing



June 15, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Original Project Routing

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

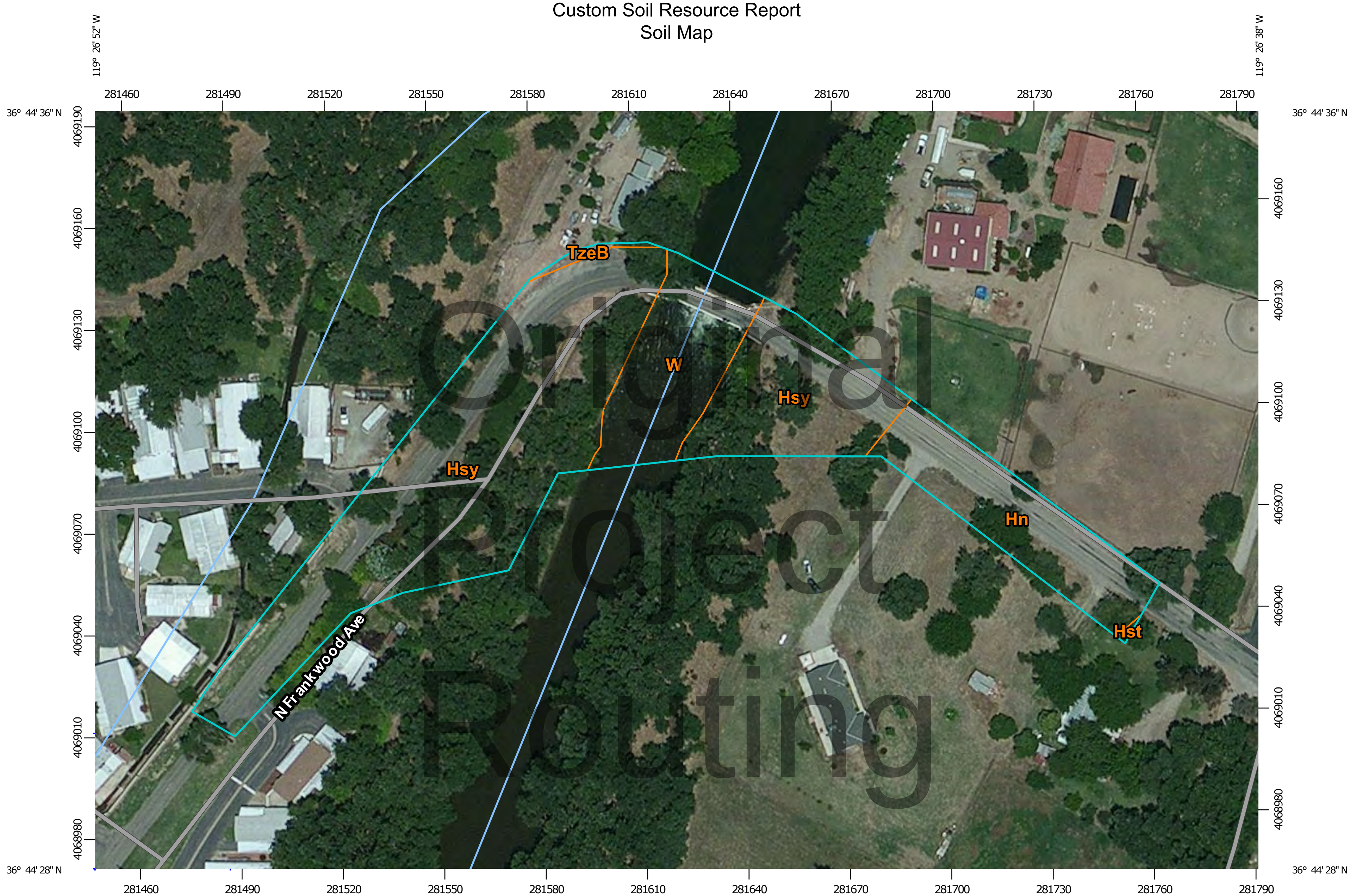
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map



Map Scale: 1:1,570 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 8, Sep 30, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 27, 2010—Jul 3, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Eastern Fresno Area, California (CA654)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Hn	Hanford fine sandy loam, gravelly substratum	0.4	15.7%
Hst	Hesperia fine sandy loam moderately deep	0.0	0.1%
Hsy	Hesperia fine sandy loam, moderately deep, saline-alkali	2.0	68.9%
TzeB	Tujunga soils, channeled, 0 to 9 percent slopes	0.0	0.7%
W	Water	0.4	14.6%
Totals for Area of Interest		**2.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Fresno Area, California

Hn—Hanford fine sandy loam, gravelly substratum

Map Unit Setting

National map unit symbol: hl5q
Elevation: 200 to 500 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Benches, flood plains
Landform position (two-dimensional): Backslope, toeslope
Landform position (three-dimensional): Side slope, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 16 inches: fine sandy loam
C - 16 to 36 inches: fine sandy loam
2C - 36 to 72 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Benches, flood plains

Hanford, gravelly

Percent of map unit: 5 percent

Landform: Benches, flood plains

Hst—Hesperia fine sandy loam moderately deep

Map Unit Setting

National map unit symbol: hl65
Elevation: 200 to 400 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesperia

Setting

Landform: Alluvial fans, fan skirts
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 11 inches: fine sandy loam
C - 11 to 32 inches: fine sandy loam
Ck - 32 to 43 inches: fine sandy loam
2Ck - 43 to 60 inches: silt

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A

Minor Components

Unnamed, reclaimed

Percent of map unit: 10 percent
Landform: Fan skirts

Unnamed, loam surface

Percent of map unit: 5 percent
Landform: Alluvial fans

Hsy—Hesperia fine sandy loam, moderately deep, saline-alkali

Map Unit Setting

National map unit symbol: hl66
Elevation: 200 to 400 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesperia

Setting

Landform: Alluvial fans, fan skirts
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 11 inches: fine sandy loam
C - 11 to 32 inches: fine sandy loam
Ck - 32 to 43 inches: fine sandy loam
2Ck - 43 to 60 inches: silt

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups
Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Minor Components

Unnamed
Percent of map unit: 15 percent
Landform: Fan skirts, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear

TzeB—Tujunga soils, channeled, 0 to 9 percent slopes

Map Unit Setting
National map unit symbol: hlc5
Elevation: 180 to 400 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 225 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition
Tujunga and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting
Landform: Flood plains, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
A - 0 to 4 inches: gravelly sand
C - 4 to 60 inches: stratified extremely gravelly sand to loamy sand

Properties and qualities
Slope: 0 to 9 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: RIVERWASH (R017XE114CA)

Minor Components

Riverwash

Percent of map unit: 10 percent
Landform: Channels on flood plains

Unnamed

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

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Appendix B.
Wetland Determination and Ordinary High Water Mark Data Forms

Original Project Routing

Original Project Routing

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alta Main Canal City/County: Sanger, Fresno Sampling Date: 06/10/16

Applicant/Owner: County of Fresno State: CA Sampling Point: dpA

Investigator(s): Noyes, Price Section, Township, Range: Section 2, Township 14 South, Range 23 East

Landform (hillslope, terrace, etc.): Bank Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): C - Mediterranean Lat: 36.7426256349 Long: -119.446124748 Datum: WGS84

Soil Map Unit Name: Hesperia find sandy loam, moderately deep, saline-alkali NWI classification: Freshwater Forest/Shrul

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ______
Hydric Soil Present?	Yes ✔	No ______
Wetland Hydrology Present?	Yes ✔	No ______

Is the Sampled Area within a Wetland? **Yes** ______ **No** ✔

Remarks:

Artificial seasonally saturated wetland along the shallow-sloped fringes of the Alta Main Canal. Hydrology is artificially maintained by Alta Irrigation District. Flows into the Alta Main Canal, an engineered canal excavated in uplands, are controlled by the Frankwood Weir in the Project area and the Cobbles Weir upstream. The canal is not a tributary (i.e., does not regularly contribute flow to downstream waters), was not excavated in a tributary, and does not drain wetlands.

VEGETATION – Use scientific names of plants.

Stratum / Species	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 2x5)			
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: 2x5)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: 2x5)			
1. Juncus mexicanus	25	Y	FACW
2. Artemsia douglasiana	15	N	FAC
3. Carex barbarae	25	Y	FAC
4. Verbascum sp.	5	N	NL
5. Melilotus indicus	10	N	FACU
6. Poa pratensis	10	N	FAC
7. Rubus armeniacus	10	N	FAC
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: 2x5)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	25	x 2 = 50
FAC species	60	x 3 = 180
FACU species	10	x 4 = 40
UPL species	5	x 5 = 25
Column Totals:	100 (A)	295 (B)

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

- ✔ Dominance Test is >50%
- ✔ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ______

Remarks:

Wetland fringe along edge of irrigation canal. This vegetation community does not pond water, and is formed as a result of the artificial hydrology of the canal.

SOIL

Sampling Point: dpA

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✔ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Cobbles (rip-rap)

Depth (inches): 8+

Hydric Soil Present? Yes ✔ No ___

Remarks:

Based on the irrigation schedule of the Alta Main Canal, soils within this area remain saturated at water level for periods longer than 2 weeks (>5% of the growing season). Due to the series of weirs along the Alta Main Canal between the Project area and the point of diversion along the Kings River, the hydroperiod of this vegetation community is artificial, and any hydric soils that formed within this portion of the Project area formed under artificial conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✔ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✔	Depth (inches): ___
Water Table Present?	Yes ✔	No ___	Depth (inches): 8"
Saturation Present? (includes capillary fringe)	Yes ✔	No ___	Depth (inches): 8"

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrology is artifically maintained by the Alta Irrigation District. The canal is not a tributary (i.e., does not regularly contribute flow to downstream waters), was not excavated in a tributary, and does not drain wetlands. Inflow is controlled at the Frankwood Weir/Bridge. Saturation present at water level (8 inches below surface). Soils likely retain relatively high levels of moisture during the irrigation delivery season due to capillary rise at the edge of the canal.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Alta Main Canal City/County: Sanger, Fresno Sampling Date: 06/10/16

Applicant/Owner: County of Fresno State: CA Sampling Point: dpA

Investigator(s): Noyes, Price Section, Township, Range: Section 2, Township 14 South, Range 23 East

Landform (hillslope, terrace, etc.): Bank Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): C - Mediterranean Lat: 36.7426256349 Long: -119.446124748 Datum: WGS84

Soil Map Unit Name: Hesperia find sandy loam, moderately deep, saline-alkali NWI classification: Freshwater Forest/Shrul

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ______	**Is the Sampled Area within a Wetland?** **Yes** ______ **No** ✔
Hydric Soil Present?	Yes ✔ No ______	
Wetland Hydrology Present?	Yes ✔ No ______	

Remarks:

Artificial seasonally saturated wetland along the shallow-sloped fringes of the Alta Main Canal. Hydrology is artificially maintained by Alta Irrigation District. Flows into the Alta Main Canal, an engineered canal excavated in uplands, are controlled by the Frankwood Weir in the Project area and the Cobbles Weir upstream. The canal is not a tributary (i.e., does not regularly contribute flow to downstream waters), was not excavated in a tributary, and does not drain wetlands.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 2x5)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 2x5)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 2x5)			
1. Juncus mexicanus	25	Y	FACW
2. Artemsia douglasiana	15	N	FAC
3. Carex barbarae	25	Y	FAC
4. Verbascum sp.	5	N	NL
5. Melilotus indicus	10	N	FACU
6. Poa pratensis	10	N	FAC
7. Rubus armeniacus	10	N	FAC
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 2x5)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	60	x 3 =	180
FACU species	10	x 4 =	40
UPL species	5	x 5 =	25
Column Totals:	100 (A)		295 (B)

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

- ✔ Dominance Test is >50%
- ✔ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ______

Remarks:

Wetland fringe along edge of irrigation canal. This vegetation community does not pond water, and is formed as a result of the artificial hydrology of the canal.

SOIL

Sampling Point: dpA

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
✔ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Cobbles (rip-rap)

Depth (inches): 8+

Hydric Soil Present? Yes ✔ No ___

Remarks:

Based on the irrigation schedule of the Alta Main Canal, soils within this area remain saturated at water level for periods longer than 2 weeks (>5% of the growing season). Due to the series of weirs along the Alta Main Canal between the Project area and the point of diversion along the Kings River, the hydroperiod of this vegetation community is artificial, and any hydric soils that formed within this portion of the Project area formed under artificial conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
✔ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
✔ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ✔ No ___ Depth (inches): 8"

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 8"

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrology is artifically maintained by the Alta Irrigation District. The canal is not a tributary (i.e., does not regularly contribute flow to downstream waters), was not excavated in a tributary, and does not drain wetlands. Inflow is controlled at the Frankwood Weir/Bridge. Saturation present at water level (8 inches below surface). Soils likely retain relatively high levels of moisture during the irrigation delivery season due to capillary rise at the edge of the canal.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alta Main Canal
Project Number: 15-013
Stream: Alta Main Canal

Date: 4-/.+0.16 **Time:** 0945
Town: Centerville **State:** California
Photo begin file#: PP-5 **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:
Immediately south of N. Frankwood Ave. bridge over Alta Main Canal

Projection: UTM Zone 10 **Datum:** NAD83
Coordinates: 36.742444, -119.446041

Potential anthropogenic influences on the channel system:

Entire canal is excavated, periodically maintained through herbicide spraying (when dry), and is subject to a seasonal release schedule.

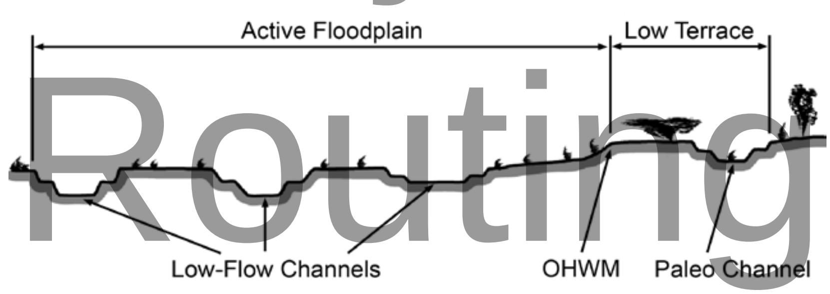
Brief site description: Project area includes stretch of North Frankwood Avenue as it approaches and crosses over the Alta Main Canal.

Checklist of resources (if available):

- ■ Aerial photography
  Dates: 3-15-2015
- ☐ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ■ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

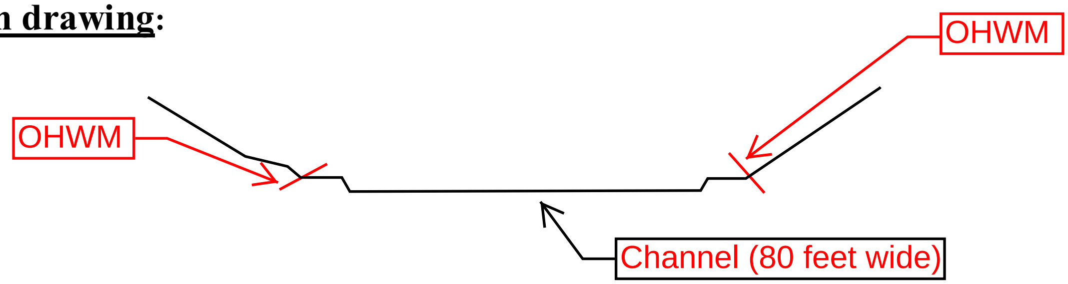


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ■ GPS
   - ☐ Other:

Project ID: Alta Main Canal **Cross section ID:**OWHM-1 **Date:** 6/10/16 **Time:** 09:45

Cross section drawing:



OHWM

GPS point: 36.742614°, -119.446091°

Indicators:

- ☒ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: ____________
- ☐ Other: ____________

Comments:
Height of water during full release, also visible due to lack of soils (bare cobbles), plant species, and plant cover. Based on historic records, the portion of the Alta Main Canal in the Project area was excavated in uplands outside of any historic drainages or accessory channels to the Kings River. The OHWM formed as a result of historic grading within uplands and the artificially-maintained hydrology of the Alta Main Canal.

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: NA

Characteristics of the floodplain unit:

Average sediment texture: Large cobble (1 foot dia)

Total veg cover: <5 % Tree: ____% Shrub: ____% Herb: <5 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☒ Other: Large cobbles
- ☐ Other: ____________
- ☐ Other: ____________

Comments: Due to the depth and velocity of flowing water, observations were conducted from the bank and bridge. Additional data regarding plant type and cover was obtained from and earlier preliminary site visit.

Appendix C.
Representative Photographs

Original Project Routing

Original Project Routing

Photo Point 1. Developed/ornamental vegetation community along North Frankwood Avenue (facing north).
Coordinates: 36.74164713, -119.4474614
Taken on June 10, 2016.

Photo Point 2. Access road within valley oak riparian vegetation community (facing north).
Coordinates: 36.74208865, -119.4466407
Taken on June 10, 2016.

Photo Point 3. Access road within valley oak riparian vegetation community (facing north).
Coordinates: 36.74254432, -119.4463783
Taken on June 10, 2016.

Photo Point 4. Developed/ornamental (right), valley oak riparian (left), and valley oak woodland vegetation communities (background) (facing south).
Coordinates: 36.74280797, -119.4463158
Taken on June 10, 2016.

Photo Point 5. Canal vegetation community (foreground) with valley oak riparian (background) (facing east).
Coordinates: 36.742296, -119.4462731
Taken on June 10, 2016.

Photo Point 6. Data Point B in valley oak riparian vegetation community (facing north).
Coordinates: 36.74267496, -119.4461466
Taken on June 10, 2016.

Photo Point 7. Data Point A in artificial seasonal wetland vegetation community (left) and Data Point B in valley oak riparian (right) (facing south).
Coordinates: 36.74264539, -119.4461102
Taken on June 10, 2016.

Photo Point 8. Existing bridge (developed/ornamental vegetation community) (facing east).
Coordinates: 36.74286677, -119.4460676
Taken on June 10, 2016.

Photo Point 9. Artificial seasonal wetland vegetation community (right) and canal (left) (facing south).
Coordinates: 36.74284672, -119.4459372
Taken on June 10, 2016.

Photo Point 10. Valley oak riparian vegetation community (right) and canal (left) (facing north).
Coordinates: 36.7425111, -119.4457863
Taken on June 10, 2016.

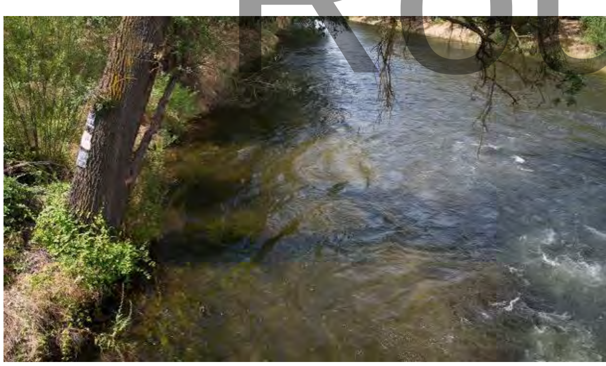


Photo Point 11. Edge of canal as it meets the valley oak riparian vegetation community (facing south).
Coordinates: 36.74267653, -119.445724
Taken on June 10, 2016.

Photo Point 12. Existing bridge (developed/ornamental) and canal (left) downstream of weir (facing west).
Coordinates: 36.74275937, 119.445683
Taken on June 10, 2016.

Photo Point 13. Valley oak riparian (left) and canal (right) (facing south).
Coordinates: 36.74274534, -119.4456527
Taken on June 10, 2016.

Photo Point 14. Canal upstream of existing bridge/weir (facing west).
Coordinates: 36.74283343, -119.4455834
Taken on June 10, 2016.

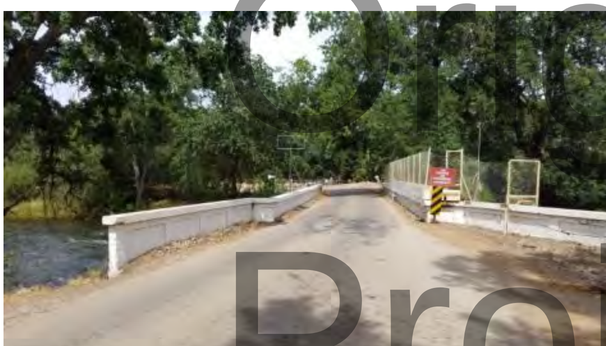


Photo Point 15. Existing bridge (developed/ornamental) (facing west).
Coordinates: 36.74271876, -119.4455419
Taken on June 10, 2016.

Photo Point 16. Annual grassland (foreground) with valley oak woodland (background) (facing west).
Coordinates: 36.74232448, -119.4449027
Taken on June 10, 2016.

Page intentionally blank

Original Project Routing

Appendix D
List of Vascular Plant Species Observed

Original Project Routing

Original Project Routing

Scientific Name	Common Name	Wetland Indicator Status (Arid West Region)[1]
Acacia sp.	Acacia	NL
Acmispon americanus	Spanish lotus	UPL
Amaranthus blitoides	Mat amaranth	FACU
Avena barbata	Slender wild oat	NL
Schoenoplectus sp.	Rush	FACW/OBL
Bromus diandrus	Ripgut grass	NL
Bromus hordeaceus	Soft chess brome	FACU
Bromus sterilis	Poverty brome	NL
Capsella bursa-pastoris	Shepherd's-purse	FACU
Carex barbarae	Santa Barbara sedge	FAC
Catalpa bignonioides	Southern catalpa	UPL
Cephalanthus occidentalis	Common buttonwillow	OBL
Cerastium glomeratum	Sticky mouse-ear chickweed	UPL
Chenopodium album	Lamb's-quarters	FACU
Cortaderia jubata	Pampas grass	FACU
Cynodon dactylon	Bermuda grass	FACU
Cyperus eragrostis	Tall flat sedge	FACW
Datura wrightii	Jimsonweed	UPL
Leymus triticoides	Creeping wild rye	FAC
Epilobium sp.	Willowherb	NL
Equisetum arvense	Common horsetail	FAC
Eucalyptus camaldulensis	Red gum	FAC
Euthamia occidentalis	Western goldenrod	FACW
Festuca arundinacea	Tall fescue (ornamental)	NL
Vulpia myuros	Rat-tail fescue	FACU
Fraxinus latifolia	Oregon ash	FACW
Galium aparine	Bedstraw	FACU
Geranium sp.	Geranium (ornamental)	NL
Geranium dissectum	Cutleaf geranium	NL
Hedera helix	English ivy	FACU
Helianthus annuus	Common sunflower	FACU
Heterothotheca grandiflora	Telegraph weed	NL
Hirschfeldia incana	Short-pod mustard	NL
Hordeum murinum	Hare barley	FACU
Juncus mexicanus	Mexican rush	FACW
Lactuca serriola	Prickly lettuce	FACU
Lonicera japonica	Japanese honeysuckle	FACU
Malva neglecta	Common mallow	NL
Medicago polymorpha	Burclover	FACU
Melilotus indicus	Sweet-clover,	FACU
Mimulus guttatus	Seep spring monkey-flower	OBL
Nerium oleander	Common oleander	NL
Panicum acuminatum	Western panicum	NL
Phalaris arundinacea	Reed canary grass	FACW
Pinus sp.	Pine (ornamental)	NL

Scientific Name	Common Name	Wetland Indicator Status (Arid West Region)[1]
Poa annua	Annual blue grass	FAC
Poa pratensis	Kentucky blue grass	FAC
Polygonum aviculare	Yard knotweed	FAC
Polypogon monspeliensis	Rabbitfoot grass	FACW
Populus fremontii ssp. fremontii	Fremont cottonwood	FAC
Prunus cerasifera	Cherry plum	NL
Prunus subhirtella	Weeping cherry	NL
Quercus lobata	Valley oak	FACU
Ranunculus arvensis	Field buttercup	FACU
Rosa sp.	Rose (ornamental)	NL
Rubus armeniacus	Himalayan blackberry	FAC
Rubus ursinus	California blackberry	FAC
Salix gooddingii	Black willow	FACW
Sambucus nigra ssp. caerulea	Blue elderberry	NL
Silybum marianum	Milk thistle	NL
Sonchus oleraceus	Common sow-thistle	UPL
Trifolium albopurpureum	Indian clover	FACU
Triticum aestivum	Wheat	NL
Typha sp.	Cat-tail	OBL
Verbascum sp.	Mullein	NL
Verbascum thaspus	Woolly mullein	FACU
Vicia sp.	Vetch	NL
Yucca sp.	Yucca	NL

[1]Wetland indicator status is from Lichvar et al. 2016.

Appendix E
Property Access Statement

Original Project Routing

Original Project Routing

DRAFT FOR ALTA IRRIGATION DISTRICT TO COMPLETE

June 30, 2016
Regulatory Program
U.S. Army Corps of Engineers
Sacramento District
1325 J Street, Room 1350
Sacramento, CA 95814

SUBJECT: Permission to Enter Alta Irrigation District Property for the Verification of the Alta Main Canal Bridge Replacement Wetland Delineation

To Whom It May Concern,

Representatives of the U.S. Army Corps of Engineers (USACE) have permission to enter the Alta Main Canal Bridge Replacement Project (Project) area (Attachment 1) as part of wetland delineation verification process. Within the Project area, this area includes all areas on and between the levees of the Alta Main Canal (Figure 3). This letter does not grant permission to enter portions of the Project area located outside of Alta Irrigation District property, as these areas would require separate landowner property access approval. Additionally, this letter does not grant permission to enter Alta Irrigation District property located outside of the Project area.

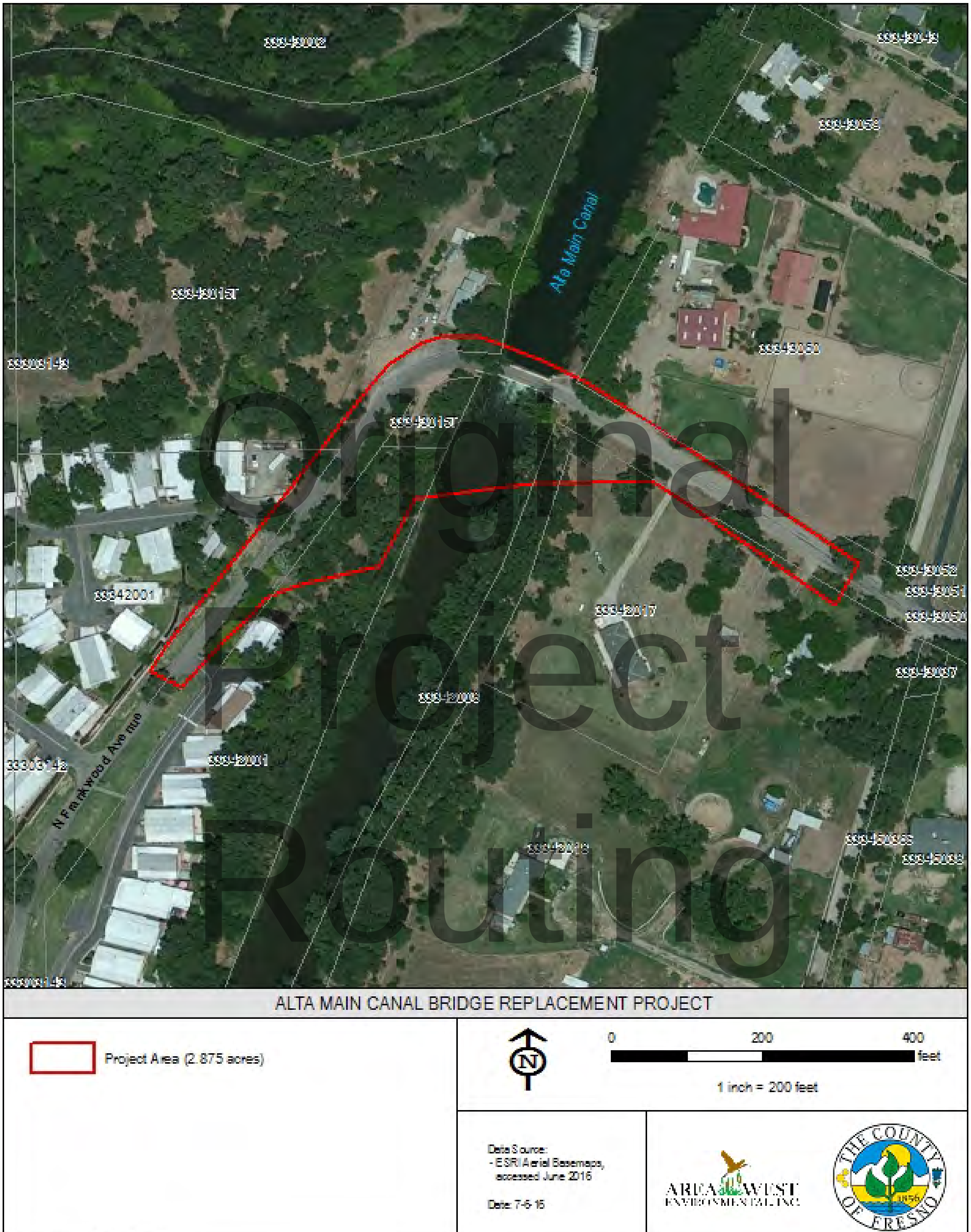
If you have any questions regarding access to the Project area, please contact me either by phone or by email at (559) 318-0175 or jc@altaid.org

Sincerely,

Javier Cavazos
Superintendent
Alta Irrigation District

Enclosures:

Attachment 1 – Project Area



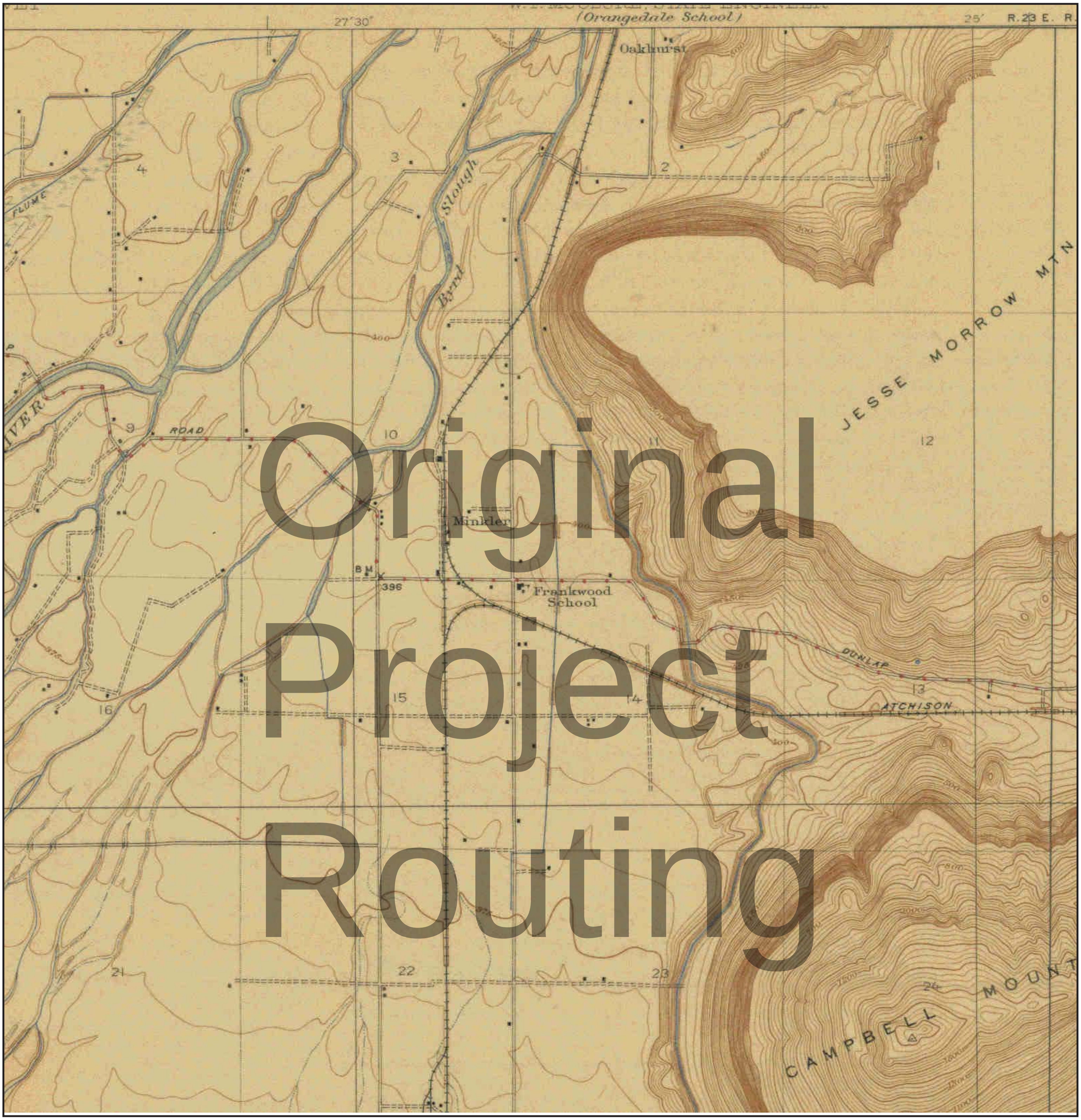
Attachment 1 – Project Area

Appendix F
Historical Topographic and Aerial Maps

Original
Project
Routing

Original Project Routing

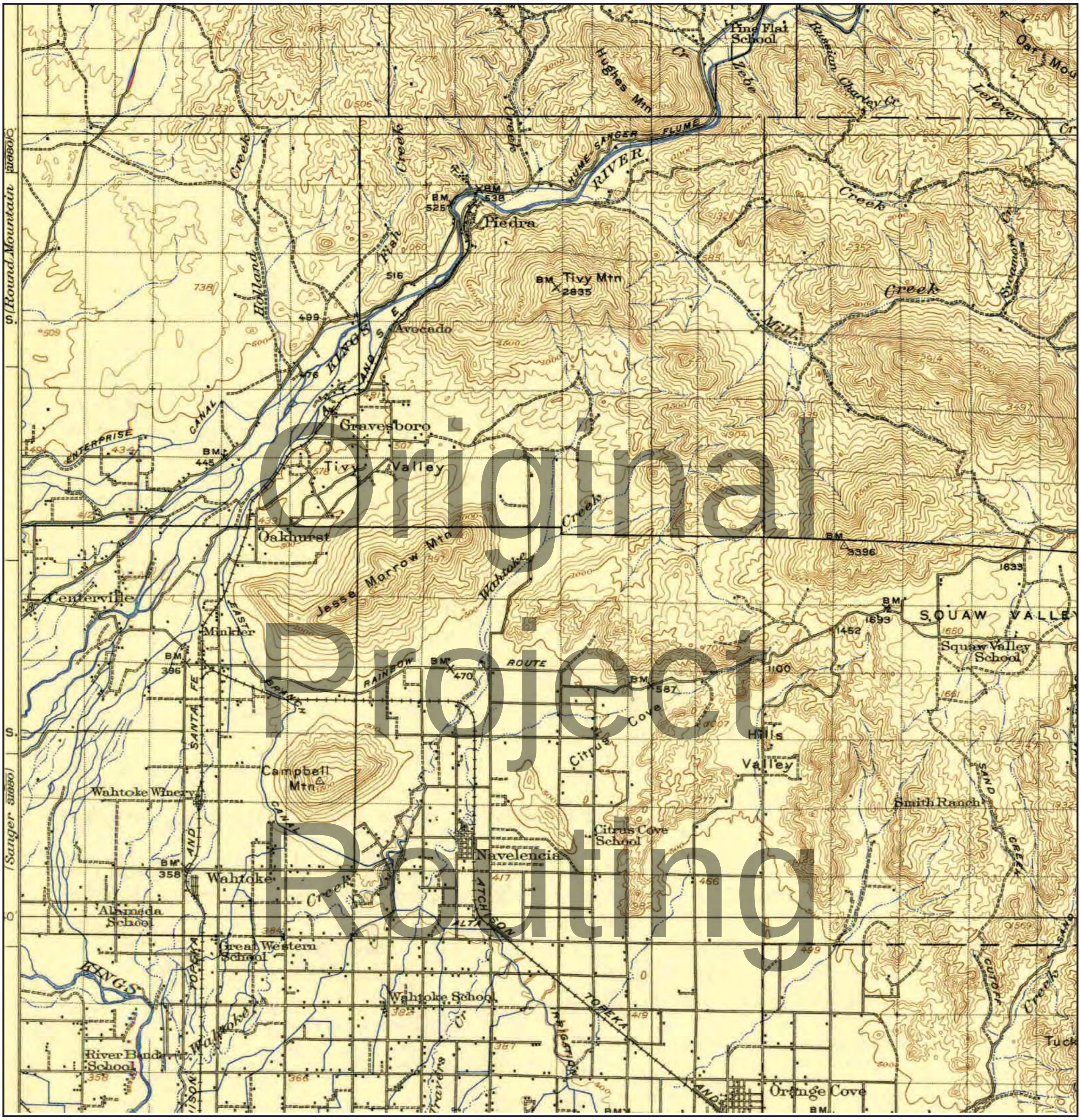
Historical Topographic Map



Unsurveyed Area on the Topographic Map

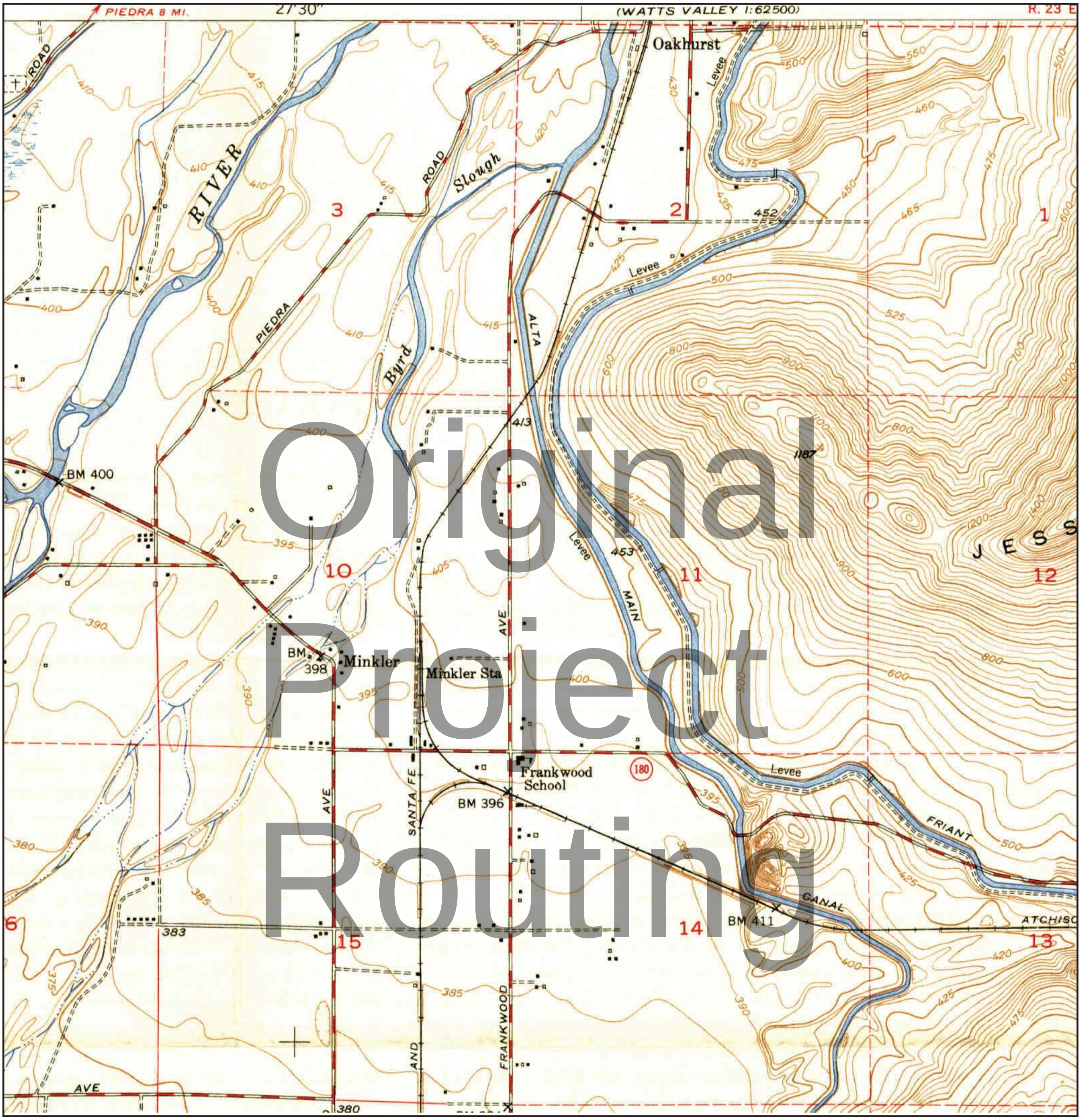
N ↑	TARGET QUAD NAME: WAHTOKE MAP YEAR: 1923 SERIES: 7.5 SCALE: 1:31680	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

Historical Topographic Map



N ↑	TARGET QUAD NAME: DINUBA MAP YEAR: 1924 SERIES: 30 SCALE: 1:125000	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

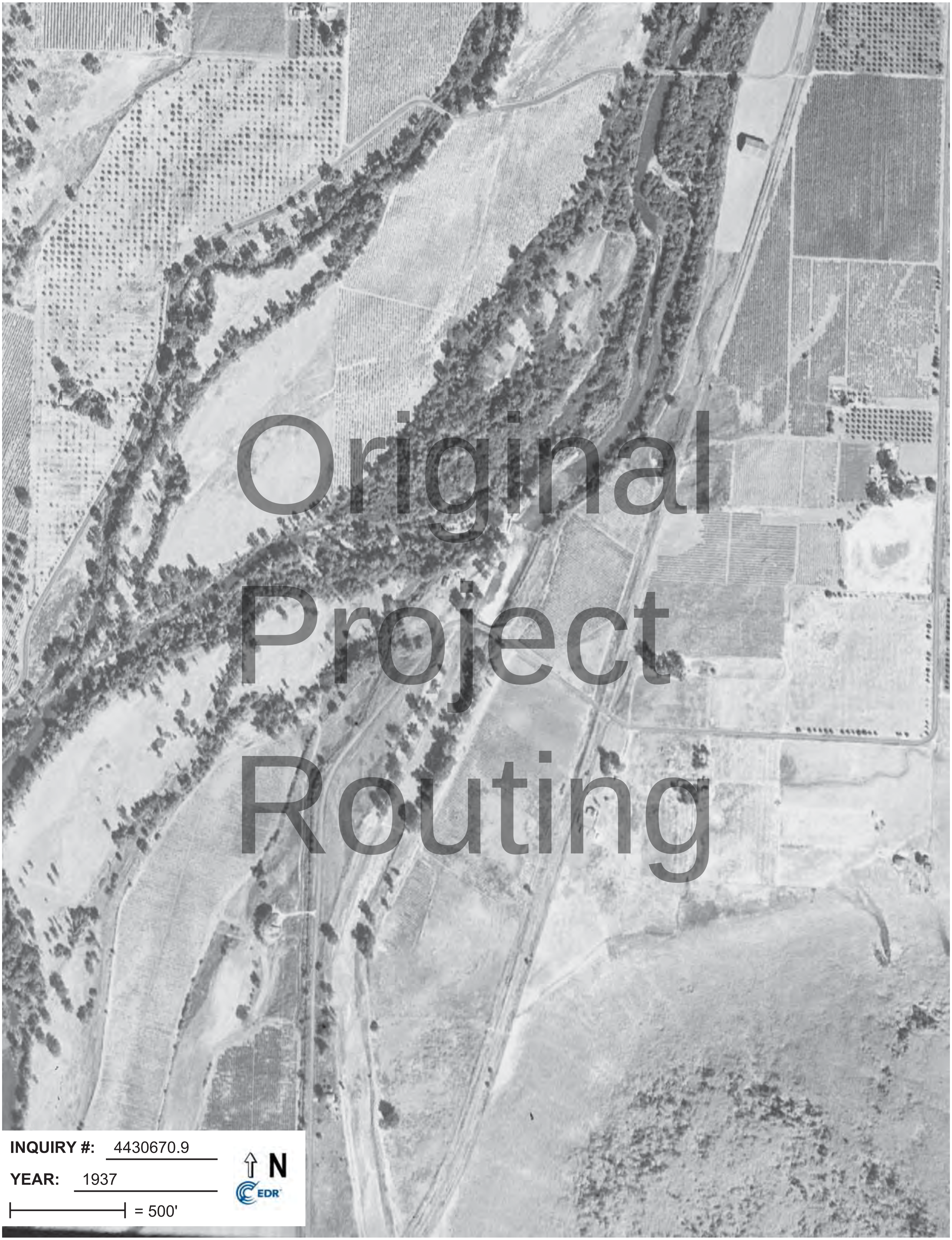
Historical Topographic Map



N	TARGET QUAD NAME: WAHTOKE MAP YEAR: 1950 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015

Historical Topographic Map

N ↑	TARGET QUAD NAME: WAHTOKE MAP YEAR: 1966 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Alta Canal Bridge ADDRESS: 400 N Frankwood Ave Sanger, CA 93657 LAT/LONG: 36.7429 / -119.4458	CLIENT: Haro Environmental, Inc. CONTACT: Elliot Haro INQUIRY#: 4430670.4 RESEARCH DATE: 10/06/2015


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 1937
= 500'
N
EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 1950
= 500'
N
EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 1954
= 500'
N
EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 1962
= 500'
N
EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 1984
= 500'
N
EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 1998
= 500'
N
EDR

INQUIRY #: 4430670.9

YEAR: 2005

= 500'

N

EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 2006
= 500'
N
EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 2010
= 500'
N
EDR


Original
Project
Routing
INQUIRY #: 4430670.9
YEAR: 2012
= 500'
N
EDR

Alta Main Canal Bridge Replacement Project

Fresno County, California

Natural Environment Study

(Minimal Impacts)

Fresno County, California

Wahtoke 7.5-Minute Quadrangle,

Township 9 South, Range 23 East, Section 2

Caltrans, District 6

BRLO-5942(247)

Caltrans

CALIFORNIA DEPARTMENT OF TRANSPORTATION

October 2016

Original
Project
Routing

Natural Environment Study
(Minimal Impacts)

Alta Main Canal Bridge Replacement Project
Fresno County, California
Wahtoke 7.5-Minute Quadrangle,
Township 14 South, Range 23 East, Section 2
Caltrans, District 6
BRLO-5942(247)

October 2016

STATE OF CALIFORNIA
Department of Transportation
Fresno County

Prepared by: ______________________ Date: 10/27/16
Aimee Dour-Smith, Senior Environmental Planner
(916) 987-3362
Area West Environmental, Inc.
6248 Main Avenue Suite C, Orangevale, CA 95662

Recommended for Acceptance by: ______________________ Date: 11/3/2016
Elmer Llamas, Biologist
(559) 445-6314
District 6
Environmental Analysis, Planning & Local Programs

Accepted by: ______________________ Date: 11/3/2016
Shane Gunn, Branch Chief
(559) 445-6310
District 6
Environmental Analysis, Planning & Local Program

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Shane Gunn, San Joaquin Valley Management Branch, 855 “M” Street, Ste. 200, Fresno, CA 93721, (559) 445-6310 (Voice), or use the California Relay Service 1(800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

Original Project Routing

SUMMARY

S.1 Project Description

This Natural Environment Study (Minimal Impacts) (NES [MI]) report has been prepared for the Alta Main Canal Bridge Replacement Project (Project). The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is proposing to replace the existing bridge on North Frankwood Avenue over the Alta Main Canal with the construction of a new bridge built to current standards on a new alignment. Construction of the new bridge would require the realignment and widening of North Frankwood Avenue, softening the existing curve in the road and improving overall sight distance.

The proposed Project will be funded by the Federal Highway Bridge Program and therefore requires both compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The lead agency for CEQA compliance is the County; the federal lead agency for NEPA compliance is Caltrans, as authorized under the NEPA Assignment Memorandum of Agreement between Caltrans and Federal Highway Administration.

S.2 Purpose and Need

The purpose of the proposed Project is to construct a new wider bridge and bridge approaches that meet current design standards, improve sight distance, and improve the curve radius to eliminate the 15 mile per hour curve at the west end of the existing bridge. The existing bridge has been listed by Caltrans as functionally obsolete with a sufficiency rating of 50.5. Deficiencies in the Alta Main Canal Bridge include transverse deck cracking over the bents, longitudinal and pattern cracking, insufficient curb-to-curb clear width, narrow traffic lanes and shoulders, narrow and winding approach roads with poor sight distance, and guardrails and railings that do not meet American Association of State Highway and Transportation Officials (AASHTO) standards. The Project is needed to replace a functionally obsolete bridge and improve overall safety conditions along North Frankwood Avenue.

S.3 Summary of Results and Project Effects

Natural resources were identified through a review of existing information and biological field surveys. The following species and habitats were documented or identified as having the potential to occur in or near the proposed Project work limits (Project area) and therefore could be affected by the proposed Project.

Natural Communities of Special Concern and Waters of the U.S. and State

Habitats and natural communities of special concern are those that are regulated by the federal, state, or local resource agencies. No waters of the U.S. are present within the Project area. However, the Project area includes one aquatic community (canal) that may qualify as a water of the State, which would be regulated by California Department of Fish and Wildlife (CDFW) under Section 1602 of the California Fish and Game Code (CFGC), and by the Regional Water Quality Control Board (RWQCB) under the Porter-Cologne Act.

Valley oak riparian vegetation, which is regulated by the CDFW under Section 1602 of the CFGC, is also present within the Project area, and is considered a natural community of special concern.

The proposed Project would result in permanent and temporary impacts to waters of the State and natural communities of special concern, as summarized in Table S-1.

Table S-1. Summary of Temporary and Permanent Effects by Habitat Type

Habitat Community	Permanent Impact (acres)	Temporary Impact (acres)
Waters of the State		
Canal	0.186	0.204
Natural Communities of Special Concern		
Valley Oak Riparian	0.241	0.607

Protected Trees

Within the County, oak trees are regulated by the *Fresno County Oak Woodland Management Guidelines*, a voluntary program to conserve oaks within the County. Construction of the proposed Project may result in the removal of 31 valley oak trees (*Quercus lobata*). Construction of the Project also may require ground-disturbance within the drip-lines of an additional 7 valley oaks.

Special-status Plant Species

The Project area supports potential habitat for four plants identified as rare by the California Native Plant Society (CNPS): California satintail (*Imperata brevifolia*), forked hare-leaf *(Lagophylla dichotoma),* spiny-sepaled button-celery (*Eryngium spinosepalum*), and winter's sunflower (*Helianthus winteri*). Although these species were not observed during the protocol-level plant survey, the survey did not occur during the bloom period of two species: California satintail and forked hare-leaf.

Special-status Fish and Wildlife

The Project area supports potential habitat for the following special-status wildlife and other protected wildlife species.

- San Joaquin kit fox (*Vulpes macrotis mutica*), a federally listed endangered species and a California listed threatened species: There are two known occurrences of San Joaquin kit fox less than 10 miles from the Project area. No suitable denning habitat was observed in the Project area. The Project will result in ***no effect*** on this federally listed species.
- Western pond turtle (*Emys marmorata*), a California species of special concern: Although western pond turtle was not observed within the Project area, the canal provides potential habitat for this species.
- Migratory birds and raptors: Suitable nesting habitat for migratory birds and raptors is present within the Project area.

S.4 Permit Requirement Summary

Based on the current project description, existing site conditions, and biological resources present in the Project area, this NES (MI) report concludes that the following permits may be required for the proposed Project:

- Streambed Alteration Agreement (SAA) under Section 1602 of the CFGC from CDFW,
- Waste Discharge Requirement (WDR) or a waiver of WDR and a National Pollution Discharge Elimination System (NPDES) permit from the RWQCB, and
- Central Valley Flood Protection Board encroachment permit.

S.5 Avoidance/Minimization Measure Summary

As part of the Project, the following list of avoidance and minimization measures, identified and described in Chapter 4, will be implemented prior to and during construction. Avoidance and minimization measures have been developed based on natural resources identified as present or having the potential to occur in the vicinity of the Project area and the potential effects that could occur as a result of the Project. The County will implement these measures as part of the proposed Project:

- **Avoidance and Minimization Measure (AMM) 1:** Conduct Environmental Awareness Training.
- **AMM 2:** Install Temporary Fencing around Environmentally Sensitive Habitat.
- **AMM 3:** Implement Measures to Reduce the Spread of Invasive Species.

- **AMM 4:** Implement Best Management Practices (BMPs) to Protect Water Quality.
- **AMM 5:** Minimize Activity near Protected Trees.
- **AMM 6:** Conduct Spring Plant Surveys and Fence Special-Status Plants, if Found.
- **AMM 7:** Provide Escape Ramps, Cover Open Trenches, and Inspect Pipes to Avoid Entrapment of Wildlife.
- **AMM 8:** Conduct a Preconstruction Survey for Special-status Wildlife.
- **AMM 9:** Implement Construction Practice Measures for Wildlife.
- **AMM 10:** Conduct a Preconstruction Survey for Western Pond Turtle.
- **AMM 11:** Conduct a Preconstruction Nesting Migratory Bird and Raptor Survey and Establish No-disturbance Buffers, if Necessary.

S.6 Compensatory Mitigation

To compensate for Project effects to sensitive natural communities, the County will implement the following compensatory mitigation measures, which are described in Chapter 4.

- **Compensation Measure 1:** Compensate for Permanent Impacts to Valley Oak Riparian Habitat through the creation of riparian habitat within the King's River watershed at a 3:1 ratio for all areas lost.

Table of Contents

Figures, Tables, and Appendices

List of Abbreviated Terms

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
AMM	Avoidance and Minimization Measure
BMP	Best Management Practices
BSA	Biological Study Area
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
Canal	Alta Main Canal
CDFW	California Department of Fish and Wildlife
CFGC	California Fish and Game Code
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of Fresno
CVFPB	Central Valley Flood Protection Board
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DBH	diameter at breast height
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Endangered Species Act
FHWA	Federal Highway Administration
°F	Fahrenheit
FEMA	Federal Emergency Management Agency
GPS	global positioning system
HUC	hydrologic unit code
MBTA	Migratory Bird Treaty Act
mph	miles per hour
MSL	mean sea level
NES (MI)	Natural Environment Study (Minimal Impacts)
NHSL	National Hydric Soils List
NMFS	National Marine Fisheries Service

NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
OHWM	ordinary high water mark
Project	Alta Main Canal Bridge Replacement Project
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreements
SFHA	Special Flood Hazard Area
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
WDR	waste discharge requirements
WPCP	Water Pollution Control Plan
WRCC	Western Regional Climate Center

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Chapter 1 Introduction

This Natural Environment Study (Minimal Impacts) (NES [MI]) report has been prepared for the Alta Main Canal Bridge Replacement Project (Project). The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is proposing to replace the existing bridge on North Frankwood Avenue over the Alta Main Canal with the construction of a new bridge built to current standards on a new alignment. Construction of the new bridge would require the realignment and widening of North Frankwood Avenue, softening the existing curve in the road and improving overall sight distance.

The proposed Project will be funded by the Federal Highway Bridge Program and therefore requires both compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The lead agency for CEQA compliance is the County; the federal lead agency for NEPA compliance is Caltrans, as authorized under the NEPA Assignment Memorandum of Agreement between Caltrans and Federal Highway Administration.

This NES (MI) generally follows the outline of the November 14, 2014 short-form template found on the Caltrans Standard Environmental Reference web site (http://www.dot.ca.gov/ser).

1.1 Project Location and Existing Land Use

The proposed Project is located approximately 9 miles northeast of the City of Sanger, California and 2.5 miles east of the unincorporated community of Centerville, Fresno County, California (Figure 1-1). Specifically, the proposed Project is located in Section 2, Range 23 East, and Township 14 South of the Wahtoke U.S. Geological Survey (USGS) 7.5-minute quadrangle map (Figure 1-2).

The Project area consists of North Frankwood Avenue where it crosses over the Alta Main Canal, an artificial irrigation canal that diverts flows from the Kings River. The Project area encompasses the limits of work, which would consist of areas of permanent (e.g. new roadway, bridge footings, etc.) and temporary (e.g., construction staging areas) alteration. Surrounding land uses consist of agricultural and low–density residential land to the north and east. A mobile home community and a golf course is located immediately southwest of the proposed Project.

1.2 Project History

The existing two-lane bridge (Bridge No. 24C0289), located on North Frankwood Avenue 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180, is integrated with a controlled weir structure that stretches the full length of the bridge, and is owned and operated by the Alta

Irrigation District. The existing bridge was built in 1925, and is a four-span cast-in-place/reinforced concrete bridge with asphalt surfacing on the deck. Last inspected in 2014, the existing bridge has a sufficiency rating of 505 and has an Average Daily Traffic (ADT) of 1,080.

1.3 Purpose and Need

The purpose of the proposed Project is to construct a new wider bridge and bridge approaches that meet current design standards, improve sight distance and improve the curve radius to eliminate the 15 mile per hour curve at the west end of the existing bridge. The existing bridge has been listed by Caltrans as functionally obsolete. Deficiencies in the Alta Main Canal Bridge include transverse deck cracking over the bents, longitudinal and pattern cracking, insufficient curb-to-curb clear width, narrow traffic lanes and shoulders, narrow and winding approach roads with sight distance, and guardrails and railings that do not meet American Association of State Highway and Transportation Officials (AASHTO) standards. The Project is needed to replace a functionally deficient bridge and improve overall safety conditions along North Frankwood Avenue.

1.4 Project Description

The proposed two-lane bridge would be an approximately 145-foot-long, three-span, cast-in-place, concrete slab bridge located downstream of the existing bridge (Figure 1-3). The proposed bridge will have curb-to-curb width of 32 feet, while the existing bridge only has a width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot shoulders in each direction, whereas the existing bridge has none. The total width of the bridge deck would be 34.8 feet. Concrete footings would be placed outside the invert of the canal and would be excavated to a depth of about 5.5 feet. All these improvements to the existing bridge would meet or exceed AASHTO standards.

The proposed Project would widen the bridge approaches from 19 feet to 32 feet to accommodate the new structure, and realign North Frankwood Road to the new bridge location. The alignment change would improve sight distance to the bridge compared to existing conditions. The west bridge approach conform extends about 460 feet from the bridge and the east conform extends about 345 feet from the bridge. The new roadway alignment will require the driveways that serve the properties north of Frankwood Avenue to be modified to conform to the new roadway alignment and profile. The access to the Alta Irrigation District field office (northwest of bridge) will also need to be realigned to conform to the new roadway alignment.

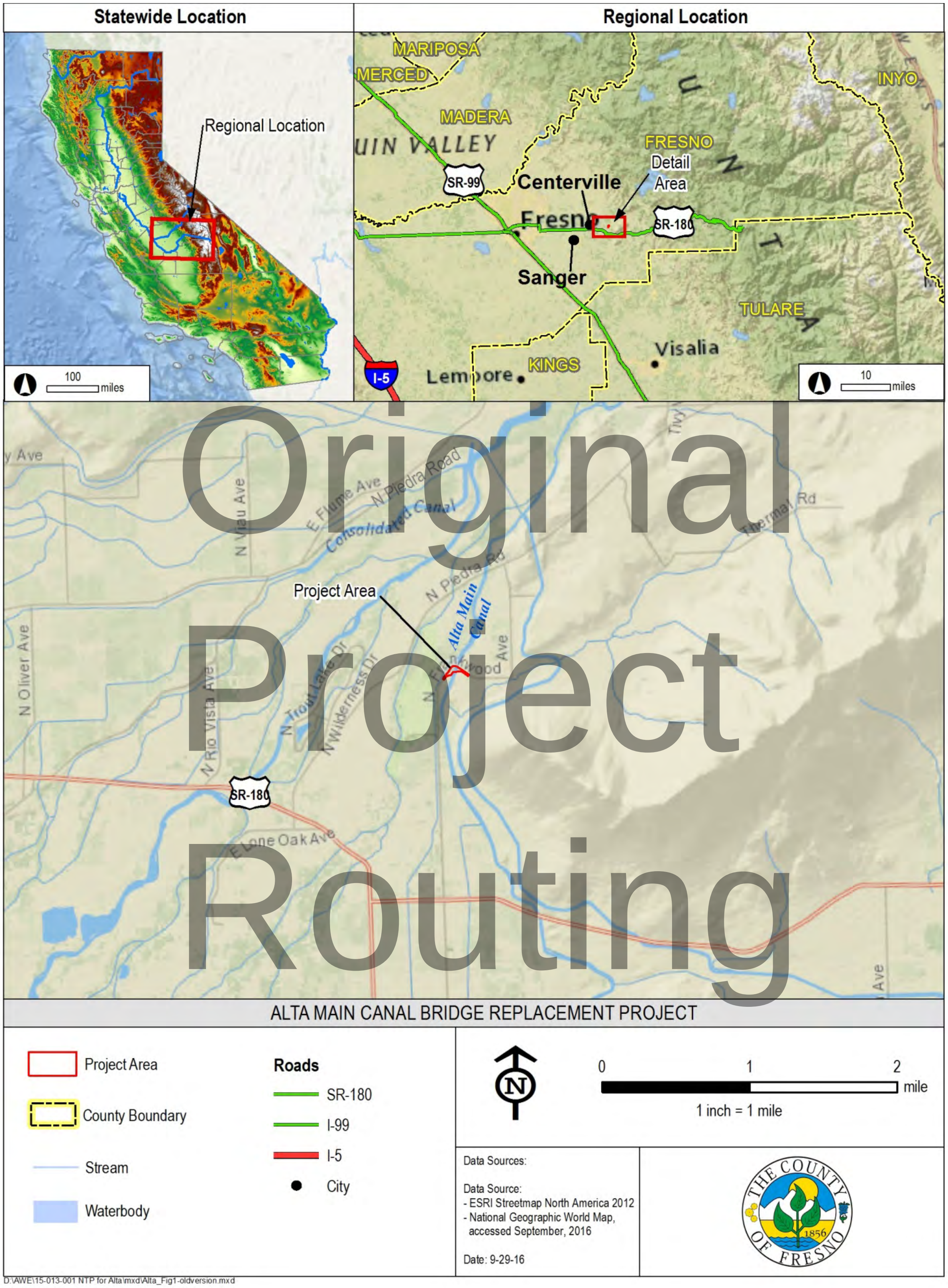

Figure 1-1. Project Area Vicinity

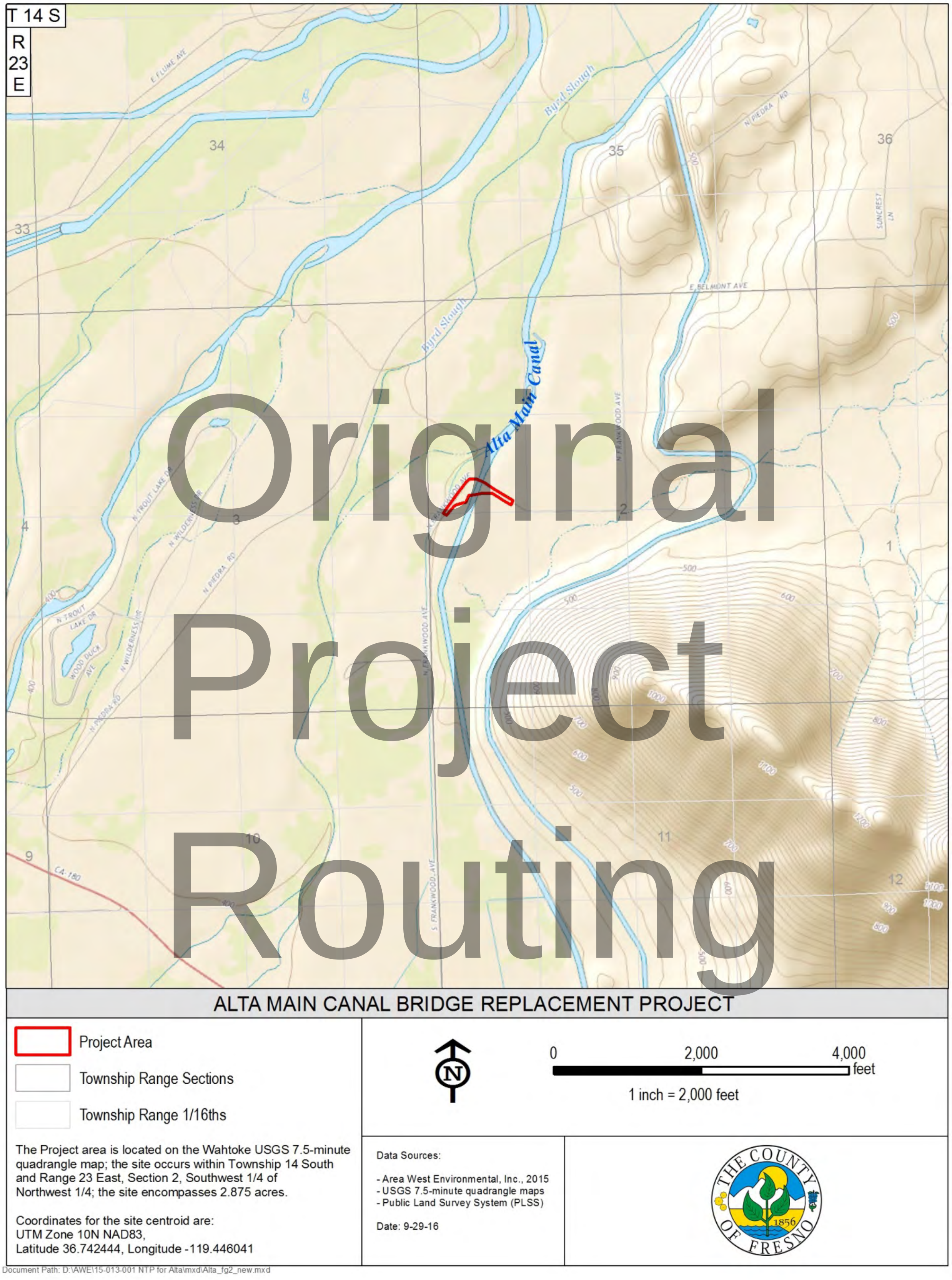

Figure 1-2. Project Area Location

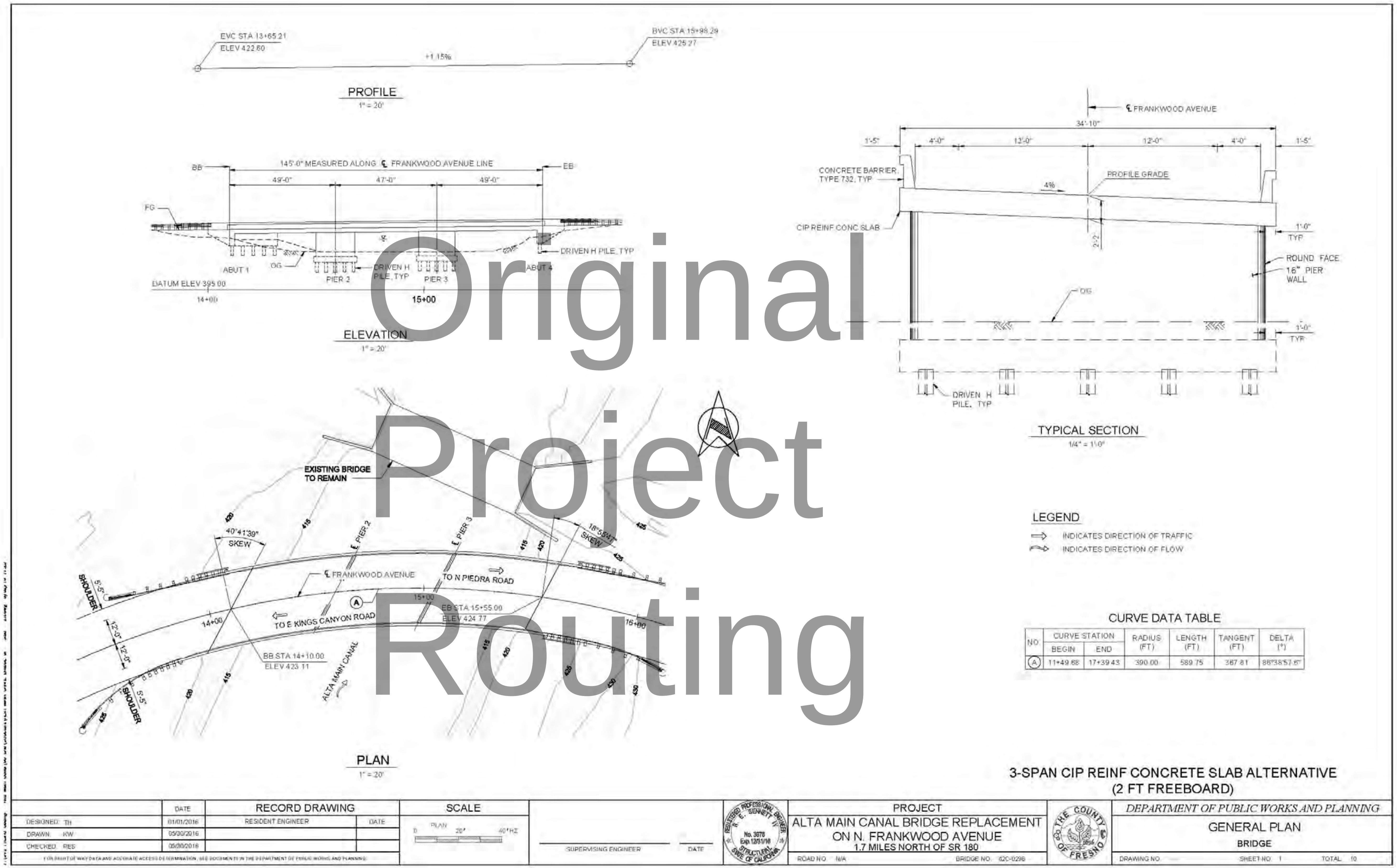

Figure 1-3. Proposed Alignment and Bridge Design

Original Project Routing

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The roadway and bridge profile is designed to slope from the east to the west, with the maximum slope of 1.15% occurring across the bridge. The intent is for the bridge deck elevation to approximate the elevation of the existing bridge while providing the canal freeboard desired by the Alta Irrigation District. The preliminary profile shows it will be necessary to lower the grade at the north and south banks of the canal to accommodate the realigned Frankwood Avenue, but will not encroach on the canal freeboard.

The roadway and bridge realignment will require the acquisition of right-of-way from Alta Irrigation District, and the Project construction would most likely require temporary construction easements from adjacent property owners. The existing bridge and roadway alignment would function as an onsite detour for vehicular traffic during construction of the Project. Once the Project is completed, the existing bridge would remain intact and continue to serve as an irrigation control structure; access to the bridge will be limited to the Alta Irrigation District.

To alleviate access constraints on maintenance activities and to minimize scour, the County is considering the placement of a concrete liner in the canal between the existing bridge and the downstream limit of the proposed bridge. The use of rip-rap is not proposed at this time.

1.4.1. Right of Way

The Alta Irrigation District owns and operates the Alta Main Canal and associated right of way. The County will work with the Alta Irrigation District to schedule construction of the proposed Project and obtain right of way for the new alignment. The roadway and bridge alignment may require additional right of way acquisition from two adjacent private properties, and Project construction would require temporary construction easements from Alta Irrigation District and nearby property owners.

1.4.2. Construction Methods and Schedule

New bridge construction will require temporary access to the canal to provide temporary formwork for the new abutments and piers. It is anticipated that bridge abutments would be diaphragm abutments supported on driven "H" piles. At the pier locations, driven "H" piles would support solid pier walls that would be aligned with the centerline of the canal. Because Alta Irrigation District operates the canal during the spring/summer irrigation season (typically May through August), bridge construction will occur during the fall/winter season when the canal is not in operation and will have minimal flow. The canal gates on the control structure do not seal; therefore, it will be necessary to install a temporary water diversion within the channel to divert canal flows from the work area. Based on preliminary estimates, the Project is anticipated to require one construction season and approximately 100-120 working days (5 to 6 months) to complete.

Construction staging would occur within the Project area (Figure 1-3), including areas that are paved or have been previously disturbed in the Project area, or in other areas negotiated by the contractor. The contractor would be responsible for ensuring environmental clearance for any staging areas outside the Project area evaluated in this report. Expected activities in staging areas include but are not limited to the following:

- Worker parking;
- Assembly area for formwork and active equipment use (e.g., cranes, concrete pump trucks);
- Overnight parking and temporary storage of construction equipment;
- Fueling and maintenance of construction equipment;
- Temporary storage of construction materials; and
- Construction trailers for the contractor, resident engineer, and/or inspector (if needed).

Typical construction equipment will include, but is not limited to, those listed in Table 1-1 below.

Table 1-1. Proposed Construction Equipment

Equipment	**Construction Purpose**
Asphalt Concrete Paver	Paving roadways
Backhoe	Soil manipulation and drainage work
Bobcat	Fill distribution
Bulldozer/Loader	Earthwork construction, cleaning and grubbing
Crane	Placement of bridge precast girders, placing of forms, and rebar
Concrete Truck	Concrete delivery
Concrete Pump	Concrete placing
Dump Truck	Fill material delivery/surplus removal
Excavator	Soil manipulation
Front-end Loader	Dirt or gravel manipulation
Grader	Ground leveling
Haul Truck	Earthwork construction; clearing and grubbing
Pile Driving Hammers and Equipment	Bridge pile placement
Roller / Compactor	Earthwork construction
Scraper	Earthwork construction; clearing and grubbing
Truck with Seed Sprayer	Landscaping
Water Truck	Earthwork construction; clearing and grubbing

1.5 Project Study Limits

For the purpose of this NES (MI), the Project area represents the maximum extent of ground disturbance that will result in direct permanent and temporary impacts. Therefore, the biological study area (BSA) encompasses the entire Project area (2.875 acres), and the term BSA is used synonymously with Project area throughout this NES (MI). The extent of the BSA will accommodate any changes to Project limits that may occur during Project development.

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Chapter 2 Study Methods

This chapter describes the methods used in the preparation of this NES (MI) report and includes a list of resources reviewed, field survey dates and personnel, and limitations encountered during the study that may influence the conclusions reached in this report.

2.1 Regulatory Requirements

This section summarizes the federal and state regulations that protect sensitive biological resources (special-status species; waters of the U.S. and State, including wetlands; and natural communities of special concern). This section also discusses pertinent County goals, ordinances, and policies relating to the protection and preservation of biological resources.

2.1.1. Special-status Species Protection

The following regulations pertain to special-status species or habitats in the BSA.

2.1.1.1. Federal Endangered Species Act

Under the federal Endangered Species Act (ESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 United States Code [USC] Section 1533[c]). Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the Project area and determine whether the project will result in "take" of any such species. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the U.S. Fish and Wildlife Service (USFWS) as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Harm is defined to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the ESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536[3], [4]).

Section 7 of the ESA provides a means for authorizing incidental take of federally endangered or threatened species that result from federally conducted, permitted, or funded projects. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Similarly, Section 10 authorizes incidental take of federally endangered or threatened species that result from non-federal projects.

2.1.1.2. Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) (16 USC, Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, bird nests, and eggs. The MBTA is administered by the USFWS and special permits from the agency are generally required for the take of any migratory birds. This act applies to all persons and agencies in the U.S., including federal agencies.

2.1.1.3. California Endangered Species Act

Under the California Endangered Species Act (CESA), California Department of Fish and Wildlife (CDFW) has the responsibility for maintaining a list of threatened and endangered species designated under state law (California Fish and Game Code [CFGC] Section 2070). Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the proposed project would result in take of any such species. Under CESA, "take" is defined as the action of or attempt to "pursue, hunt, shoot, capture, collect, or kill." The CDFW may authorize the incidental take of a state-listed species under Section 2081 of the CFGC. For species that are listed as threatened or endangered under both the ESA and CESA, and for which an incidental take permit has been issued in accordance with Section 7 or Section 10 of the ESA, CDFW may authorize take after certifying that the federal incidental take permit is consistent with CESA, pursuant to Section 2080.1 of the CFGC.

2.1.1.4. California Fish and Game Code

The CDFW provides protection from take for state-listed and non-listed species. CFGC Section 2080 prohibits take of a species listed as endangered or threatened under the CESA and CFGC Section 2081 allows CDFW to issue an incidental take permit in accordance with Title 14 California Code of Regulations (CCR) Sections 783.4(a) and (b), and CFGC Section 2081(b). Eggs and nests of all birds are protected from take under CFGC Section 3503. Raptors and raptor nests or eggs are protected from take under CFGC Section 3503.5. Migratory birds are expressly prohibited from take under CFGC Section 3513 and species designated by CDFW as fully protected species are protected from take under CFGC Sections 3511, 4700, 5050, and 5515.

2.1.2. Waters of the U.S. and State

The following federal and state regulations pertain to waters of the U.S. and State, including wetlands, found in the BSA.

2.1.2.1. Federal Regulation

The U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the U.S., including wetlands. The USACE acts under two statutory authorities: the Rivers and Harbors Act (Sections 9 and 10), which governs specified activities in “navigable waters of the U.S.,” and the Clean Water Act (CWA) Section 404, which governs specified activities in waters of the U.S. The USACE requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters and/or discharging dredged or fill material into waters of the U.S., including wetlands. The U.S. Environmental Protection Agency (USEPA), USFWS, National Marine Fisheries Service (NMFS), and several other agencies provide comment on USACE permit applications.

Executive Order 11990 – Protection of Wetlands

Executive Order (EO) 11990 established a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative. The U.S. Department of Transportation (DOT) circulated DOT Order 5660.1A in 1978 to comply with this directive. On federally funded projects, impacts to wetlands must be identified and alternatives that avoid wetlands must be considered. If wetland impacts cannot be avoided, then all practicable measures to minimize impacts must be included. This must be documented in a specific Wetlands Only Practicable Alternative Finding. An additional requirement is to provide early public involvement in projects affecting wetlands. The Federal Highway Administration (FHWA) provides technical assistance (Technical Advisory 6640.8A) and reviews environmental documents for compliance.

2.1.2.2. State Regulation

The State’s authority in regulating activities in waters of the State resides primarily with the State Water Resources Control Board (SWRCB). SWRCB, acting through Regional Water Quality Control Board (RWQCB), must certify that a USACE permit action meets state water quality objectives under Section 401 of the CWA. RWQCB jurisdiction over waters of the State is extended through the Porter-Cologne Act, which defines waters of the State as any surface water or groundwater, including saline waters, within the boundaries of the State (California Water Code Section 13050[e]). In the absence of CWA Section 404 jurisdiction over isolated waters or other waters of the State, California retains authority to regulate discharges of wastes into any waters of the State. The Porter-Cologne Act provides a comprehensive framework to protect water quality in California. It requires any entity that plans to discharge waste where it might adversely affect waters of the State to first notify the RWQCB, which may impose waste discharge requirements (WDRs) to protect water quality.

Under the California General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Permit), SWRCB Order No. 2009-0009-DWQ, National Pollutant Discharge Elimination System (NPDES) No. CAS000002, a Storm Water Pollution Protection Plan (SWPPP) that will minimize construction and storm water related impacts to waterways must be prepared when a project disturbs 1 acre or more or is part of a larger project. For projects that disturb less than 1 acre, preparation of a Water Pollution Control Plan (WPCP) may be used to minimize construction storm water related impacts.

Under the CFGC Sections 1600–1607, CDFW may develop mitigation measures and enter into Streambed Alteration Agreements (SAA) with applicants who propose projects that would obstruct the flow of, or alter the bed, channel, or bank of a river, stream, or lake in which there are fish or wildlife resources.

2.1.3. Invasive Species Regulation

The following regulations pertain to reducing the spread of invasive species within the BSA.

Executive Order 13112 – Invasive Species

EO 13112 requires federal agencies to combat the introduction or spread of invasive species in the U.S. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." FHWA guidance issued August 10, 1999 directs the use of the state’s invasive species list, maintained by the California Invasive Species Council (Cal-IPC) to define the invasive plants that must be considered as part of the National Environmental Policy Act (NEPA) analysis for a proposed project. Under the EO, federal agencies cannot authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless all reasonable measures to minimize risk of harm have been analyzed and considered.

2.1.4. Floodplain Policies

Executive Order 11988 is a flood hazard policy for all federal agencies that manage federal lands, sponsor federal projects, or provide federal funds to state or local projects. It requires that all federal agencies take necessary action to reduce the risk of flood loss; restore and preserve the natural and beneficial values served by floodplains; and minimize the impact of floods on human safety, health, and welfare. Specifically, Executive Order 11988 dictates that all federal agencies avoid construction or management practice that would adversely affect floodplains unless that agency finds that there is no practical alternative and the proposed action has been designed or modified to minimize harm to or within the floodplain.

The Central Valley Flood Protection Board (CVFPB) oversees the flood management system in California's Central Valley, as authorized under the California Water Code and Title 23 of the California Code of Regulations (23 CCR §112). The CVFPB identifies Regulated Streams and Designated Floodways, which are not the same as floodplains mapped by the Federal Emergency Management Agency (FEMA). Any proposed projects that are located within a Designated Floodway or within 30-feet from the bank of a Regulated Stream will require a CVFPB permit.

2.1.5. Local Plans and Policies

The following local planning documents contain policies applicable to biological resources in the BSA.

2.1.5.1. Fresno County General Plan

The Fresno County General Plan (Fresno County 2000) establishes goals and policies relevant to biological resources in the vicinity of the proposed Project. The Open Space and Conservation Element of the General Plan is concerned with protecting and preserving natural resources, preserving open space areas, managing the production of commodity resources, protecting and enhancing cultural resources, and providing recreational opportunities. Some of the natural resource goals included in the County's Open Space and Conservation Element are listed below.

- **Goal OS-A.** To protect and enhance the water quality and quantity in Fresno County's streams, creeks, and groundwater basins**.**
- **Goal OS-D.** To conserve the function and values of wetland communities and related riparian areas throughout Fresno County while allowing compatible uses where appropriate. Protection of these resource functions will positively affect aesthetics, water quality, floodplain management, ecological function, and recreation/tourism.
- **Goal OS-E.** To help protect, restore, and enhance habitats in Fresno County that support fish and wildlife species so that populations are maintained at viable levels.
- **Goal OS-F.** To preserve and protect the valuable vegetation resources of Fresno County.

2.1.5.2. Fresno County Oak Woodland Management Guidelines

The Fresno County Oak Woodland Management Guidelines (Fresno County 1998) provide guidance for building within oak woodlands. These voluntary guidelines direct applicants to include the following considerations when working within oak woodlands.

- Develop an Oak Woodland Management Plan to retain existing oaks, preserve agriculture, retain wildlife corridors, and enhance soil and water conservation practices.
- Avoid tree root compaction during construction by limiting heavy equipment in root zones.

- Carefully plan roads, cuts and fills, building foundations, and septic systems to avoid damage to tree roots.
- Design roads and consolidate utility services to minimize erosion and sedimentation to downstream sources. Also, consider reseeding any disturbed ground.
- Avoid landscaping which requires irrigation within 10 feet of the trunk of an existing oak tree to prevent root rot.
- Consider replacing trees whose removal during construction was avoidable.
- Use fire-inhibiting, drought-tolerant, and oak-compatible landscaping wherever possible.

2.2 Studies Required

Prior to conducting field surveys, available information regarding biological resources within the vicinity of the BSA was gathered and reviewed, including information on special-status plant and wildlife species with the potential to occur in the vicinity of the BSA. Several data sources were reviewed, including:

- a records search of CDFW's California Natural Diversity Database (CNDDB) for species within 10 miles of the BSA (CNDDB 2016) (Appendix A);
- a species list for the Project area from the USFWS (USFWS 2016) (Appendix A);
- a search of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants Database for the Wahtoke and eight surrounding USGS quadrangles (CNPS 2016) (Appendix A); and
- Cal-IPC's California Invasive Plant Inventory (Cal-IPC 2006).

Lists of special-status plant and wildlife species with the potential to occur in the vicinity of the proposed Project were developed based on the review of existing information, as identified above. These lists were used to focus the investigation on the special-status species and associated habitats with the potential to be present within the BSA.

Following a review of the resources listed above, it was determined that field surveys were required to assess the BSA for sensitive biological resources including plants and wildlife.

2.3 Personnel, Survey Dates, and Methods

Within the BSA, biologists completed the following surveys:

- vegetation community mapping;
- botanical surveys;

- wildlife surveys;
- nesting bird surveys;
- special-status species habitat assessments; and
- delineation of waters of the U.S. and State.

Biologists Brent Helm and Callen Keller conducted an initial reconnaissance-level site visit of the BSA on April 29, 2016, to identify constraints of the proposed Project and to determine the type of surveys and level of effort that would be required to analyze potential Project impacts to biological resources. The focused biological field surveys listed above were conducted by biologists Mark Noyes and Samuel Price on June 10, 2016. Qualifications of personnel conducting surveys are provided in Table 2-1.

Table 2-1. Biological Surveys Conducted for the Project

Survey Date	Type of Survey	Personnel		
		Name	**Education**	**Years' Experience**
April 29, 2016	Initial site visit, field reconnaissance	Brent Helm, Ecologist	BS, Wildlife Management MS, Ecology PhD, Ecology	27
		Callen Keller, Biologist	BS, Environmental Science & Resource Management	6
June 10, 2016	Wetland delineation, special-status species habitat assessment, botanical survey, nesting bird survey, tree inventory	Mark Noyes, Biologist/ Botanist	BS, Biology MS, Ecology	8
		Sam Price, Biologist	BS, Wildlife Management and Conservation MS, Geographic Information Science and Technology	5

The purpose of the biological field surveys was to:

- characterize biological communities and their associated wildlife uses;
- document common and special-status plant and wildlife species;
- identify potentially jurisdictional waters of the U.S. and State that could be subject to state and federal regulations; and
- map trees within the BSA.

2.3.1. Wildlife Surveys

On June 10, 2016, biologists conducted a general wildlife survey within the BSA. The survey focused on identifying and evaluating biological communities in the BSA to determine their suitability to support common and special-status species (see Section 3.2 for a definition of special-status species). Surveys were conducted while walking through the BSA in meandering transects. Trees were scanned for nests and potential bat roosts using binoculars, and any species of animal observed was identified and recorded using a Trimble global positioning system (GPS) unit with sub-meter accuracy.

2.3.1. Vegetation Surveys

All plant species encountered during field surveys were identified to the level necessary to determine if they were special-status species. Plants not readily identifiable in the field were identified plants using identification keys in the *Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin 2012). Vegetation communities present within the BSA were classified based upon visual determinations of species composition, location, and prevalence. With the exception of potential Waters of the U.S. and State, vegetation community boundaries were drawn on aerial photography of the Project area. Appendix B includes lists of plant and wildlife species observed during the field surveys.

2.3.2. Tree Inventory

All trees within the BSA were identified and mapped using a GPS unit with sub-meter accuracy. Data collected included species, diameter at breast height (DBH), estimate of canopy size, and any additional notes regarding tree vigor or wildlife observations. Appendix C includes the Alta Main Canal Tree Inventory, which includes the locations and data for all trees occurring in the BSA.

2.3.3. Waters of the U.S. and State

A wetland delineation was conducted on June 10, 2016. Data point and delineation mapping was conducted according to the *Corps of Engineers Wetland Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008).

2.4 Agency Coordination and Professional Contacts

The following agency coordination has been conducted for the proposed Project.

2.4.1. California Department of Fish and Wildlife

Charles Walbridge at the CDFW Region 4 office was contacted on July 1, 2016 to determine whether a SAA would be required for work in the canal. Mr. Walbridge stated that the Project would require a SAA, as the canal meets the definition of a water of the State and the canal has habitat value. He also remarked that as a water of the State, work in the canal may be subject to review by the RWQCB under the Porter Cologne Act.

2.4.2. U.S. Fish and Wildlife Service

A query of the USFWS Information for Planning and Conservation database was conducted on June 9, 2016 to create a list of potential special-status species for the Project area and surrounding area.

2.4.3. Alta Irrigation District

Alta Irrigation District was contacted on June 22, 2016 to discuss Alta Main Canal operations and maintenance. Mr. Javier Cavazos provided clarification on canal control structures, water distribution, water operations, and connection to natural waterways.

2.5 Limitations That May Influence Results

Limitations encountered during surveys that might influence results included:

1) Survey date outside bloom period of two special-status plant species with potential to occur in the BSA and identified as rare by the CNPS.

2) The wetland delineation survey was performed during the season when the Alta Irrigation District releases water through the segment of the Alta Main Canal within the BSA. As a result of the flowing water within the canal, a data point could not be taken within the feature.

3) Although the surveys were within the nesting season, migratory nesting birds and raptors may change nesting locations seasonally and annually. Two mourning dove nests were observed during the surveys. While no raptor nests were observed during the surveys, it does not exclude the possibility of their presence during the construction period.

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Chapter 3 Environmental Setting

This Section provides a description of existing physical and biological conditions within the BSA. During field surveys, representative photographs were taken and are provided in Appendix D.

3.1 Description of the Existing Biological and Physical Conditions

The BSA is located within an unincorporated area approximately 9 miles northeast of the incorporated City of Sanger in the southeastern portion of the San Joaquin Valley, in Fresno County, California (Figure 1-1). North Frankwood Avenue crosses over the Alta Main Canal, an artificial irrigation canal that diverts flows from the Kings River. Surrounding land uses consist of agricultural and low–density residential land to the north and east. A mobile home community and a golf course is located immediately southwest of the BSA. The BSA is 2.87 acres at an elevation of approximately 425 feet above mean sea level (msl) (Figure 1-2).

3.1.1. Soils

Five soil map units occur within the BSA: Hanford fine sandy loam, gravelly substratum; Hesperia fine sandy loam, moderately deep, saline-alkali; Hesperia fine sandy loam, moderately deep; Tujunga soils, channeled, 0 to 9 percent slopes; and water (Figure 3-1) (Natural Resource Conservation Service [NRCS] 2016). The Hanford fine sandy loam, gravelly substratum and Tujunga soils, channeled, 0 to 9 percent slopes soil map units are listed in the National Hydric Soil List (NHSL) (NRCS 2015). No other soil map units within the Project area are listed in the NHSL.

3.1.2. Climate

Climate details for the BSA are based on historical data collected by a Western Regional Climate Center (WRCC) at the monitoring station at Fresno 5 Northeast, located approximately 13.5 miles west of the Project area. The WRCC station at Fresno 5 Northeast has records from 1999-2016, and collects data on daily temperature (minimum and maximum), precipitation, snowfall, and snow depth. Temperatures range from an average high in July of 98.1 degrees Fahrenheit (°F) to an average low in January of 37.7 °F (WRCC 2016). The average annual temperature in is approximately 66 °F, and an average of 10.63 inches of precipitation falls annually. Precipitation occurs throughout the year, with the least occurring from July through September. Precipitation falls primarily in the form of rain (WRCC 2016).

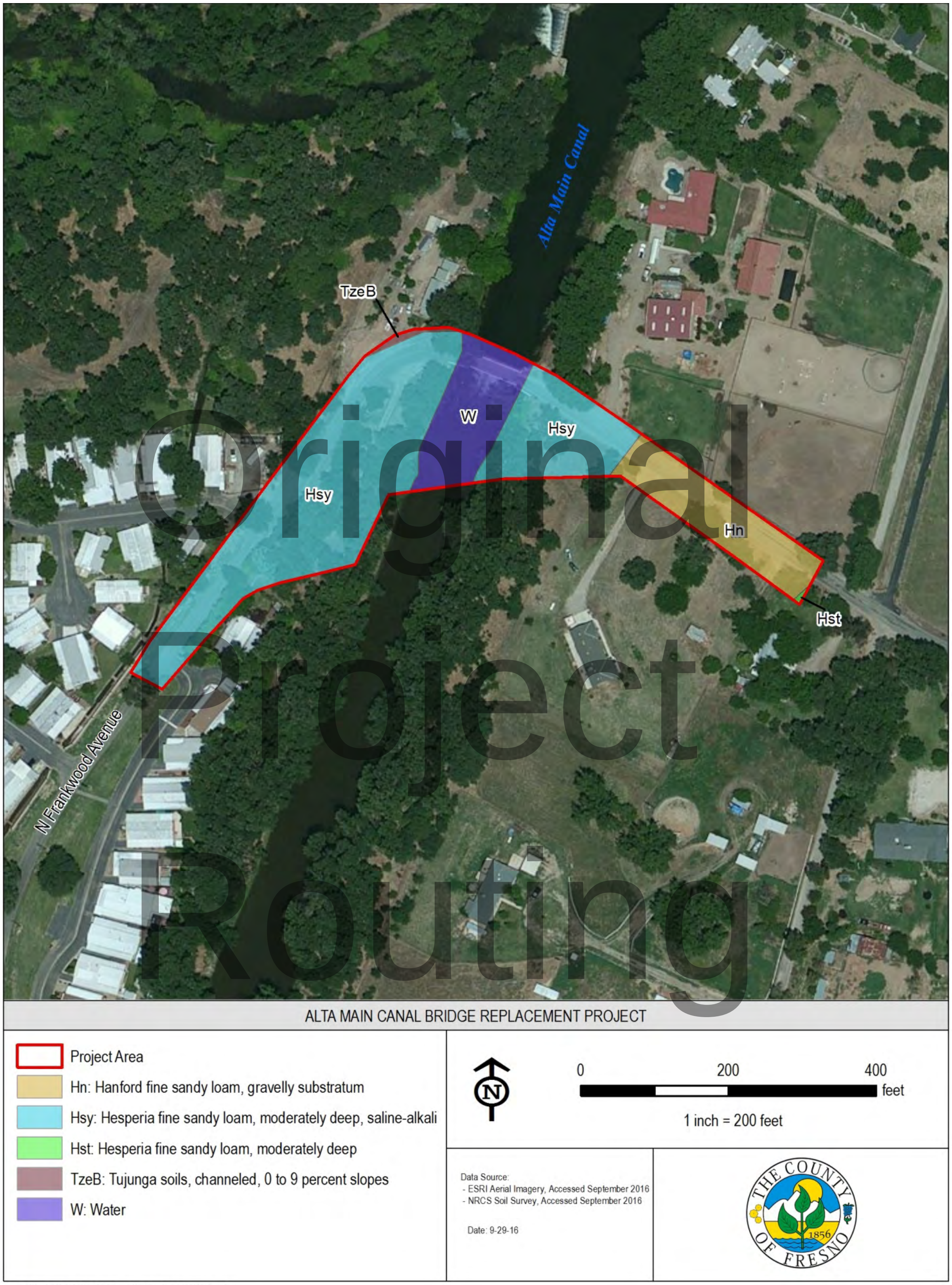

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Figure 3-1. Project Soils

3.1.3. Local and Regional Hydrology

The BSA lies within the Tulare-Buena Vista Lakes Subbasin (USGS Hydrologic Unit Code [HUC] 18030012), part of the Tulare Lake Basin (Basin), which comprises the San Joaquin Valley south of the San Joaquin River (Watershed Boundary Dataset 2016). More specifically, the BSA is located in the Cole Slough-Kings River watershed (HUC 1803001202) and the Byrd Slough subwatershed (HUC 180300120203) (Figure 3-2). Irrigated agriculture accounts for most of the water use within the Basin (Central Valley Regional Water Quality Control Board [CVRWQCB 2015]). Surface waters from the Basin only drain north into the San Joaquin River during extreme rainfall years (CVRWQCB 2015).

Water flow within Alta Main Canal through the BSA is controlled by the Alta Irrigation District, with an average annual flow of 150,261 acre feet. Water is diverted into the canal from the Kings River at the Cobbles Weir near Piedra, California and distributed for irrigation purposes through distribution facilities (canals and ditches) (Alta Irrigation District 2010). Water flows through the Alta Main Canal from its confluence with the Kings River, approximately 2.75 miles northeast of the BSA. From the canal, water flows through a series of irrigation canals and ditches to agricultural sites throughout the Alta Irrigation District. During normal rain years, all water entering the canal is utilized, and none returns to a traditional navigable water. In emergency maintenance situations, water could be released through Wahtoke Creek back to the Kings River and eventually to the San Joaquin River.

3.1.4. Floodplains

The BSA is located within the 06019C2180H Flood Insurance Rate Map (FIRM) (Figure 3-3). Portion of the Project area upstream of the existing bridge/weir is designated as Zone A, which is defined as, "Special Flood Hazard Areas (SFHA) Subject to Inundation by the 1% Annual Chance Flood Event". For the area downstream of the existing bridge/weir, FEMA has not evaluated flood conditions along the Canal. (FEMA 2016).

The CVFPB has identified the Alta Main Canal within the BSA as a Regulated Stream both upstream and downstream of the bridge/weir (California Department of Water Resources 2016; 23 CCR §112, Table 8.1).

3.1.1. Biological Conditions

The BSA supports six generalized vegetation community types (developed/ornamental, annual grassland, valley oak woodland, valley oak riparian, artificial season wetland, and canal) (Figure 3-4). Acreage of vegetation community types within the BSA is provided in Table 3-1.

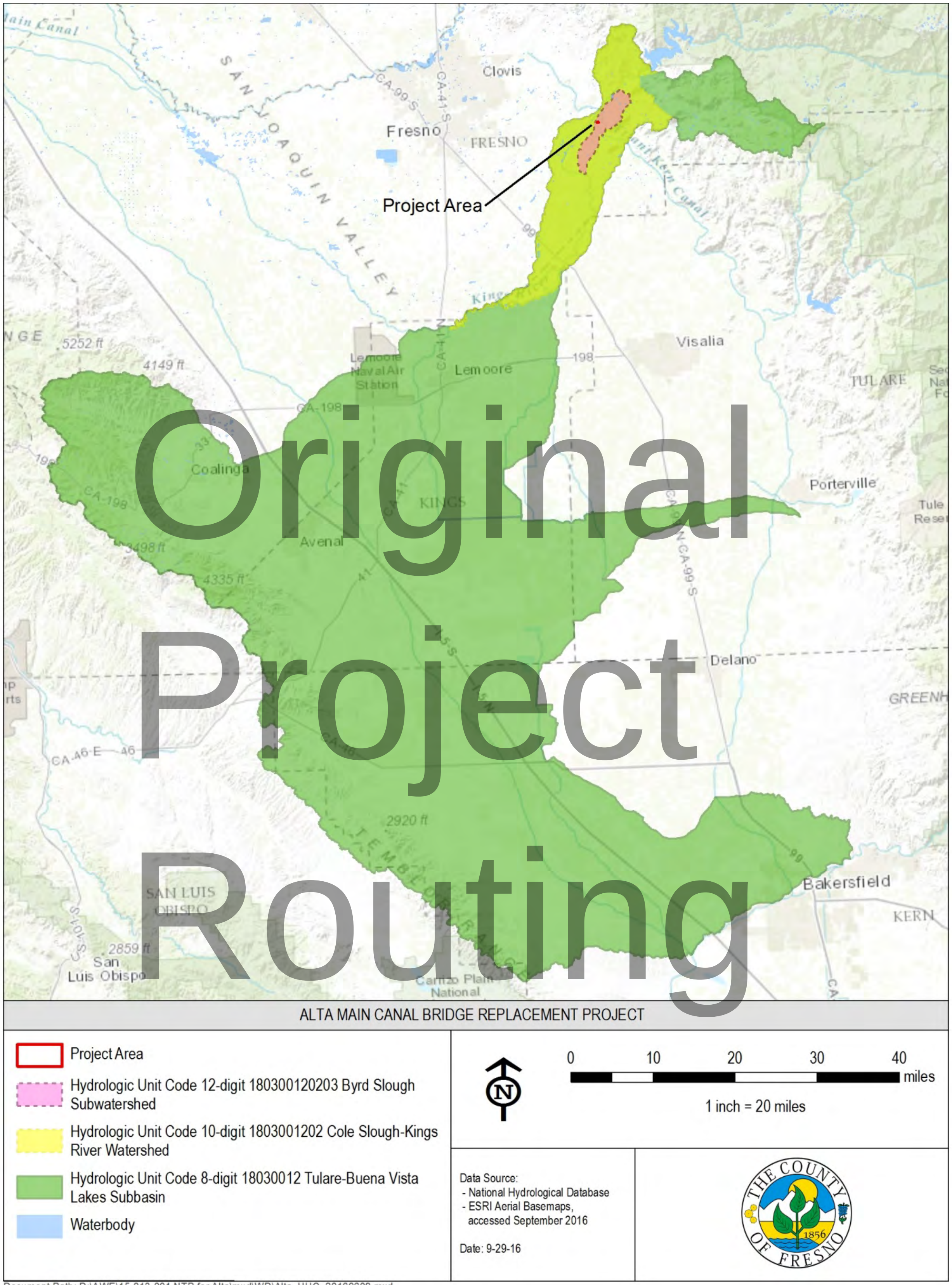

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Figure 3-2. Project Hydrologic Unit

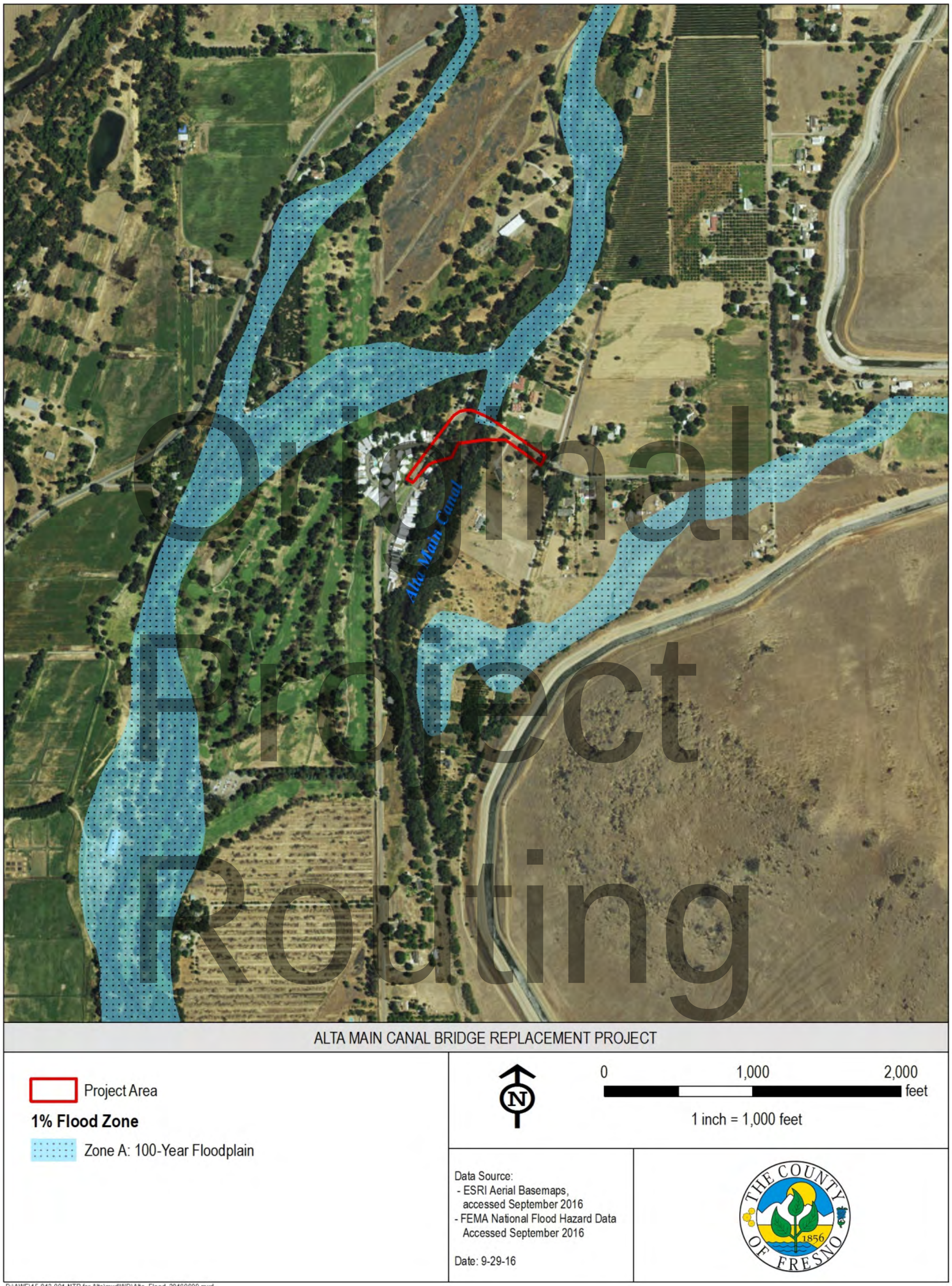

Figure 3-3. FEMA Flood Hazard Map

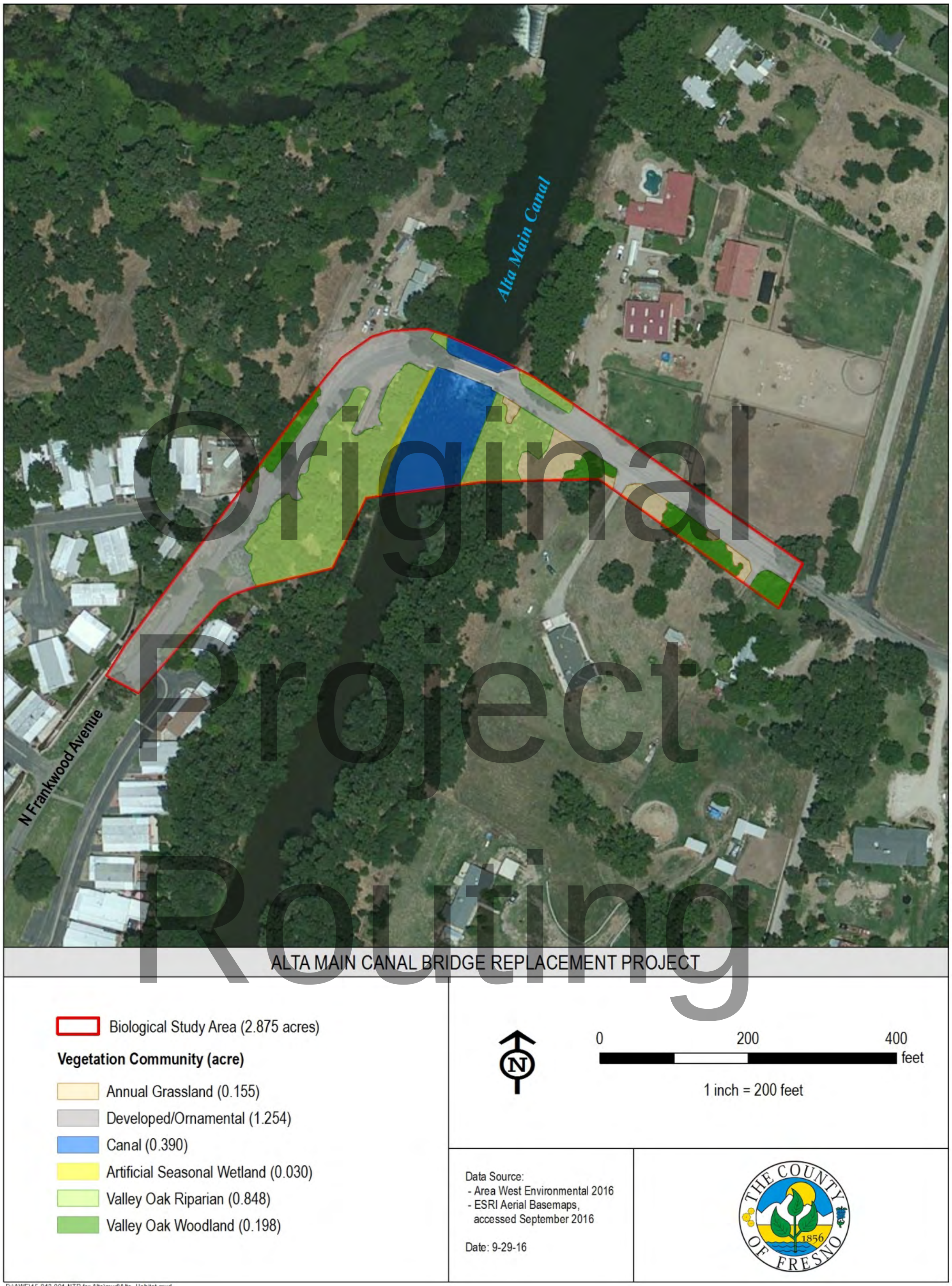

Figure 3-4. Vegetation Communities within the Biological Study Area

Table 3-1. Vegetation Community Types

Habitat Community	Acres within the BSA
Developed/Ornamental	1.254
Annual Grassland	0.155
Valley Oak Woodland	0.198
Valley Oak Riparian	0.848
Artificial Seasonal Wetland	0.030
Canal	0.390
Total	**2.875**

3.1.1.1. Developed/Ornamental

This vegetation community includes private residences and associated landscaping and driveways, roads, and the existing bridge. North Frankwood Avenue, a paved road, bisects the BSA and crosses the canal over the existing bridge/weir. Unpaved shoulders along both sides of the road appear to be regularly mowed and/or sprayed with herbicides. Near private residences in the southern portion of the BSA, landscaped ornamental vegetation is present, and appears to be regularly irrigated and mowed/trimmed. The Alta Irrigation District maintains (with mowing) an unpaved dirt access road along the western side of the canal. Only the portion of the road outside of the riparian tree canopy was classified as developed/ornamental.

Roadside vegetation consisted almost entirely of non-native annual grasses, including ripgut brome (*Bromus diandrus*), soft chess brome (*Bromus hordeaceus*), and poverty brome (*Bromus sterilis*). Within the landscaped portions of the habitat, Bermuda grass (*Cynodon dactylon*) and tall fescue (ornamental variety) (*Festuca arundinacea*) were common, as well as ornamental shrubs and trees including oleander *(Nerium oleander*) and weeping cherry (*Prunus subhirtella*). Portions of this vegetation community were adjacent to valley oaks (*Quercus lobata*).

3.1.1.2. Annual Grassland

Annual grassland consists primarily of non-native annual grasses with a small forb component. Present within private property in the southwestern and eastern portions of the BSA outside of the narrow riparian band flanking each side of the canal, this vegetation community was mowed in most areas, with the exception of the east side of the eastern canal levee.

Plants in this habitat type were entirely herbaceous and consisted mainly of non-native annual grasses including ripgut brome, soft chess brome, and wild oats. When present, forbs included sunflower (*Helianthus annuus*), prickly lettuce (*Lactuca serriola*), common mallow (*Malva neglecta*), and Spanish lotus (*Acmispon americanus*). Forbs were higher in abundance and cover within the portions of the annual grassland habitat that were mowed.

3.1.1.3. Valley Oak Woodland

Valley oak woodland is present along North Frankwood Avenue in the northwestern and eastern portions of the BSA. While similar to the valley oak riparian vegetation community (Section 3.1.5.2.), this vegetation community is located outside of the levees along the canal. Along the road, the understory is mowed periodically.

The overstory consists entirely of valley oaks (*Quercus lobata*), while the understory contains the same species as the annual grassland community, although ripgut brome is more prevalent. Additionally, the patch of valley oak woodland along the western edge of the Project area contains California blackberry (*Rubus ursinus*), which is located just outside of a large swale than runs behind the nearby mobile home park outside the BSA.

3.1.1.4. Valley Oak Riparian

This vegetation community occurs on the levees that flank the canal. While dominated by valley oaks, this vegetation community type is more structurally diverse, with small midstory component of black willows (*Salix gooddingii*) in low-lying areas near the edge of the canal. A vine stratum of Japanese honeysuckle (*Lonicera japonica*) is also present. Due to the steeper slope of the eastern levee, the valley oak riparian vegetation community appears more xeric, and more closely resembles the valley oak woodland vegetation community. Along the eastern edge of the canal, sporadic hydrophytes are present, including Himalayan blackberry (*Rubus armeniacus*) and Fremont cottonwood (*Populus fremontii*).

Within this vegetation community, the overstory is dominated by valley oak and the midstory is dominated by black willow (within the less steep areas closer to the canal). Occasional Japanese honeysuckle vines are also present. In the herbaceous layer, low-growing Himalayan berry, common horsetail (*Equisetum arvense*), mugwort (*Artemesia douglasii*), and vetch (*Vicia* sp.) are present.

The valley oak riparian vegetation community is regulated by CDFW under Section 1602 of the CFGC and therefore is considered a natural community of special concern.

3.1.1.5. Artificial Seasonal Wetland

This vegetation community occurs along the western fringe of the canal where the gradual slope of the levee creates saturated soil conditions via capillary rise. Due to the release schedule of the canal, soils within this vegetation community typically remain saturated for up to 4 months (May through August). Overlying large cobbles, this vegetation community has relatively shallow soil (less than 8 inches) that supports primarily herbaceous hydrophytes with occasional Himalayan blackberry plants. Further upslope from the edge of the canal, this vegetation community transitions to valley oak riparian, where deeper soils support perennial woody vegetation.

During the remainder of the year when water is not being released into the portion of the canal within the BSA, this habitat type does not receive any additional hydrologic inputs.

Vegetation in this vegetation community is mostly herbaceous and includes Mexican rush (*Juncus mexicanus*), mugwort , Santa Barbara sedge (*Carex barbarae*), mullein (*Verbascum* sp.), Kentucky blue grass (*Poa pratensis*), sweet clover (*Melilotus indicus*), and Himalayan berry. At the base of the bridge, this vegetation community also supports common buttonwillow (*Cephalanthus occidentalis*).

Although the artificial seasonal wetland vegetation community type meets the wetland criteria as described by the USACE (USACE 2008), this vegetation community would not be considered – jurisdictional waters of the U.S. based on the source of the hydrology being artificially maintained through the use of a series of weirs. Furthermore, this vegetation community does not pond water, and is formed as a result of the artificial hydrology of the canal vegetation community described in Section 3.1.5.4.

3.1.1.6. Canal

During the time of the June 10, 2016 field survey, the segment of the canal within the BSA consisted of open, flowing water. As observed during a April 2016 site visit, the lining of the canal consists of large cobble covered with a sparse layer of herbaceous hydrophytes. Flanking a low-flow channel approximately 80 feet wide, each side of the canal consists of a shallow bench 9 feet wide that is under approximately 1 foot of water during scheduled water releases. Based on the results of the April site visit, the Alta Irrigation District sprays herbicide within the canal, likely to prevent the establishment of emergent vegetation (e.g., cattails [*Typha* spp.] and tules [*Schoenoplectus* spp.]).

Based on the plants growing along the shallow benches of the canal that were visible, vegetation consists primarily of western panicum (*Panicum acuminatum*) and Mexican rush. During the June field survey, these plants comprised less than five percent aerial cover of the vegetation community. The vegetation likely established prior to the release of water and is not characteristic of submergent or emergent plant species.

Due to the series of weirs along the Alta Main Canal between the Project area and the point of diversion along the Kings River, the hydroperiod of this vegetation community is artificial, and any hydric soils that formed within this portion of the Project area formed under artificial conditions. Based on historic records, the portion of the Alta Main Canal in the Project area was excavated in the uplands outside of any historic drainages or accessory channels to the Kings River. The ordinary high water mark (OHWM) formed as a result of historic grading within uplands and the artificially-maintained hydrology of the portion of the Alta Main Canal within the Project area. Although the Alta Main Canal does intercept natural flows downstream of the Project area, including Wahtoke Creek, these areas are located outside of the Project area. As a result, the canal vegetation community is not considered USACE-jurisdictional.

The canal vegetation community may qualify as a water of the state, which would be regulated by CDFW under Section 1602 of the CFGC, and by the RWQCB under the Porter-Cologne Act.

3.1.2. Habitat Connectivity and Wildlife Migration Corridors

The riparian corridor of the Alta Main Canal, which bisects the BSA, is a potential movement corridor for wildlife. However, the existing Alta Main Canal Bridge, located directly north/upstream from the BSA, has an active weir that is operated by the Alta Main Irrigation District. The irrigation district releases water in the canal during the irrigation season (typically May through August). As a result of the weir and irregular flows, the BSA does not provide fish migration habitat or suitable aquatic habitat for many aquatic species. The segment of the canal just north of the BSA, upstream from the weir, holds water for a longer duration may provide more consistent aquatic habitat for wildlife species. The canal may serve as a stopover site for migratory birds, providing access to feeding and breeding habitat during migrations.

Vegetation within and surrounding the BSA is characterized by a mosaic of oak woodlands, annual grasslands, and rural residential land, which likely supports wildlife movement locally and regionally. The existing bridge and roadway may also provide wildlife movement across the canal. It is possible that deer, coyote, bobcats, and other small mammals could use the bridge for movement.

3.1.3. Protected Trees

A total of 122 trees were identified within the BSA during the survey, including 113 valley oaks. Appendix C includes the Alta Main Canal Tree Inventory Memo, which includes the tree locations and corresponding data on species and size for all trees occurring in the BSA.

3.1.4. Non-native Invasive Plant Species

Non-native invasive plant species are non-native plants that can spread into native ecosystems. These species also displace native species, hybridize with native species, alter biological communities, or alter ecosystem processes. The Cal-IPC provides an overall rating for all plants listed in the Invasive Plant Inventory for California (Cal-IPC 2006). A rating of *high* indicates a species with severe ecological impacts, high rates of dispersal and establishment, and usually widely distributed. A rating of *moderate* indicates a species with substantial and apparent ecological impacts, moderate to high rates of dispersal, establishment dependent on disturbance, and limited to widespread distribution. A rating of *limited* indicates a species with minor ecological impacts, low to moderate rates of invasion, limited distribution, and locally persistent and problematic. In addition to the overall ratings, indications of a significant potential for invading new ecosystems triggers a "Red Alert" designation.

A total of 13 invasive plant species listed in the Invasive Plant Inventory were documented within the BSA (Table 3-2). Of those 13 species, 7 were rated as Limited, 5 as Moderate, and 1 as High. Most of these species are widespread throughout the valley and foothills and none are on the Red Alert species by Cal-IPC; therefore, construction of the Project would not result in new or severe infestations of invasive plant species.

Table 3-2. Plant Species Within the BSA with an Invasive Species Rating

Scientific Name	Common Name	Family	Rating
Avena barbata	Slender oat	Poaceae	Moderate
Bromus diandrus	Ripgut grass	Poaceae	Moderate
Bromus hordeaceus	Soft chess brome	Poaceae	Limited
Cortaderia jubata	Pampas grass	Poaceae	High
Cynodon dactylon	Bermuda grass	Poaceae	Moderate
Eucalyptus camaldulensis	Red gum	Myrtaceae	Limited
Festuca arundinacea	Tall fescue (ornamental)	Moderate	Moderate
Geranium dissectum	Cutleaf geranium	Geraniaceae	Limited
Hirschfeldia incana	Short-pod mustard	Brassicaceae	Moderate
Medicago polymorpha	Burclover	Fabaceae	Limited
Poa pratensis	Kentucky blue grass	Poaceae	Limited
Polypogon monspeliensis	Rabbitfoot grass	Poaceae	Limited
Prunus cerasifera	Cherry plum	Rosaceae	Limited

3.2 Regional Species and Habitats of Concern

Fresno County supports many special-status plants, animals, and natural communities of special concern. The majority of special-status plant species identified during pre-field reviews are endemic to habitats which are absent within the BSA. Similarly, special-status wildlife species are also typically associated with regional habitats of concern such as vernal pool, riparian habitat, or freshwater marsh, though some species occur in more common plant communities like annual grasslands and oak woodlands.

3.2.1. Special-status Species

Tables 3-3 and 3-4 (provided at the end of this chapter) list the special-status plant, wildlife, and fish species that are known to occur or have the potential to occur in the Project area. Figure 3-5 shows CNDDB results within 10 miles of the BSA.

For the purpose of this NES (MI), special-status species are generally defined as follows:

- Plant and wildlife species listed or proposed for listing as threatened or endangered under the ESA and/or CESA.
- Plant and wildlife species that meet the definition of rare or endangered species under the California Environmental Quality Act (CEQA), or are considered sensitive or unique by the scientific community, or occur at the limits of its natural range (CEQA Guidelines, Section 15380).
- Plants considered by the CNPS to be "rare, threatened, or endangered" in California (California Rare Plant Rank 1A, 1B and 2 [CNPS 2016]).
- Plants listed under the California Native Plant Protection Act.
- Plants considered sensitive by other federal agencies (i.e., U.S. Forest Service, Bureau of Land Management) or state and local agencies or jurisdictions.
- Wildlife species that are designated as Species of Special Concern (SSC) by CDFW.
- Wildlife species that are designated as Fully Protected by CDFW.

3.2.1.1. Special-status Plants

During the pre-field investigation, 11 special-status plant species were identified as having potential to occur in the vicinity of the Project (Table 3-3; Appendix A). Rationale for presence or absence and likelihood of occurrence within the BSA for special-status plants is provided in Table 3-3. A list of all plant species encountered during the June 10, 2016 field survey are provided in Appendix B.

Of the 11 special-status plant species listed in Table 3-3, 9 were determined to not have potential to occur in the BSA or have the potential to be affected by Project construction because: 1) the BSA lacks suitable habitat, 2) the BSA is outside the species' known range, and/or 3) field surveys determined that the species is not present. Two special-status species were presumed present within the BSA, because the suitable habitat for the species is present, and botanical surveys were conducted outside the bloom period for the species (California satintail [*Imperata brevifolia*], and forked hare-leaf [*Lagophylla dichotoma*]).

3.2.1.2. Special-status Wildlife

Based on the results of the field surveys and review of existing information including a search of the CNDDB, USFWS species list (Appendix A), and species distribution and habitat requirements data, 18 special-status wildlife species were identified during the pre-field review as occurring or having the potential to occur within the vicinity of the proposed Project. The listing status, preferred habitat, and potential for occurrence in the BSA for each of these species are listed in Table 3-4 (provided at the end of this chapter).

Of the 18 special-status wildlife species listed in Table 3-4, 16 species would not occur in the BSA or would not have the potential to be affected by the proposed Project construction because: 1) the BSA lacks suitable habitat for the species, 2) the BSA is outside the species' known range, and/or 3) field surveys determined that the species is not present. There is potential habitat within the BSA for the remaining two species, San Joaquin kit fox (*Vulpes macrotis mutica*) and Western pond turtle (*Emys marmorata*). These species are addressed in Chapter 4 of this NES(MI). Rationale for presence or absence and likelihood of occurrence in the BSA for special-status wildlife is provided in Table 3-4. A list of all wildlife species encountered during the field surveys is provided in Appendix B. Figure 3-5 shows CNDDB results within 10 miles of the BSA.

3.2.2. Migratory Birds and Raptors

In addition to the wildlife species listed in Table 3-4 and Appendix B, the BSA was also evaluated for its potential to support migratory birds and raptors. Trees and shrubs within and adjacent to the BSA could provide nesting habitat for migratory birds and raptors. Migratory birds and raptors observed during the wildlife survey are listed in Appendix B.

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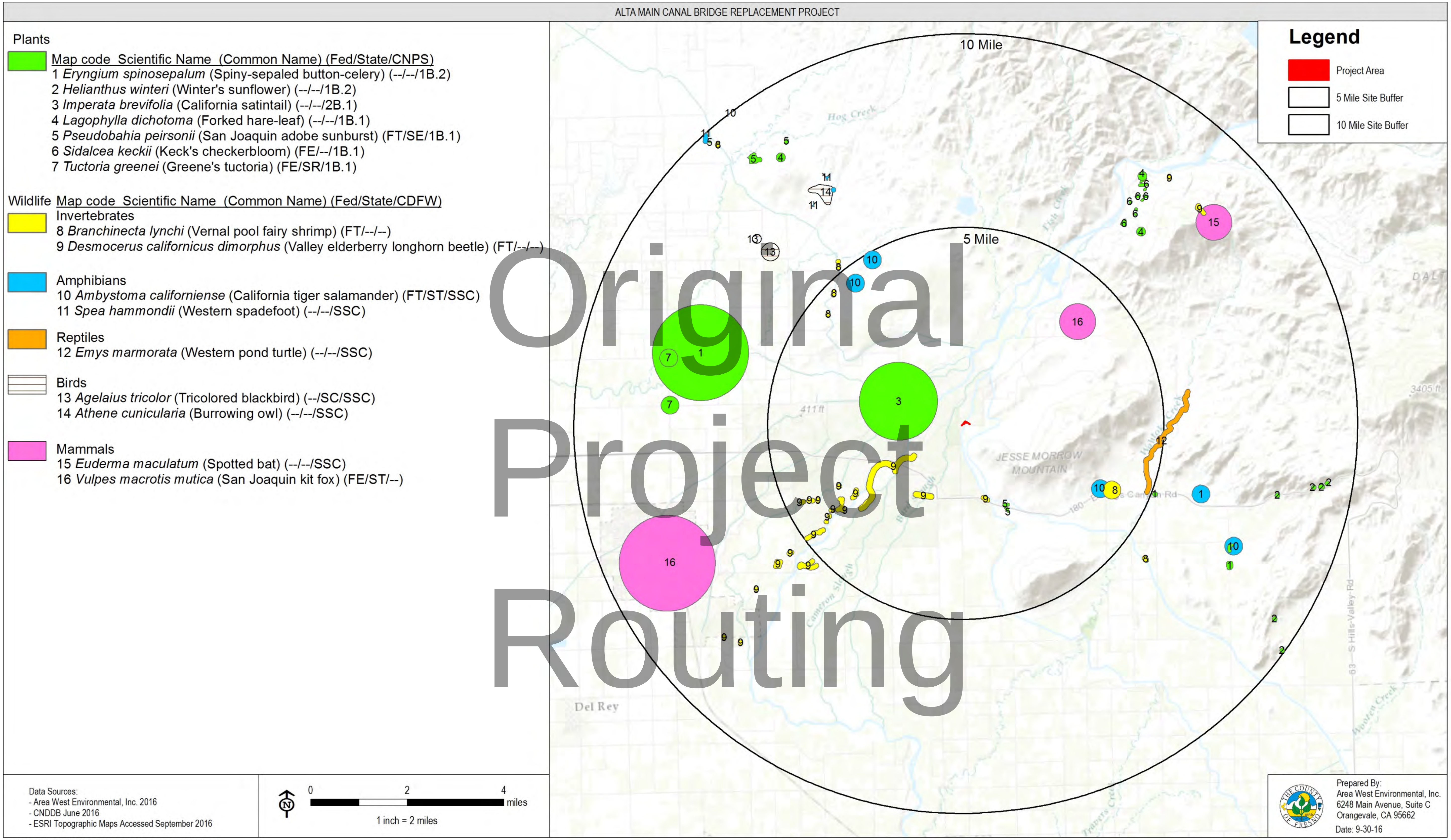

Figure 3-5. CNDDB Occurrences Within 10-miles of the BSA

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Project

Routing

Table 3-3. Special-status Plant Species with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1] Federal/State/CNPS	Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Survey Results/Rationale[2]
Succulent owl's-clover *Castilleja campestris* var. *succulenta*	FT/SE/1B.2	Fresno, Madera, Merced, Mariposa, San Joaquin, and Stanislaus counties.	Vernal pools (often acidic). 164 – 2,460 feet.	April - May	Habitat Absent	Absent	No suitable habitat within the BSA. No CNDDB occurrence within 10 miles of the BSA. Not observed during special-status plant surveys. ***No effect***
Kings River buckwheat *Eriogonum nudum* var. *regirivum*	--/--/1B.2	Fresno County.	Cismontane woodland (carbonate, rocky). 1,000 – 2,395 feet.	August - November	Habitat Absent	Absent	BSA is not within the known elevation range for the species. There are no CNDDB occurrences within 10 miles of the BSA. Not observed during special-status plant surveys.
Spiny-sepaled button-celery *Eryngium spinosepalum*	--/--/1B.2	Contra Costa, Fresno, Kern, Madera, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties.	Valley and foothill grassland and vernal pools. 262 – 2,034 feet.	April - June	Habitat Present	Absent	Suitable habitat present within the BSA. Four CNDDB occurrences are within 10 miles of the BSA, the closest is located approximately 5 miles to the southeast. Not observed during special-status plant surveys conducted during the appropriate bloom period.
Winter's sunflower *Helianthus winteri*	--/--/1B.2	Fresno and Tulare counties.	Openings on relatively steep south-facing slopes, granitic, often rocky soil; often roadsides; cismontane woodland; and valley and foothill grassland. 410 – 1,509 feet.	January - December	Habitat Present	Absent	Suitable habitat present within the BSA. Four CNDDB occurrences approximately 8.5 miles southwest of the BSA. Not observed during special-status plant surveys conducted during the appropriate bloom period.

Table 3-3. Special-status Plant Species with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1] Federal/State/CNPS	Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Survey Results/Rationale[2]
California satintail *Imperata brevifolia*	--/--/2B.1	Butte, Fresno, Imperial, Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, Tehama, Tulare, and Ventura counties.	Mesic chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub. 0 – 3,986 feet.	September - May	Habitat Present	Assumed Present	Suitable habitat present within the BSA. One CNDDB occurrence located approximately 0.7 mile west of the BSA. Not observed during special-status plant surveys.
Forked hare-leaf *Lagophylla dichotoma*	--/--/1B.1	Calaveras, Fresno, Monterey, San Benito, and Stanislaus counties.	Cismontane woodland and valley and foothill grassland, sometimes clay. 148 – 1,099 feet.	April - May	Habitat Present	Assumed Present	Suitable habitat present within the BSA. There are three CNDDB occurrences within 10 miles of the BSA, the closest is located approximately 6.5 miles to the northeast. Not observed during special-status plant surveys.
Madera leptosiphon *Leptosiphon serrulatus*	--/--/1B.2	Fresno, Kern, Madera, Mariposa, and Tulare counties.	Cismontane woodland and lower montane coniferous forest. 984 – 4,265 feet.	April - May	Habitat Absent	Absent	BSA is not within the known elevation range for the species. There are no CNDDB occurrences within 10 miles of the BSA. Not observed during special-status plant surveys.
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	FT/SE/1B.1	Fresno, Madera, Merced, Solano, Stanislaus, and Tulare counties.	Vernal pools. 33 – 2,477 feet.	April - September	Habitat Absent	Absent	No suitable habitat within the BSA. No CNDDB occurrence within 10 miles of the BSA. Not observed during special-status plant surveys conducted during the appropriate bloom period. ***No effect***

Table 3-3. Special-status Plant Species with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1] Federal/State/ CNPS	Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Survey Results/Rationale[2]
San Joaquin adobe sunburst *Pseudobahia peirsonii*	FT/SE/1B.1	Fresno, Kern, and Tulare counties.	Adobe clay soils in cismontane woodlands and valley and foothill grasslands. 295 – 2,625 feet.	March - April	Habitat Absent	Absent	No suitable habitat within the BSA. Four CNDDB occurrences within 10 miles of the BSA, the closest is located approximately 2.2 miles to the south of the BSA. Not observed during special-status plant surveys. ***No effect***
Keck's checkerbloom *Sidalcea keckii*	FE/--/1B.1	Fresno, Merced, and Tulare counties. Possible occurrences in Colusa, Napa, Solano, and Yolo counties.	Serpentinite clay soils in cismontane woodland and valley and foothill grassland. 246 – 2,133 feet.	April - June	Habitat Absent	Absent	No suitable habitat within the BSA. There are six CNDDB occurrence within 10 miles of the BSA, the closest is located approximately 6.5 miles to the northeast. Not observed during special-status plant surveys conducted during the appropriate bloom period. ***No effect***
Greene's tuctoria *Tuctoria greenei*	FE/SR/1B.1	Butte, Colusa, Fresno, Glenn, Madera, Merced, Modoc, Shasta, San Joaquin, Stanislaus, Tehama, and Tulare counties.	Vernal pools. 98 – 3,510 feet.	May - September	Habitat Absent	Absent	No suitable habitat within the BSA. There are two CNDDB occurrences approximately 7.5 miles west of the BSA. Not observed during special-status plant surveys conducted during the appropriate bloom period. ***No effect***

[1]Status explanations:

--	=	no listing.

Federal

FE	=	listed as endangered under the federal Endangered Species Act.
FT	=	listed as threatened under the federal Endangered Species Act.

State

SE	=	listed as endangered under the California Endangered Species Act.
SR	=	listed as rare under the California Endangered Species Act.

California Native Plant Society

1B	=	Rank 1B species: rare, threatened, or endangered in California and elsewhere.
2B	=	Rank 2B species: rare, threatened, or endangered in California but more common elsewhere.
0.1	=	Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
0.2	=	Moderately threatened in California (20%-80% occurrences threatened/moderate degree and immediacy of threat)

[2]Rationale includes an effects determination under the FESA for all federally listed species.

Table 3-4. Special-status Wildlife with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1]		Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Rationale[2]
	Federal	State						
Invertebrates								
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	--	Central Valley, Central and South Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County and southern Oregon	Vernal pools and seasonal wetlands; also found in sandstone rock outcrop pools.	November-April for active shrimp, April-November for cysts	Habitat Absent	Absent	No suitable habitat within the BSA. The seasonal wetland within the BSA does not pond water. Six CNDDB occurrences are within 10 miles of the BSA; the closest is approximately 3.8 miles southeast from the BSA. ***No effect***
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	--	Central Valley and surrounding foothills below 500 feet elevations	Dependent on elderberry (*Sambucus nigra*) shrubs as a host plant; potential habitat is shrubs with stems 1 inch in diameter or greater within the Central Valley.	Year-round for host plant and exit holes	Habitat Present	Absent	Suitable habitat is present within the BSA. One elderberry shrub is within BSA, with no exit holes. The BSA is outside the accepted range of the species (ECOS 2016). There are 14 CNDDB occurrences within 10 miles of the BSA, the closest is approximately 1.3 miles southwest from the BSA. ***No effect***
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	--	Central Valley from Shasta County south to Merced County.	Vernal pools, vernal lakes, and other seasonal wetlands.	November-April for active shrimp, April-November for cysts	Habitat Absent	Absent	No suitable habitat within the BSA. The seasonal wetland within the BSA does not pond water. No CNDDB occurrences are within 10 miles of the BSA. ***No effect***

Table 3-4. Special-status Wildlife with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1]		Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Rationale[2]
	Federal	State						
Amphibians								
California tiger salamander *Ambystoma californiense*	FT	ST	Central Valley, including Sierra Nevada foothills up to 1,500 feet. The Cosumnes River marks the northern boundary of the species' range	Annual grasslands and valley-foothill woodlands; breeds in seasonal wetlands such as vernal pools and stockponds. Burrows in underground refugia such as small mammal burrows.	January-May (aquatic)	Habitat Absent	Absent	No suitable habitat within the BSA. The seasonal wetland within the BSA does not pond water. There are eight CNDDB occurrences within 10 miles of the BSA; the closest is approximately 3.5 miles southeast from the BSA. ***No effect.***
California red-legged frog *Rana draytonii*	FT	ST	Along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County.	Permanent and semi-permanent aquatic habitats, such as creeks and ponds with emergent and submergent vegetation; may aestivate in upland burrow during dry periods.	Year-round	Habitat Absent	Absent	No suitable habitat within the BSA. Neither the artificial seasonal wetland, nor the canal within the BSA ponds water. The canal flow is rapid when water is present. No CNDDB occurrences are within 10 miles of the BSA. ***No effect.***
Western spadefoot *Spea hammondii*	--	SSC	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California.	Shallow streams with riffles and seasonal wetlands, such as vernal pools in annual grasslands and oak woodlands.	January-July (aquatic)	Habitat Absent	Absent	No suitable habitat within the BSA. The artificial seasonal wetland within the BSA does not pond water and the canal flow is rapid when water is present. There are four CNDDB occurrences within 10 miles, the closest of which is approximately 6.8 miles northwest from the BSA.

Table 3-4. Special-status Wildlife with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1] Federal	Legal Status[1] State	Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Rationale[2]
Reptiles								
Western pond turtle *Emys marmorata*	--	SSC	Populations extend throughout the coast and Central Valley of California.	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation below 6,000 feet in elevation.	Year-round	Habitat Present	Assumed Present	Suitable aquatic habitat (canal) is present in the BSA. One CNDDB occurrence is approximately 4.5 miles east of the BSA.
Blunt-nosed leopard lizard *Gambelia silus*	FE	SE	San Joaquin Valley.	Sparsely vegetated alkali and desert scrub habitats in areas of low topographic relief.	Year-round	Habitat Absent	Absent	No suitable habitat within the BSA. No CNDDB occurrences are within 10 miles of the BSA. ***No effect.***
Giant garter snake *Thamnophis gigas*	FT	ST	Central Valley from Fresno County north to the Gridley-Sutter Buttes area; has been extirpated from areas south of Fresno.	Sloughs, canals, and other small waterways where there is a prey base of small fish and amphibians; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter. Utilizes upland habitats within 200 feet from aquatic habitats.	April-October	Habitat Absent	Absent	No suitable habitat within the BSA. The portion of the Canal within the BSA flows too fast to support giant garter snake. In addition, due to the release schedule of the canal, there is not a sufficient aquatic prey base to support the species. No CNDDB occurrences are within 10 miles of the BSA. ***No effect.***

Table 3-4. Special-status Wildlife with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1]		Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Rationale[2]
	Federal	State						
Birds								
Tricolored blackbird *Agelaius tricolor*	--	SSC	San Joaquin Valleys and low foothills of coast ranges and Sierra Nevada.	Nests in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; nesting habitat must be large enough to support 50 pairs. Requires large foraging areas, including marshes, pastures, agricultural wetlands, dairies, and feedlots, where insect prey is abundant.	March-August	Habitat Absent	Absent	No suitable nesting habitat within the BSA. This species was not observed during wildlife surveys. There are two CNDDB occurrences within 10 miles of the BSA, the nearest is approximately 6.4 miles northwest from the BSA.
Burrowing owl *Athene cunicularia*	--	SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas.	Open grasslands, deserts, and scrublands characterized by low-growing vegetation. Dependent upon burrowing mammals for burrows.	Year-round	Habitat Present	Absent	Although annual grassland are present within the BSA, burrows were not observed during wildlife surveys. The nearest CNDDB occurrence is approximately 6.6 miles northwest of the BSA.
Swainson's hawk *Buteo swainsoni*	--	ST	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte County.	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields.	March-September	Habitat Present	Absent	Suitable habitat present within the BSA. Nesting sites or individuals were not observed during wildlife surveys. No CNDDB occurrences are within 10 miles of the BSA.

Table 3-4. Special-status Wildlife with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1]		Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Rationale[2]
	Federal	State						
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT	SE	More common locations include the Sacramento River from Red Bluff to Colusa and the south of the fork Kern River from Isabella Reservoir to Canebrake Ecological Reserve.	Low to moderate elevation riparian woodlands with native broadleaf trees and shrubs that are 50 acres or more in extent.	May - September	Habitat Absent	Absent	No suitable nesting habitat within the BSA. The extent of the riparian habitat contiguous to the BSA is too small (<50 acres) to support the species. Nesting sites or individuals were not observed during wildlife surveys. No CNDDB occurrences are within 10 miles of the BSA. ***No effect.***
Mammals								
Pallid bat *Antrozous pallidus*	--	SSC	Low elevations throughout California.	Rocky outcrops, cliffs, and crevices for roosting; access to open habitats required for foraging.	Year-round	Habitat Absent	Absent	No suitable habitat within the BSA. This species was not observed during wildlife surveys. No CNDDB occurrences are within 10 miles of the BSA.
Fresno kangaroo rat *Dipodomys nitratoides exilis*	FE	SE	Western Fresno County.	Alkali sink and open grassland habitats.	Year-round	Habitat Absent	Absent	No suitable habitat is present within the BSA. The BSA is outside the species' range. This species was not observed during wildlife surveys. No CNDDB occurrences are within 10 miles of the BSA. ***No effect.***

Table 3-4. Special-status Wildlife with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1]		Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Rationale[2]
	Federal	State						
Spotted bat *Euderma maculatum*	--	SSC	Occurs throughout eastern and southern California, the central Sierra Nevada, and the Sierra Nevada foothills bordering the San Joaquin Valley.	Roosts primarily in rock crevices; uses arid deserts and open pine forests set in rocky terrain; females may favor ponderosa pine forests during reproduction.	Year-round	Habitat Absent	Absent	No suitable habitat within the BSA. This species was not observed during wildlife surveys. The nearest CNDDB occurrence is approximately 7.7 miles northeast of the BSA.
San Joaquin kit fox *Vulpes macrotis mutica*	FE	ST	San Joaquin Valley and adjacent foothills.	Grasslands, scrublands, irrigated pastures, croplands, annual grassland, oak savanna, and freshwater marsh.	Year-round	Habitat Present	Assumed Present	Suitable denning and foraging habitat is not present within the BSA. Den features and individuals were not observed during wildlife surveys. Two CNDDB occurrences are within 10 miles of the BSA, the nearest occurrence (dated in the early 1990s) is approximately 3.3 miles northeast from the BSA. Therefore, the BSA represents low suitability habitat for kit fox movement (i.e., transient individuals dispersing through the area). ***No effect.***

Table 3-4. Special-status Wildlife with the Potential to Occur in the Biological Study Area

Common and Scientific Name	Legal Status[1]		Distribution	Habitat Association	Identification Period	Habitat Present/ Absent	Species Present/ Absent	Rationale[2]
	Federal	State						
Fish								
Delta Smelt *Hypomesus transpacificus*	FT	SE	Sacramento-San Joaquin Delta complex.	Estuarine or brackish waters with salinity levels up to 14 parts per thousand (ppt). Spawn in shallow brackish water upstream of the saltwater freshwater mixing zone where salinity is around 2 ppt.	Year-round	Habitat Absent	Absent	No suitable habitat within the BSA. The BSA is outside the range for the species. There are no CNDDB occurrences within 10 miles of the BSA. ***No effect.***

[1]Status explanations:

-- = no listing.

Federal
FE = listed as endangered under the federal Endangered Species Act.
FT = listed as threatened under the federal Endangered Species Act.

State
SE = listed as endangered under the California Endangered Species Act.
SSC = state species of special concern
ST = listed as threatened under the California Endangered Species Act.

[2]Rationale includes an effects determination under the FESA for all federally listed species.

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Chapter 4 Results: Discussion of Impacts and Mitigation

This chapter analyzes the effects of the Project on natural communities of special concern, special-status species, and other protected biological resources. To calculate effects to special-status species and natural communities of special concern, effects within the Project area were assumed to be either direct temporary and direct permanent. Permanent effects will occur within the footprint and grading limits for the new roadway alignment, new bridge, and concrete liner within the canal. Temporary effects may occur throughout the BSA, therefore the entire BSA (2.875 acres) represents the maximum extent of ground disturbance that may result from construction activities. The extent of the BSA will accommodate any changes to Project limits that may occur during Project development. Figure 4-1 shows the areas of permanent and temporary effects for the Project.

4.1 Natural Communities of Special Concern

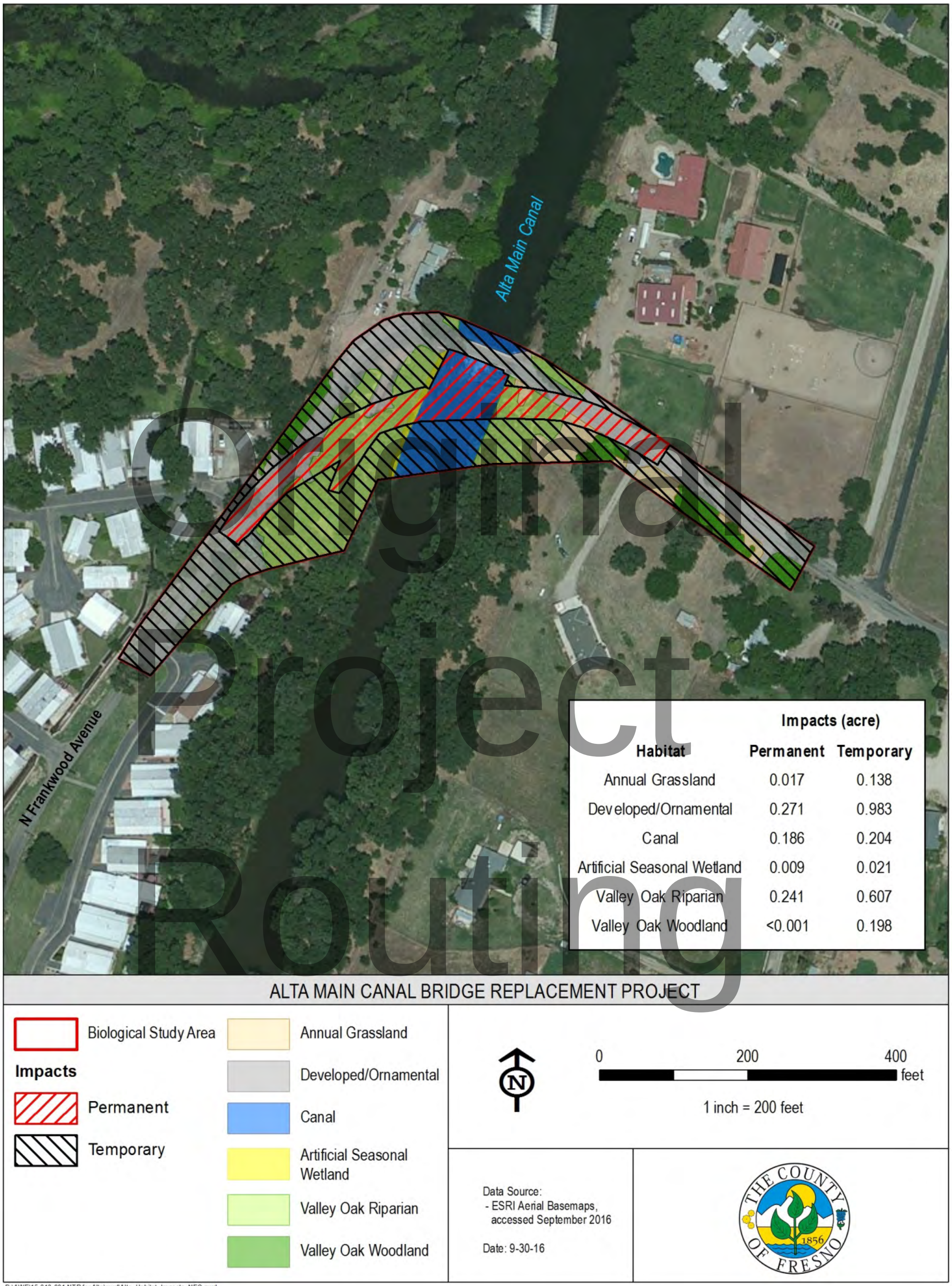
Natural communities and habitats of special concern are those that are regulated by federal, state, or local resource agencies. Within the Project area, riparian habitat and waters of the State qualify as natural communities of special concern. Table 4-1 summarizes permanent and impacts on natural communities of special concern within the Project work limits.

Table 4-1. Summary of Permanent and Temporary Effects by Habitat Type

Habitat Community	BSA (acre)	Project Area	
		Permanent Impacts (acre)	Temporary Impacts (acre)
Communities of Special Concern			
Valley Oak Riparian	0.848	0.241	0.607
Water of the State			
Canal	0.390	0.186	0.204

4.1.1. Valley Oak Riparian

The valley oak riparian vegetation community present along the Alta Main Canal is regulated by CDFW under Section 1602 of the CFGC for protecting wildlife resources and may be evaluated as part of the Section 1602 SAA permit. As a part of the County's General Plan (Fresno County 2000), the County requires new public and private development to preserve and enhance existing riparian vegetation. The County designates riparian protection zones around natural watercourses with buffers from 50 to 100' wide (OS-D.4). Mitigation in the same watershed, on the ratio of 3:1 is recommended for any riparian areas destroyed (OS-D.6).



Habitat	Impacts (acre) Permanent	Temporary
Annual Grassland	0.017	0.138
Developed/Ornamental	0.271	0.983
Canal	0.186	0.204
Artificial Seasonal Wetland	0.009	0.021
Valley Oak Riparian	0.241	0.607
Valley Oak Woodland	<0.001	0.198

Figure 4-1. Impacts to Vegetation Communities

4.1.1.1. Survey Results

The valley oak riparian vegetation community occupies the majority of the area surrounding the canal channel outside of the OHWM. This habitat provides cover, shade, and food to wildlife. Migratory birds could also use this vegetation community for nesting.

4.1.1.2. Project Impacts

Construction of the road realignment and new bridge will affect the valley oak riparian vegetation community. Construction of the proposed Project will result in 0.241 acre of permanent impacts and up to 0.607 acre of temporary impacts to this vegetation community. Temporary impacts could occur as a result of vegetation disturbance or trimming of tree canopy required to provide clearance for construction equipment and work area during construction.

4.1.1.3. Avoidance and Minimization Measures

The following avoidance and minimization measures will be implemented prior to and during bridge construction to avoid and minimize potential impacts to the valley oak riparian vegetation community.

Avoidance and Minimization Measure (AMM) 1: Conduct Environmental Awareness Training

Before work begins in the Project area, including grading and equipment staging, all construction personnel shall participate in an environmental awareness training regarding special-status species and sensitive habitats present in the Project area. If new construction personnel are added to the Project, they must receive the mandatory training before starting work. As part of the training, an environmental awareness handout will be provided to all personnel that describes and illustrates sensitive resources to be avoided during Project construction.

AMM 2: Install Temporary Fencing around Environmentally Sensitive Areas

Before any ground-disturbing activity occurs within the Project area, the County shall ensure that temporary construction barrier fencing, silt fencing, and/or flagging is installed between the work area and environmentally sensitive habitat areas (i.e., Waters, riparian habitat, special-status species habitat, and buffers around active bird/raptor nests), as appropriate. Construction personnel and construction activity shall avoid areas outside the fencing. The exact location of the fencing and/or flagging shall be determined by the resident engineer coordinating with a qualified biologist, with the goal of protecting sensitive biological habitat and water quality. The fencing/flagging shall be checked regularly and maintained until all construction is complete. No construction activity shall be allowed until this condition is satisfied. Any required barrier or sediment fencing and a note reflecting this condition shall be shown on the final construction documents.

AMM 3: Implement Measures to Reduce the Spread of Invasive Species

To prevent the accidental introduction of new invasive species into the Project area during construction, the County will require that the project contractor implement the following control measures:

- Only certified noxious weed-free erosion control materials shall be used. All straw and seed material shall be certified as weed-free prior to being used at the project site.
- Contractor will wash all construction equipment prior to bringing it onto the job site. Inspection will ensure that equipment arrives on site free of mud and seed-bearing material.
- Any reseeding of disturbed soil areas and newly constructed slopes shall use an appropriate native seed mix.

4.1.1.4. Compensatory Mitigation

The County shall obtain a SAA for the Project in accordance with Section 1602 of the CFGC from CDFW, and shall implement compensatory mitigation as required in the SAA. The following proposed compensatory mitigation would compensate for the Project's permanent impacts to the valley oak riparian vegetation community.

Compensation Measure 1: Compensate for Permanent Impacts to the Valley Oak Riparian Vegetation Community

In coordination with CDFW in the SAA, the County will compensate for permanent impacts to the valley oak riparian vegetation community. The County will be responsible for creating new riparian habitat, with a similar plant species composition within the same watershed, if feasible, as the Project area (Kings River). Compensations shall meet a minimum 3:1 replacement ratio (3 acres replaced for every 1 acre permanently impacted). Based on the preliminary Project design, the Project would permanently impact 0.241 acre of valley oak riparian vegetation community.

4.1.2. Canal

The Alta Main Canal in the Project area may qualify as a waters of the State, which would be regulated by CDFW under Section 1602 of the CFGC, by the RWQCB under the Porter-Cologne Act, and by CVFPB under the California Water Code and Title 23 of the California Code of Regulations (23 CCR §112).

4.1.2.1. Survey Results

During the June 10, 2016 field survey, the segment of the Alta Main Canal within the BSA consisted of open, flowing water. Based on a delineation of potential waters of the U.S. and State within the BSA, the canal vegetation community is not considered a jurisdictional water of the U.S. because within the BSA, it has artificially maintanied hydrology in a man-made canal excavated in uplands. However, the canal vegetation community could meet the definition of waters of the State, since the Alta Main Canal receives surface water from a natural waterway (Kings River) and provides potential habitat value to wildlife resources.

4.1.2.2. Project Impacts

The Project will not result in long-term changes to the function and value of the canal to support wildlife. The Project will not restrict, eliminate, or significantly alter the canal as a wildlife movement corridor. Water in the canal is artificially managed for irrigation deliveries, and the Project would not alter the timing, pattern, or volume of flows in the canal. The new bridge piers constructed within the canal have been designed to maintain the canal's hydraulic capacity. No long-term changes to the canal is anticipated.

Construction of the proposed Project will occur when the portion of the Alta Main Canal that bisects the BSA is not being utilized to transport water for irrigation. Since construction of the bridge abutments and piers, and installation of the concrete lining, would take place outside the seasonal water operation of the canal, impacts to canal water quality during construction would be minimized. The canal gates on the control structure do not seal; therefore, it will be necessary to install a temporary water diversion within the channel to divert canal flows from the work area during construction. Although construction activities would not obstruct the flow of water within the Alta Main Canal, construction activities would result in ground disturbance within and adjacent to the canal. Earthmoving, excavation, and pile drilling needed to construct the new bridge and the new approach roads could result in a temporary increase in sediment loads, turbidity, and siltation in the canal. Also, there is potential for erosion to occur from areas along the levee slopes where trees and other vegetation is removed to clear for the new road alignment and provide equipment access. As required by the Construction General Permit, the County will implement best management practices (BMPs) to address potential construction-related impacts on water quality in the canal.

4.1.2.3. Avoidance and Minimization Efforts

The following avoidance and minimization measures shall be implemented prior to and during construction to avoid adverse effects to canal water quality.

AMM 1: Conduct Environmental Awareness Training

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 2: Install Temporary Fencing around Environmentally Sensitive Habitat

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 3: Implement Measures to Reduce the Spread of Invasive Species

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 4: Implement Best Management Practices (BMPs) to Protect Water Quality

The County shall require that the construction contractor implement the following BMPs to protect water quality of Waters adjacent to the Project area.

- Install sediment fencing, fiber rolls, or other equivalent erosion and sediment control measures between the designated work area and the Alta Main Canal, as necessary, to ensure that construction debris and sediment does not inadvertently enter the waterway. Tightly woven fiber netting (no monofilament netting) or similar material shall be used for erosion control or other purposes within the Project work limits to ensure that wildlife are not trapped. This limitation will be communicated to the contractor through the special provisions included in the bid solicitation package. Coconut coir matting and burlap-contained fiber rolls are an example of acceptable erosion control materials. The County will also cover or otherwise stabilize all exposed soil 48 hours prior to potential precipitation events of greater than 0.5 inch.

- Immediately after bridge construction is complete, all exposed soil shall be stabilized. Soil stabilization may include, but is not limited to, seeding with a native grass seed mix, planting native plants and placement of rock.

- No refueling, storage, servicing, or maintenance of equipment shall take place within 100 feet of aquatic habitat.

- All machinery used during construction of the proposed Project shall be properly maintained and cleaned to prevent spills and leaks that could contaminate soil or water.

- Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) shall be cleaned up in accordance with applicable local, state, and/or federal regulations.

- Before any ground-disturbing activities, the County shall prepare and implement a SWPPP (as required under the SWRCB's General Construction Permit Order 2009-0009-DWQ [and as amended by most current order(s)]) that includes erosion control measures and construction waste containment measures to ensure that waters of the U.S. and State are protected during and after Project construction. A SWPPP is required when ground disturbance is one acre or more. The Project's disturbed surface area is estimated at 2.8 acres, as staging and construction activities could occur throughout the Project area. Due to size of the potential ground disturbance (>1 acre), a SWPPP will be prepared and implemented. The SWPPP shall include site design to minimize offsite storm water runoff that might otherwise affect adjacent stream habitat. The SWPPP shall be prepared with the following objectives: (a) to identify pollutant sources, including sources of sediment, that may affect the quality of storm water discharges from the construction of the Project; (b) to identify BMPs to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the site during construction; (c) to outline and provide guidance for BMP monitoring; (d) to identify Project discharge points and receiving waters; (e) to address post-construction BMP implementation and monitoring; and (f) to address sedimentation, siltation, and turbidity.

4.1.2.4. Compensatory Mitigation

Implementation of avoidance and minimization efforts described under Section 4.1.2.3. would ensure that the proposed Project does not adversely affect the bioloigcal function and value of the canal. Therefore, no compensatory mitigation is required.

4.2 Protected Trees

Trees provide habitat and food to numerous bird and wildlife species. The Fresno County Oak Woodland Management Guidelines (Fresno County 1998) provides guidance for building within oak woodlands. Within these voluntary guidelines, the County acknowledges the importance of preserving existing oaks and recommends:

- avoidance of damage and compaction to tree roots,
- minimization of erosion and sedimentation,
- avoidance of landscaping irrigation within ten feet of existing oaks, and
- consideration of replacing removed oaks when construction is unavoidable.

4.2.1. Survey Results

A total of 122 trees were surveyed with the BSA, of which 113 are valley oaks (*Quercus lobata*), 5 Goodding's willows (*Salix goodingii*), 3 Fremont cottonwood (*Populus fremontii*), and 1 ornamental pine species (*Pinus* sp.). Appendix C includes the Alta Main Canal Tree Inventory Memo, which includes the locations and data for all trees occurring in the BSA.

4.2.2. Project Impacts

Construction of the proposed Project may result in the full removal of 31 valley oak trees within the Project footprint and grading limits for the new bridge and approach roads. An additional 7 valley oaks will have their drip-lines affected as a result of the proposed Project (Figure 4-2). This analysis of tree removal assumes that trees outside the Project grading limits but inside the temporary work area (i.e., Project area) would be avoided to the extent possible when planning construction staging and equipment access. Some tree trimming may occur within the temporary work area to accommodate construction equipment access and use.

4.2.3. Avoidance and Minimization Efforts

AMM 1: Conduct Environmental Awareness Training

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 2: Install Temporary Fencing around Environmentally Sensitive Habitat

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 5: Minimize Activity near Protected Trees

Where possible, the County shall avoid grade changes, trenching, compacting soils, and paving with non-porous materials within the drip-line of protected trees. In addition, grade changes that would cause water to pond within the drip-line of native oaks shall be prohibited.

Where construction activities involve encroachment into the dripline of a protected tree, a qualified individual will provide recommendations to minimize adverse effects on those trees. For example, trenching within the protected zone of a protected tree may be permitted using hand tools to avoid root injury, all severed roots need to be cut cleanly, and no roots over 1-inch in diameter should be cut without approval and oversight.

4.2.4. Compensatory Mitigation

Since all the affected trees occur in the Valley Oak Riparian vegetation community, impacts to protected trees will be mitigated through the following compensatory measure.

Compensatory Mitigation 1: Compensate for Permanent Impacts to the Valley Oak Riparian Vegetation Community

(described above under Section 4.1.1.4. Compensatory Mitigation)

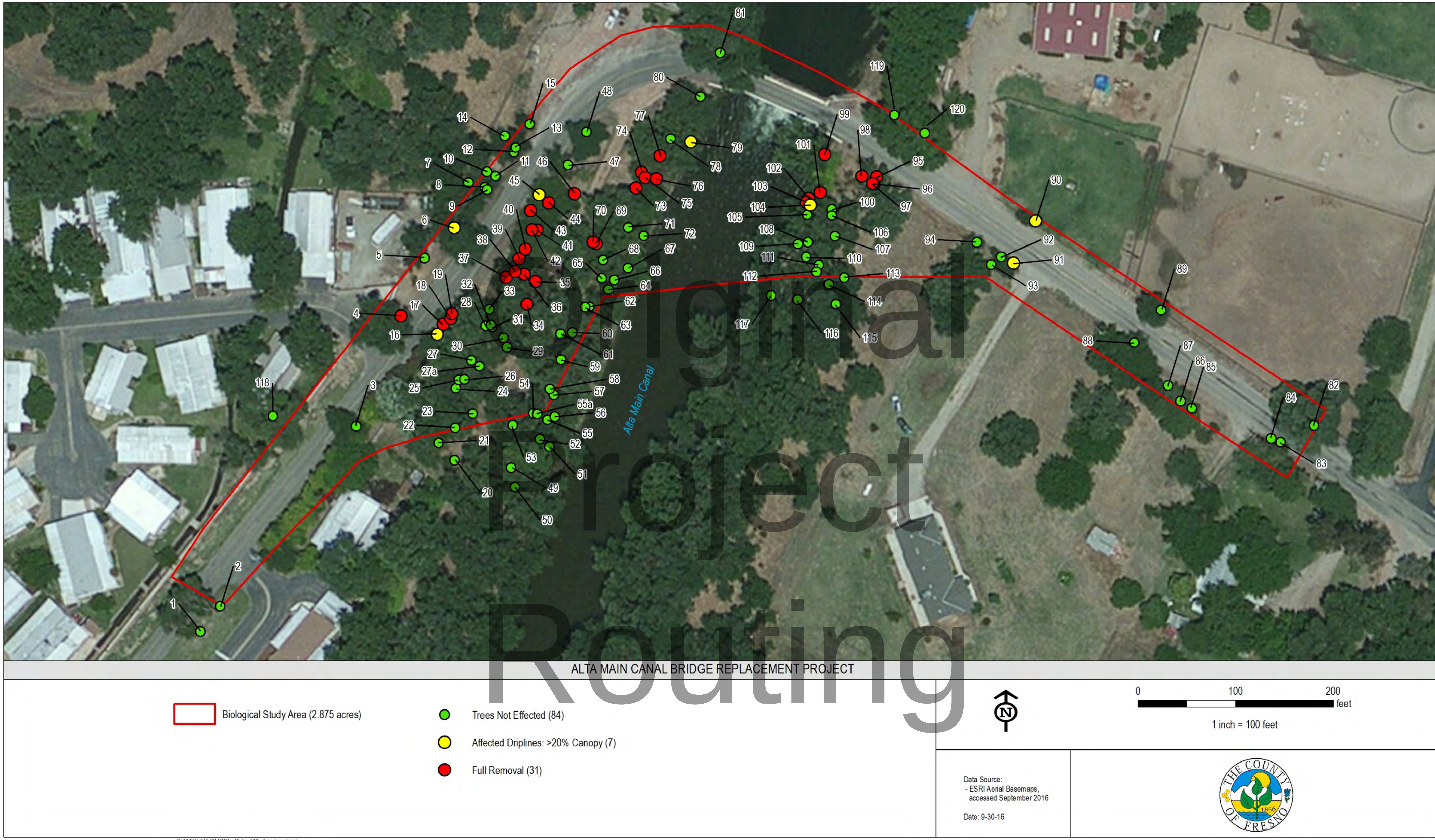


Figure 4-2. Trees within the Biological Study Area

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4.3 Special-status Plant Species

As shown in Table 3-3, two special-status plant species with potential habitat within the BSA, California satintail and forked hare-leaf, were not in bloom during plant surveys conducted for the Project.

4.3.1. Survey Results

No special-status plants were during the plant surveys. However, the botanical surveys occurred outside the bloom period for the California satintail and forked hare-leaf, both CNPS-identified as rare plants. Suitable habitat for these two special-status plant species occurs within the BSA in annual grasslands, therefore they are assumed present within the BSA.

4.3.2. Proposed Project Impacts

The Project could result in a impacts to the California satintail and forked hare-leaf.

4.3.3. Avoidance and Minimization Efforts

AMM 1: Conduct Environmental Awareness Training
(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 2: Install Temporary Fencing around Environmentally Sensitive Habitat
(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 6: Conduct Spring Plant Surveys and Fence Special-Status Plants, if Found.
A qualified biologist shall conduct a spring botanical survey for California satintail and forked hare-leaf during the appropriate bloom period for these species (April-May) within two years of the start of construction. If special-status plant are found within the BSA, individual plants shall be fenced or flagged for avoidance. If the plants can not be avoided, prior to excavation and grading work, the topsoil (roughly the first 3-4 inches of soil where dormant seeds would be present) in areas that support occupied special-status plant habitat will be removed and stockpiled onsite. After finished grades generally have been achieved, the stockpiled topsoil will be redistributed within disturbed areas in the Project Area.

4.3.4. Compensatory Mitigation

Implementation of avoidance and minimization efforts described under Section 4.3.3. would ensure that the proposed Project does not adversely affect special-status plant species. Therefore, no compensatory mitigation is required.

4.4 Special-status Wildlife Species

After completion of the wildlife habitat assessment and review of existing information on special-status wildlife in the proposed Project region, two special-status wildlife species (San Joaquin kit fox and western pond turtle) could occur in the BSA and have potential to be affected by construction activities. These species are discussed below.

4.4.1. San Joaquin Kit Fox

The San Joaquin kit fox (*Vulpes macrotis mutica*) was listed as endangered on March 11, 1967 by USFWS (32 FR 4001) and in 1971 California listed them as threatened. The San Joaquin kit fox is the larger of two subspecies of the kit fox (*Vulpes macrotis*), which is the smallest canid species in North America. On average, the San Joaquin kit fox weighs 2.3 kilograms (5 pounds) and stands 30 centimeters (12 inches) tall. It has a small, slim body, relatively large ears set close together, a narrow nose, and a long bushy tail that tapers at the tip (Morrell 1972). Depending on location and season, the fur coat of the kit fox varies in color and texture from buff to tan or yellowish-grey. The tail is distinctly black-tipped (USFWS 1998).

The San Joaquin kit fox is endemic to California and was relatively common until the 1930s when much of their habitat in the San Joaquin Valley (Valley) was lost to farming and development. Historically, the species was known to occur in semi-arid habitats of the Valley and in arid grasslands of the adjacent foothills. Currently, the boundaries of the kit fox's range still extended from southern Kern County north to Contra Costa, Alameda, and San Joaquin Counties on the west, and to the La Grange area, Stanislaus County, on the east side of the Valley (Williams 1990, as cited in USFWS 2010).

Kit foxes can breed when one year old. Adult pairs stay together all year, sharing a home range but not necessarily the same den. During September and October, females begin to clean and enlarge their pupping dens. Mating and conception take place between late December and March. Litters of from two to six pups are born sometime between February and late March (USFWS 1998). Pups emerge from the den after about a month. The San Joaquin kit fox utilizes subsurface dens, which may extend to 6 feet or more below ground surface, for shelter and for reproduction (Laughrin 1970). Kit foxes probably enlarge California ground squirrel burrows, but they can also construct their own dens. Kit foxes change dens four or five times during the summer months, and change natal dens one or two times per month (Morrell 1972). Frequent den changes are often attributed to predator avoidance or a depletion of prey in the vicinity. In California, kit fox have a home range of approximately 1 to 2 square miles (USFWS 1998).

The San Joaquin kit fox is primarily nocturnal. Historically, the kit fox was thought to subsist primarily on kangaroo rats (*Dipodomys* spp.). Currently, the kit fox diet varies geographically, seasonally, and annually. Their diets include small mammals such as mice, California ground squirrels (*Spermophilus beecheyi*), rabbits (*Sylvilagus* spp.) and hares (*Lepus* spp.), as well as ground-nesting birds and insects. Kit foxes are subject to predation or competitive exclusion by other species, such as the coyote (*Canis latrans*), nonnative red foxes (*Vulpes vulpes)*, domestic dog (*Canis familiaris*), bobcat (*Felis rufus*), and large raptors. (USFWS 1998)

4.4.1.1. Survey Results

There are two known occurrences for San Joaquin kit fox within 10 miles of the BSA. The nearest CNDDB record for the species, dated from the early 1990's, is located approximately 3.2 miles northeast of the BSA and the other CNDDB record dated from the 1980's, is located approximately 6.8 miles southwest of the BSA (CNDDB 2016) (Figure 3-5). No suitable denning features or individual San Joaquin kit foxes were observed within the BSA during the wildlife surveys. Additionally, domestic dogs freely roam the Project area; biologists observed three dogs wandering throughout the BSA during the field survey. Therefore, the BSA does not include suitable denning or foraging habitat for kit fox. Land outside the BSA consists of rural residential properties, golf course, grazing land, and managed agricultural fields. The Valley oak riparian and other habitats in the BSA could provide low suitability habitat for kit fox movement (i.e., for transient individuals dispersing through the area), but the presence of dogs may deter kit fox from entering the area.

4.4.1.2. Project Impacts

The Project will not affect potential denning or foraging habitat for San Joaquin kit fox. It is unlikely but possible that an individual may move through the BSA during Project construction. If a kit fox were to traverse the area during construction, it would be allowed to move out of the area on its own. Project construction activities could temporarily impede the movement of individuals through the Project area. Trenches and pipes left open during the night could be used by kit fox seeking refuge. Effects on potential transient individuals are temporary and avoidance and minimization measures described below would be implemented. The Project will have ***no effect*** on San Joaquin kit fox.

4.4.1.3. Avoidance and Minimization Efforts

The following avoidance and minimization measures shall be implemented prior to and during construction to avoid adverse effects on wildlife, including San Joaquin kit fox.

AMM 1: Conduct Environmental Awareness Training

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 2: Install Temporary Fencing around Environmentally Sensitive Habitat

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 7: Provide Escape Ramps, Cover Open Trenches, and Inspect Pipes to Avoid Entrapment of Wildlife.

To avoid entrapment of wildlife, all excavated steep-walled holes or trenches more than six inches deep shall be provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each workday. If escape ramps cannot be provided, then holes or trenches shall be covered with plywood or similar materials. Providing escape ramps or covering open trenches will prevent injury or mortality of wildlife resulting from falling into trenches and becoming trapped. In addition to trenches, all construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit fox and other wildlife species before the pipe is subsequently buried, capped, or otherwise used or moved in any way. All trenches and pipes shall be thoroughly inspected for the presence of wildlife at the beginning of each workday. Any species observed shall be allowed to voluntarily move outside of the work area on its own.

AMM 8: Conduct a Preconstruction Survey for Special-status Wildlife

A qualified biologist shall conduct a preconstruction clearance survey for special-status wildlife and signs of wildlife use in the Project area and the surrounding 200 feet of the project boundary, utility corridors, and access roads, where access is permitted. During the survey, the biologist will note potential for San Joaquin kit fox dens. The survey shall occur no less than 14 days and no more than 30 days prior to any ground disturbance within the Project area. The qualified biologist will conduct walking transects surveys that achieve 100 percent visual coverage for signs of special-status wildlife, including San Joaquin kit fox dens, in the Project area. If an individual or potential den feature is located during the preconstruction survey, the qualified biologist shall immediately notify Caltrans, who in turn will notify USFWS and CDFW, and additional surveys and reporting may be required.

AMM 9: Implement Construction Practice Measures for Wildlife

The County shall require that the construction contractor implement the following construction practice measures to protect wildlife during Project related construction activities.

- All construction equipment and Project-related vehicles and construction equipment shall observe a daytime speed limit of 20 miles per hour (mph) throughout the Project area. In the event of night-time construction, the speed limit shall be reduced to 10-mph. Off-road traffic outside of designated project areas shall be prohibited.

- All food-related trash items shall be disposed of in securely closed containers and removed daily from the Project area

- No construction-personnel pets, such as dogs or cats, shall be permitted on the Project area to prevent harassment, mortality of kit foxes, or destruction of dens.

- Any wildlife species observed in the Project area shall be allowed to voluntarily move outside of the work area on its own.

- Use of rodenticides and herbicides in project areas shall be restricted. If rodent control must be conducted, zinc phosphide will be used because of a proven lower risk to kit fox and other wildlife species.

- No firearms shall be allowed on the project site.

4.4.1.4. Compensatory Mitigation

Implementation of avoidance and minimization efforts described under Section 4.4.1.3. would ensure that the proposed Project will have no effect on the San Joaquin kit fox. Therefore, no compensatory mitigation is required.

4.4.2. Western Pond Turtle

The western pond turtle is designated as a state species of special concern. Western pond turtles inhabit aquatic habitats such as ponds, marshes, or streams with rocky or muddy bottoms and vegetative cover. They will occasionally leave the water to bask, and females leave the water from May through July to lay eggs, up to 1,300 feet (396 meters) or more into upland areas (Jennings and Hayes 1994). Western pond turtles typically become active in March and return to overwintering sites by October or November (Jennings et al. 1992).

4.4.2.1. Survey Results

No western pond turtles were observed during the wildlife surveys. The portion of the Project area within the Alta Main Canal has potential to provide suitable aquatic habitat (canal) for the western pond turtle. The nearest CNDDB record for the species is located approximately 4.5 miles east of the BSA, where slow moving water, sandy substrate, and adequate vegetative coverage is present (CNDDB 2016).

4.4.2.2. Proposed Project Impacts

Potential aquatic and upland dispersal and nesting habitat for western pond turtle is present within the BSA. If western pond turtles are present within the Project work limits during construction, the movement of equipment within the canal and construction of road realignment and new bridge structures could crush pond turtles or nests containing eggs or young.

4.4.2.3. Avoidance and Minimization Efforts

The following avoidance and minimization measure shall be implemented prior to and during construction to avoid adverse effects on western pond turtle.

AMM 1: Conduct Environmental Awareness Training

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 2: Install Temporary Fencing around Environmentally Sensitive Habitat

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 4: Implement Best Management Practices (BMPs) to Protect Water Quality

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 7: Provide Escape Ramps, Cover Open Trenches, and Inspect Pipes to Avoid Entrapment of Wildlife.

(described above under Section 4.4.1.3. Avoidance and Minimization Measures)

AMM 9: Implement Construction Practice Measures for Wildlife

(described above under Section 4.4.1.3. Avoidance and Minimization Measures)

AMM 10: Conduct a Preconstruction Survey for Western Pond Turtle

A qualified biologist shall conduct a preconstruction clearance survey for western pond turtles within 48 hours prior to any ground disturbance within the Project area. Any western pond turtles found within the construction work area shall be allowed to voluntarily move out of this area. If the individual does not move out of the Project area, a qualified biologist will, in coordination with Caltrans and CDFW, assist in removing the turtle. If a western pond turtle nest containing eggs or young is identified within the construction work area, a qualified biologist will determine an appropriate no-disturbance buffer to ensure avoidance of the nest.

4.4.2.4. Compensatory Mitigation

Implementation of avoidance and minimization efforts described under Section 4.4.2.3. would ensure that the proposed Project does not adversely affect western pond turtle. Therefore, no compensatory mitigation is required.

4.4.3. Other Nesting Migratory Birds and Raptors

Other migratory birds and raptors could nest within and surrounding the BSA on the ground and within trees. The breeding season for most birds and raptors within the Project region is generally from February 15 to September 1. The occupied nests and eggs of these birds are protected by federal and state laws, including MBTA and CFGC Sections 3503 and 3503.5.

4.4.3.1. Survey Results

Migratory birds observed within the BSA during field surveys that could potentially nest within or adjacent to the BSA included: acorn woodpecker (*Melanerpes formicivorus*), Anna's hummingbird (*Calypte anna*), barn swallow (*Hirundo rustica*), belted kingfisher (*Megaceryle alcyon),* black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), great white egret (*Ardea alba*), hooded merganser (*Lophodytes cucullatus*), mourning dove (*Zenaida macroura*), nuthatch (*Sitta* sp.), tree swallow (*Tachycineta bicolor*), western scrub jay (*Aphelocoma californica*), and yellow-rumped warbler (*Dendrocia coronate*). Only a single mourning dove nest was observed during the survey.

4.4.3.2. Project Impacts

Noise associated with construction activities involving heavy equipment operation that occurs during the breeding season (generally between February 15 and September 1) could disturb nesting migratory birds and raptors if an active nest is located near these activities.

4.4.3.3. Avoidance and Minimization Efforts

The following avoidance and minimization measure shall be implemented prior to and during construction to avoid take of nesting migratory birds and raptors.

AMM 1: Conduct Environmental Awareness Training

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 2: Install Temporary Fencing around Environmentally Sensitive Habitat

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 4: Implement Best Management Practices (BMPs) to Protect Water Quality

(described above under Section 4.1.1.3. Avoidance and Minimization Measures)

AMM 11: Conduct a Preconstruction Nesting Migratory Bird and Raptor Survey and Establish No-disturbance Buffers, if Necessary

If construction (including equipment staging and tree removal) will occur during the breeding season for migratory birds and raptors (generally between February 15 and September 1), the County shall retain a qualified biologist to conduct a preconstruction nesting bird and raptor survey before the onset of construction activities. The preconstruction nesting bird and raptor surveys shall be conducted between February 15 and September 1 within suitable habitat at the Project area. Surveys for nesting migratory birds shall be completed within 100 feet of Project construction. Surveys for raptors nests should also extend 0.25 mile from the Project area to ensure that nesting raptors are not indirectly affected by construction noise. The survey shall be conducted no more than 14 days before the initiation of construction activities. If no active nests are detected during the survey, no additional mitigation is required and construction can proceed.

If migratory birds or raptors are found to be nesting in or adjacent to the Project area, a no-disturbance buffer of 100-feet around an active bird nest or 300-feet around an active raptor nest shall be established to avoid disturbance of the nest area and to avoid take. The buffer shall be maintained around the nest area until the end of the breeding season or until a qualified biologist determines that, the young have fledged and are foraging on their own. The extent of these buffers may be modified, as determined by the biologist (coordinating with Caltrans and CDFW), depending on the species identified, level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers.

4.4.3.4. Compensatory Mitigation

Implementation of avoidance and minimization efforts described under Section 4.4.2.3 would ensure that the Project does not result in take of migratory birds and raptors. Therefore, no compensatory mitigation is required.

Chapter 5 Conclusion

5.1 Federal Endangered Species Act Consultation Summary

To date, there has been no FESA consultation with USFWS. A species list from the USFWS was received on June 9, 2016. The Project area does not support denning and foraging habitat for San Joaquin kit fox, a federally listed endangered species. The BSA provides low suitability movement habitat for San Joaquin kit fox. Avoidance and minimization measures are recommended to avoid take of San Joaquin kit fox and the Project will have ***no effect*** on this species. Therefore, no FESA consultation is required.

5.2 Federal Fisheries and Essential Fish Habitat Consultation Summary

To date, there has been no federal fisheries or Essential Fish Habitat (EFH) consultation with NMFS for the proposed Project. No listed fish species occur within the Project work limits. The Alta Main Canal within the BSA is not considered EFH; therefore EFH consultation is not required.

5.3 California Endangered Species Act Consultation Summary

To date, there has been no CESA consultation with CDFW for the proposed Project. The proposed Project will avoid take of state listed and candidate species; therefore, no CESA consultation is required.

5.4 California Fish and Game Code Summary

Charles Walbridge at the CDFW Region 4 office was contacted on July 1, 2016 to determine whether a SAA would be required for work in the canal. Mr. Walbridge stated that the Project would require a SAA, as the canal meets the definition of a water of the State and the canal has habitat value. He also remarked that as a water of the State, work in the canal may be subject to review by the RWQCB under the Porter Cologne Act.

5.5 Wetlands and Other Waters Coordination Summary

To date, there has been no CWA coordination with the USACE, RWQCB, or SWRCB for the Project. A delineation of wetlands and waters of the U.S. has been completed, and Caltrans will submit the report to the USACE for a jurisdictional determination that the canal does not qualify as a water of the U.S. The Project will potentially impact waters of the State, which may require WDRs or a waiver of WDRs and a NPDES permit in accordance with the Porter-Cologne Act.

The Project may also require an encroachment permit from the CVFPB. The County will apply for and obtain all applicable permits prior to Project construction.

5.6 Invasive Species

Bridge construction would occur along the existing road right of way within a disturbed corridor. The BSA currently supports non-native invasive plants. Implementation of the proposed Project is not expected to result in the introduction, establishment, and spread of new invasive weeds into Fresno County. Therefore, no coordination with the Fresno County Agricultural Commissioner's office is required.

Chapter 6 References

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USFWS. See U.S. Fish and Wildlife Service.

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Appendix A

CNDDB, CNPS, and USFWS Species Lists

Original Project Routing

Original
Project
Routing

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
FEDERAL BUILDING, 2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
PHONE: (916)414-6600 FAX: (916)414-6713

Consultation Code: 08ESMF00-2016-SLI-1635 June 09, 2016
Event Code: 08ESMF00-2016-E-03565
Project Name: Alta Canal Bridge Replacement Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Alta Canal Bridge Replacement Project

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

Consultation Code: 08ESMF00-2016-SLI-1635
Event Code: 08ESMF00-2016-E-03565

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Name: Alta Canal Bridge Replacement Project
Project Description: Fresno County (County) is proposing to construct a new bridge over the Alta Main Canal Bridge on North Frankwood Avenue in an unincorporated portion of the County (Project).

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:

Project Coordinates: MULTIPOLYGON (((-119.44441864032686 36.741924084869865, -119.44522801251841 36.74242123046764, -119.44577171085692 36.7424220930218, -119.44630165187428 36.74237592703041, -119.44646464270289 36.74211839286897, -119.44698865702591 36.742004401006916, -119.44737324661675 36.74167656141306, -119.44751545675449 36.74174269877421, -119.4464757095602 36.74281863906566, -119.44639373369006 36.742893778711526, -119.44616349937237 36.74298711000653, -119.44590337526361 36.74296252975993, -119.44551098813102 36.74280111359357, -119.44430401773049 36.74208546827592, -119.44441864032686 36.741924084869865)))

Project Counties: Fresno, CA

United States Department of Interior
Fish and Wildlife Service

Project name: Alta Canal Bridge Replacement Project

Endangered Species Act Species List

There are a total of 10 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
California red-legged frog *(Rana draytonii)* Population: Entire	Threatened	Final designated	
California tiger Salamander *(Ambystoma californiense)* Population: U.S.A. (Central CA DPS)	Threatened	Final designated	
Crustaceans			
Vernal Pool fairy shrimp *(Branchinecta lynchi)* Population: Entire	Threatened	Final designated	
Fishes			
Delta smelt *(Hypomesus transpacificus)* Population: Entire	Threatened	Final designated	
Flowering Plants			
San Joaquin Adobe sunburst *(Pseudobahia peirsonii)*	Threatened		
San Joaquin Orcutt grass *(Orcuttia*	Threatened	Final designated	

inaequalis)			
Mammals			
Fresno kangaroo rat *(Dipodomys nitratoides exilis)* Population: Entire	Endangered	Final designated	
San Joaquin Kit fox *(Vulpes macrotis mutica)* Population: wherever found	Endangered		
Reptiles			
Blunt-Nosed Leopard lizard *(Gambelia silus)* Population: Entire	Endangered		
Giant Garter snake *(Thamnophis gigas)* Population: Entire	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Orange Cove North (3611963) OR Orange Cove South (3611953) OR Piedra (3611974) OR Pine Flat Dam (3611973) OR Reedley (3611954) OR Round Mountain (3611975) OR Sanger (3611965) OR Selma (3611955) OR Wahtoke (3611964))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	None	G2G3	S1S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus morrisoni Morrison bumble bee	IIHYM24460	None	None	G4G5	S1S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Calicina macula marbled harvestman	ILARAU8060	None	None	G1	S1	
Calicina piedra Piedra harvestman	ILARAU8080	None	None	G1	S1	
Castilleja campestris var. succulenta succulent owl's-clover	PDSCR0D3Z1	Threatened	Endangered	G4?T2	S2	1B.2
Chrysis tularensis Tulare cuckoo wasp	IIHYM72010	None	None	G1G2	S1S2	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriogonum nudum var. regirivum Kings River buckwheat	PDPGN0849F	None	None	G5T2	S2	1B.2
Eryngium spinosepalum spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	G2	S2	1B.2

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Euderma maculatum spotted bat	AMACC07010	None	None	G4	S3	SSC
Great Valley Mixed Riparian Forest Great Valley Mixed Riparian Forest	CTT61420CA	None	None	G2	S2.2	
Helianthus winteri Winter's sunflower	PDAST4N260	None	None	G1G2	S1S2	1B.2
Imperata brevifolia California satintail	PMPOA3D020	None	None	G3	S3	2B.1
Lagophylla dichotoma forked hare-leaf	PDAST5J070	None	None	G1	S1	1B.1
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Leptosiphon serrulatus Madera leptosiphon	PDPLM09130	None	None	G3	S3	1B.2
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Lytta molesta molestan blister beetle	IICOL4C030	None	None	G2	S2	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Orcuttia inaequalis San Joaquin Valley Orcutt grass	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
Pseudobahia peirsonii San Joaquin adobe sunburst	PDAST7P030	Threatened	Endangered	G1	S1	1B.1
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Sycamore Alluvial Woodland Sycamore Alluvial Woodland	CTT62100CA	None	None	G1	S1.1	
Talanites moodyae Moody's gnaphosid spider	ILARA98020	None	None	G1G2	S1S2	
Tuctoria greenei Greene's tuctoria	PMPOA6N010	Endangered	Rare	G1	S1	1B.1
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 37

CNPS California Native Plant Society   Rare and Endangered Plant Inventory

Plant List

18 matches found. *Click on scientific name for details*

Search Criteria
Found in 9 Quads around 36119F4

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Castilleja campestris var. succulenta	succulent owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	1B.2	S2	G4?T2
Clarkia exilis	slender clarkia	Onagraceae	annual herb	4.3	S4	G4
Claytonia parviflora ssp. grandiflora	streambank spring beauty	Montiaceae	annual herb	4.2	S3	G5T3
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	4.2	S4	G4
Delphinium hansenii ssp. ewanianum	Ewan's larkspur	Ranunculaceae	perennial herb	4.2	S3	G4T3
Eriogonum nudum var. regirivum	Kings River buckwheat	Polygonaceae	perennial herb	1B.2	S2	G5T2
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual / perennial herb	1B.2	S2	G2
Erythranthe sierrae	Sierra Nevada monkeyflower	Phrymaceae	annual herb	4.2	S3	G3
Helianthus winteri	Winter's sunflower	Asteraceae	perennial shrub	1B.2	S1S2	G1G2
Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	2B.1	S3	G3
Lagophylla dichotoma	forked hare-leaf	Asteraceae	annual herb	1B.1	S1	G1
Leptosiphon serrulatus	Madera leptosiphon	Polemoniaceae	annual herb	1B.2	S3	G3
Mimulus acutidens	Kings River monkeyflower	Phrymaceae	annual herb	3	S2?	G2?Q
Navarretia nigelliformis ssp. nigelliformis	adobe navarretia	Polemoniaceae	annual herb	4.2	S3	G4T3
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	1B.1	S1	G1
Pseudobahia peirsonii	San Joaquin adobe sunburst	Asteraceae	annual herb	1B.1	S1	G1
Sidalcea keckii	Keck's checkerbloom	Malvaceae	annual herb	1B.1	S2	G2
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	1B.1	S1	G1

Suggested Citation

CNPS, Rare Plant Program. 2016. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Website http://www.rareplants.cnps.org [accessed 03 May 2016].

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- The Calflora Database
- The California Lichen Society

Appendix B

List of Observed Plants and Wildlife

Original Project Routing

Original Project Routing

Vascular Plant Species Observed within the BSA

Scientific Name[1]	Common Name	Family	Nativity	Invasive Rating[2]	Wetland Indicator Status (Arid West Region)[1]
Acacia sp.	Acacia	Fabaceae	Naturalized	NL	NL
Acmispon americanus	Spanish lotus	Fabaceae	Native	NL	UPL
Amaranthus blitoides	Mat amaranth	Amaranthaceae	Native	NL	FACU
Avena barbata	Slender wild oat	Poaceae	Naturalized	Moderate	NL
Bromus diandrus	Ripgut grass	Poaceae	Naturalized	Moderate	NL
Bromus hordeaceus	Soft chess brome	Poaceae	Naturalized	Limited	FACU
Bromus sterilis	Poverty brome	Poaceae	Naturalized	NL	NL
Capsella bursa-pastoris	Shepherd's-purse	Brassicaceae	Naturalized	NL	FACU
Carex barbarae	Santa Barbara sedge	Cyperaceae	Native	NL	FAC
Catalpa bignonioides	Southern catalpa	Bignoniaceae	Naturalized	NL	UPL
Cephalanthus occidentalis	Common buttonwillow	Rubiaceae	Native	NL	OBL
Cerastium glomeratum	Sticky mouse-ear chickweed	Caryophllyaceae	Naturalized	NL	UPL
Chenopodium album	Lamb's-quarters	Chenopodiaceae	Naturalized	NL	FACU
Cortaderia jubata	Pampas grass	Poaceae	Naturalized	High	FACU
Cynodon dactylon	Bermuda grass	Poaceae	Naturalized	Moderate	FACU
Cyperus eragrostis	Tall flat sedge	Cyperaceae	Native	NL	FACW
Datura wrightii	Jimsonweed	Solanaceae	Native	NL	UPL
Epilobium sp.	Willowherb	Onagraceae	Native	NL	NL
Equisetum arvense	Common horsetail	Equisetaceae	Native	NL	FAC
Eucalyptus camaldulensis	Red gum	Myrtaceae	Naturalized	Limited	FAC
Euthamia occidentalis	Western goldenrod	Asteraceae	Native	NL	FACW
Festuca arundinacea	Tall fescue (ornamental)	Poaceae	Naturalized	Moderate	NL
Fraxinus latifolia	Oregon ash	Oleaceae	Native	NL	FACW
Galium aparine	Bedstraw	Rubiaceae	Native	NL	FACU
Geranium dissectum	Cutleaf geranium	Geraniaceae	Naturalized	Limited	NL
Geranium sp.	Geranium (ornamental)	Geraniaceae	Naturalized	NL	NL
Hedera helix	English ivy	Araliaceae	Naturalized	NL	FACU

Scientific Name[1]	Common Name	Family	Nativity	Invasive Rating[2]	Wetland Indicator Status (Arid West Region)[1]
Helianthus annuus	Common sunflower	Asteraceae	Native	NL	FACU
Heterothotheca grandiflora	Telegraph weed	Asteraceae	Native	NL	NL
Hirschfeldia incana	Short-pod mustard	Brassicaceae	Naturalized	Moderate	NL
Hordeum murinum	Hare barley	Poaceae	Naturalized	NL	FACU
Juncus mexicanus	Mexican rush	Cyperaceae	Native	NL	FACW
Lactuca serriola	Prickly lettuce	Asteraceae	Naturalized	NL	FACU
Leymus triticoides	Creeping wildrye	Poaceae	Native	NL	FAC
Lonicera japonica	Japanese honeysuckle	Caprifoliaceae	Naturalized	NL	FACU
Malva neglecta	Common mallow	Malvaceae	Naturalized	NL	NL
Medicago polymorpha	Burclover	Fabaceae	Naturalized	Limited	FACU
Melilotus indicus	Sweet-clover,	Fabaceae	Naturalized	NL	FACU
Mimulus guttatus	Seep spring monkey-flower	Phrymaceae	Native	NL	OBL
Nerium oleander	Common oleander	Apocynaceae	Naturalized	NL	NL
Panicum acuminatum	Western panicum	Poaceae	Native	NL	NL
Phalaris arundinacea	Reed canary grass	Poaceae	Native	NL	FACW
Pinus sp.	Pine (ornamental)	Pinaceae	Native	NL	NL
Poa annua	Annual blue grass	Poaceae	Naturalized	NL	FAC
Poa pratensis	Kentucky blue grass	Poaceae	Naturalized	Limited	FAC
Polygonum aviculare	Yard knotweed	Polygonaceae	Naturalized	NL	FAC
Polypogon monspeliensis	Rabbitfoot grass	Poaceae	Naturalized	Limited	FACW
Populus fremontii ssp. fremontii	Fremont cottonwood	Salicaceae	Native	NL	FAC
Prunus cerasifera	Cherry plum	Rosaceae	Naturalized	Limited	NL
Prunus subhirtella	Weeping cherry	Rosaceae	Naturalized	NL	NL
Quercus lobata	Valley oak	Fagaceae	Native	NL	FACU
Ranunculus arvensis	Field buttercup	Ranunculaceae	Naturalized	NL	FACU
Rosa sp.	Rose (ornamental)	Rosaceae	Naturalized	NL	NL

Scientific Name[1]	Common Name	Family	Nativity	Invasive Rating[2]	Wetland Indicator Status (Arid West Region)[1]
Rubus armeniacus	Himalayan blackberry	Rosaceae	Naturalized	High	FAC
Rubus ursinus	California blackberry	Rosaceae	Native	NL	FAC
Salix gooddingii	Black willow	Salicaceae	Native	NL	FACW
Sambucus nigra ssp. caerulea	Blue elderberry	Adoxaceae	Native	NL	NL
Schoenoplectus sp.	Rush	Cyperaceae	Native	NL	FACW/OBL
Silybum marianum	Milk thistle	Asteraceae	Naturalized	Limited	NL
Sonchus oleraceus	Common sow-thistle	Asteraceae	Naturalized	NL	UPL
Trifolium albopurpureum	Indian clover	Fabaceae	Native	NL	FACU
Triticum aestivum	Wheat	Poaceae	Naturalized	NL	NL
Typha sp.	Cat-tail	Typhaceae	Native/Naturalized	NL	OBL
Verbascum sp.	Mullein	Scrophulariaceae	Naturalized	NL	NL
Verbascum thaspus	Woolly mullein	Scrophulariaceae	Naturalized	NL	FACU
Vicia sp.	Vetch	Fabaceae	Naturalized	NL	NL
Vulpia myuros	Rat-tail fescue	Poaceae	Naturalized	Moderate	FACU
Yucca sp.	Yucca	Agavaceae	Native	NL	NL

Footnotes:

[1] Scientific nomenclature follows Baldwin, B., G., Douglas H. G., David J. K., Robert P., Thomas J. R., and Dieter H. W. 2012. The Jepson Manual: Vascular Plants of California. Second edition, revised and expanded. Berkeley, CA: University of California Press.

[2] Wetland indicator status definitions are provided below (Lichvar 2016).

Indicator Category	**Wetland Occurrence**
OBL (Obligate Wetland Plants)	Almost always occur in wetlands.
FACW (Facultative Wetland Plants)	Usually occur in wetlands, but may occur in nonwetlands.
FAC (Facultative Wetland Plants)	Occur in wetlands and nonwetlands.
FACU (Facultative Upland Plants)	Usually occur in nonwetlands, but may occur in wetlands.
NL	Not listed
UPL (Obligate Upland Plants)	Almost never occur in wetlands.

The wetland indicator status definitions were obtained from: Lichvar, R., N. Melvin, M. Butterwick, and W. Kirchner. 2016. National Wetland Plant List Indicator Rating Definitions. ERDC/CRREL TN-12-1

Wildlife Species Observed in the BSA

Common Name	Scientific Name
Birds	
Acorn Woodpecker	*Melanerpes formicivorus*
Anna's Hummingbird	*Calypte anna*
Barn Swallow	*Hirundo rustica*
Belted Kingfisher	*Megaceryle alcyon*
Black Phoebe	*Sayornis nigricans*
Bushtit	*Psaltriparus minimus*
European Starling	*Sturnus vulgaris*
Great White Egret	*Ardea alba*
Hooded Merganser	*Lophodytes cucullatus*
House Finch	*Haemorhous mexicanus*
Mourning Dove	*Zenaida macroura*
Nuthatch	*Sitta* sp.
Tree Swallow	*Tachycineta bicolor*
Western Scrub Jay	*Aphelocoma californica*
Yellow-rumped Warbler	*Dendroica coronate*
Reptiles	
Western Fence Lizard	*Sceloporus occidentalis*

Appendix C

Tree Inventory Memo

Original Project Routing

Original Project Routing

AREA WEST ENVIRONMENTAL, INC.

June 30, 2016

Alexis Rutherford
County of Fresno
2220 Tulare Street, 7th Floor
Fresno, CA 93721

SUBJECT: Tree Inventory for the Alta Main Canal Bridge Replacement Project, Fresno County, California

Dear Ms. Rutherford:

This report presents the results of a tree inventory conducted for the Alta Main Canal Bridge Replacement Project (Project) in Fresno County (County), California (Figure 1). The tree inventory was conducted in support of a Natural Environmental Study (NES) Minimal Impacts (MI) for the Project site.

Project Background

The County, in cooperation with the California Department of Transportation (Caltrans), is proposing to replace the existing bridge on North Frankwood Avenue over the Alta Main Canal (Canal) with the construction of a new bridge built to current standards on a new alignment. Construction of the new bridge would require the realignment and widening of North Frankwood Avenue, which would soften the existing curve in the road and improve overall sight distance.

Construction of the proposed Project would likely result in the removal of trees, largely valley oaks (*Quercus lobata*). Within the County of Fresno, the removal of oak trees is regulated by the *Fresno County Oak Woodland Management Guidelines*, a voluntary program to conserve oaks within the County. Removal of trees within the riparian zone may also be regulated by the California Department of Fish and Wildlife (CDFW) under a Streambed Alteration Agreement (SAA), as authorized by Section 1602 of the California Fish and Game Code (CFGC).

6248 MAIN AVENUE, SUITE C • ORANGEVALE, CA 95662
PHONE (916) 987-3362 • FAX (916) 988-2677
WEBSITE: AREAWEST.NET

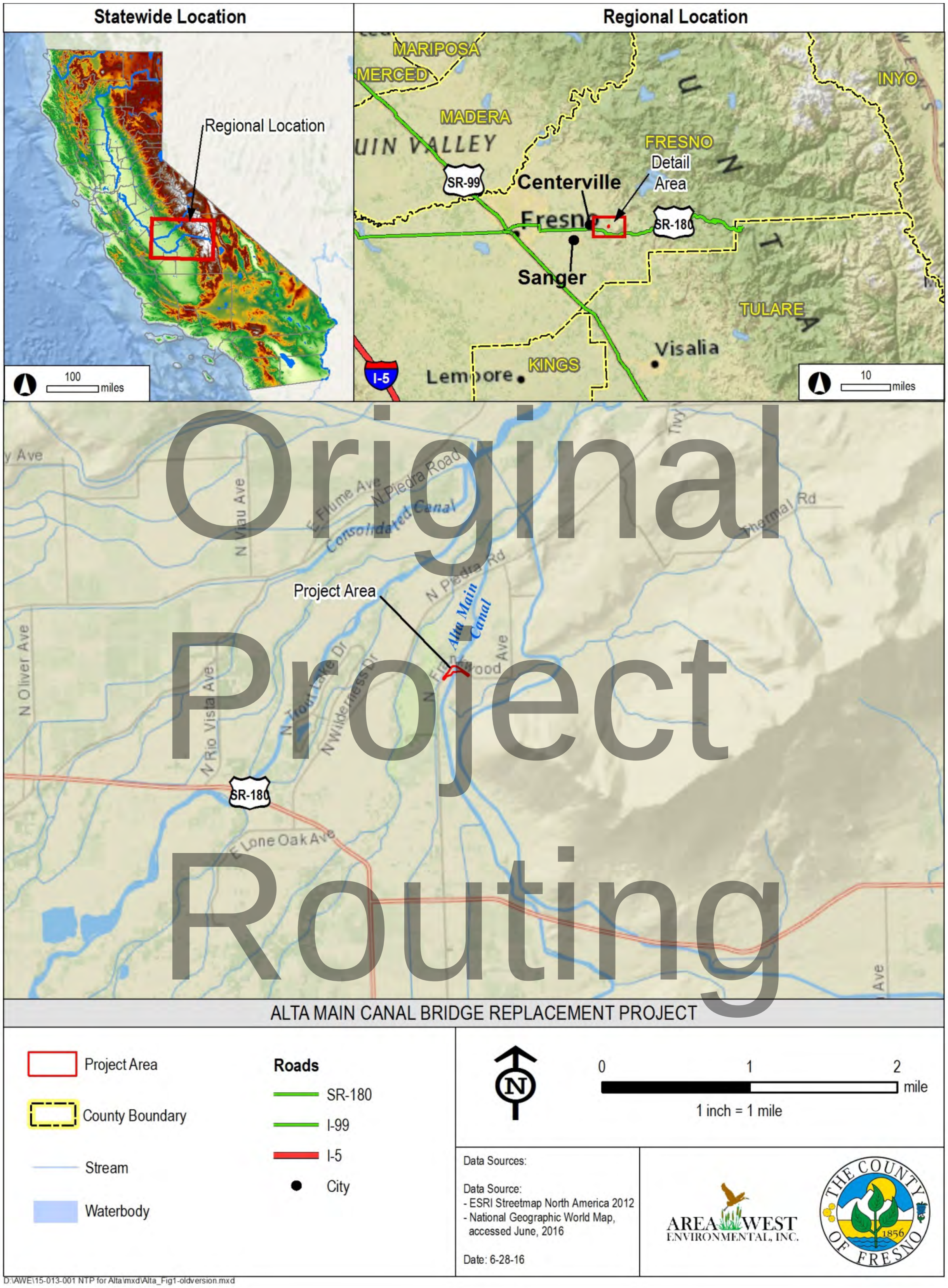


Figure 1. Project Area Location

The proposed Project is located approximately 9 miles east of the City of Sanger, California and 2.5 miles east of the unincorporated community of Centerville, California (Figure 1). Project area limits represent the maximum extent of ground disturbance that will result in direct permanent and temporary impacts. Therefore, the biological study area (BSA) encompasses the entire Project area (2.875 acres). This extent of the BSA will accommodate any changes to Project limits that may occur during Project development.

Study Area Description

The BSA consists of North Frankwood Avenue where it crosses over the Alta Main Canal on the existing bridge/weir structure. The existing bridge is integrated with a controlled weir structure that stretches the full length of the bridge and is owned and operated by the Alta Irrigation District. Bisected by the Alta Main Canal, an artificial channel that diverts water from the Kings River, the Project area consists mainly of riparian woodland habitat, paved road, and dirt access roads. Surrounding land uses consist of agriculture/pasture fields and low-density rural residential housing. A mobile home community and a golf course is located immediately southwest of the proposed Project.

Fresno County Oak Woodland Management Guidelines

The Fresno County Oak Woodland Management Guidelines (Fresno County 1998) provides oak conservation guidance for development projects in Fresno County. These voluntary guidelines direct applicants to include the following considerations when working within oak woodlands.

- Develop an Oak Woodland Management Plan to retain existing oaks, preserve agriculture, retain wildlife corridors, and enhance soil and water conservation practices.
- Avoid tree root compaction during construction by limiting heavy equipment in root zones.
- Carefully plan roads, cuts and fills, building foundations, and septic systems to avoid damage to tree roots.
- Design roads and consolidate utility services to minimize erosion and sedimentation to downstream sources. Also, consider reseeding any disturbed ground.
- Avoid landscaping which requires irrigation within 10 feet of the trunk of an existing oak tree to prevent root rot.
- Consider replacing trees whose removal during construction was avoidable.
- Use fire-inhibiting and drought-tolerant and oak-compatible landscaping wherever possible.

California Department of Fish and Wildlife

The CDFW reviews applications and issues SAA under Section 1602 of the CFGC. CDFW may develop mitigation measures and enter into SAA with applicants who propose projects that would obstruct the flow of, or alter the bed, channel, or bank of, a river, stream, or lake in which there are fish or wildlife resource, including seasonal drainages and riparian habitat. The removal of oak trees within the riparian zone may require a SAA.

Methods

The tree inventory was conducted on June 10, 2016 by Area West Environmental, Inc. (AWE) biologists Mark Noyes and Samuel Price. Survey methods consisted of identifying, measuring, and numbering all trees within the study area. Information collected included tree species, diameter at breast height (dbh) (measured at 4.5 feet from the base of the tree), canopy size estimates, and the presence of bird and/or bird nests and roosts or wildlife observations. The locations were recorded with a Trimble Global Positioning System (GPS) unit with sub-meter accuracy.

Results

A total of 122 trees were surveyed within the Project area, including those trees whose canopies overhang the Project area. The 122 trees are composed of 113 valley oaks (*Quercus lobata*), 5 Goodding's willows (*Salix goodingii*), 3 Fremont's cottonwood (*Populus fremontii*), and 1 ornamental pine (*Pinus* sp.). A hedge of oleander (*Nerium oleander*) runs along the east side of the road in front of a house in the southwestern portion of the Project area. Attachment 1 provides a complete list of the 122 trees and their locations within the Project area are shown on Attachment 2.

Please call me at (916) 987-3362 or email me at mnoyes@areawest.net with any questions.

Sincerely,

Mark Noyes
Biologist

Enclosure: Attachment 1. Tree Survey Data
Attachment 2. Tree Locations

Attachment 1

Tree Survey Data

Original Project Routing

Original Project Routing

Trees Survey Data for the Alta Main Canal Bridge Replacement Project

Tree #	Scientific Name	Common Name	DBH (inches)	Canopy Dimensions (length x width [feet])	Notes (Tree condition; nests or cavities for wildlife)
1	*Quercus lobata*	Valley oak	23.5	25 x 35	-
2	*Quercus lobata*	Valley oak	23	30 x 25	-
3	*Quercus lobata*	Valley oak	14	25 x 20	-
4	*Quercus lobata*	Valley oak	27	50 x 50	-
5	*Quercus lobata*	Valley oak	16	40 x 20	-
6	*Quercus lobata*	Valley oak	27	50 x 30	-
7	*Quercus lobata*	Valley oak	11	30 x 15	-
8	*Quercus lobata*	Valley oak	7	15 x 10	-
9	*Quercus lobata*	Valley oak	7/5*	15 x 10	-
10	*Quercus lobata*	Valley oak	5	10 x 10	-
11	*Quercus lobata*	Valley oak	5	10 x 5	-
12	*Quercus lobata*	Valley oak	3.5	6 x 5	-
13	*Quercus lobata*	Valley oak	3.5/15*	30 x 20	-
14	*Quercus lobata*	Valley oak	9	25 x 10	-
15	*Quercus lobata*	Valley oak	3/5/4/4/4*	20 x 15	-
16	*Quercus lobata*	Valley oak	12.5	15 x 15	-
17	*Quercus lobata*	Valley oak	9	7 x 4	-
18	*Quercus lobata*	Valley oak	8	6 x 6	-
19	*Quercus lobata*	Valley oak	6.5	10 x 4	-
20	*Quercus lobata*	Valley oak	4	10 x 5	-
21	*Quercus lobata*	Valley oak	12	15 x 20	-
22	*Quercus lobata*	Valley oak	15	30 x 30	-
23	*Quercus lobata*	Valley oak	13	35 x 35	-
24	*Quercus lobata*	Valley oak	14	20 x 40	-
25	*Quercus lobata*	Valley oak	12	20 x 35	-
26	*Quercus lobata*	Valley oak	15	45 x 50	-
27	*Quercus lobata*	Valley oak	17	40 x 40	-
27a	*Quercus lobata*	Valley oak	3	8 x 8	-
28	*Quercus lobata*	Valley oak	6.5	10 x 15	-
29	*Quercus lobata*	Valley oak	8	20 x 30	Dove nest
30	*Quercus lobata*	Valley oak	5	5 x 15	-
31	*Quercus lobata*	Valley oak	6.5	20 x 30	-
32	*Quercus lobata*	Valley oak	24	50 x 50	-
33	*Quercus lobata*	Valley oak	5	6 x 6	-
34	*Quercus lobata*	Valley oak	7	10 x 15	-
35	*Quercus lobata*	Valley oak	18	40 x 40	-
36	*Quercus lobata*	Valley oak	5	10 x 20	-

Tree #	Scientific Name	Common Name	DBH (inches)	Canopy Dimensions (length x width [feet])	Notes (Tree condition; nests or cavities for wildlife)
37	*Quercus lobata*	Valley oak	12	15 x 20	-
38	*Quercus lobata*	Valley oak	7/6*	16 x 10	-
39	*Quercus lobata*	Valley oak	6/5*	15 x 15	-
40	*Quercus lobata*	Valley oak	12	15 x 20	Tree topped (trimmed)
41	*Quercus lobata*	Valley oak	9/10*	10 x 20	Tree topped (trimmed)
42	*Quercus lobata*	Valley oak	13	20 x 20	Tree topped (trimmed)
43	*Quercus lobata*	Valley oak	9	10 x 12	-
44	*Quercus lobata*	Valley oak	10.5	15 x 15	-
45	*Quercus lobata*	Valley oak	12	15 x 30	-
46	*Quercus lobata*	Valley oak	6.5	8 x 8	-
47	*Quercus lobata*	Valley oak	11	20 x 35	-
48	*Quercus lobata*	Valley oak	14	25 x 25	Dove nest
49	*Quercus lobata*	Valley oak	32	50 x 60	-
50	*Quercus lobata*	Valley oak	22	50 x 70	-
51	*Quercus lobata*	Valley oak	14	20 x 50	-
52	*Quercus lobata*	Valley oak	20/16*	50 x 60	-
53	*Quercus lobata*	Valley oak	5	12 x 12	-
54	*Quercus lobata*	Valley oak	14	40 x 40	-
55	*Quercus lobata*	Valley oak	4	12 x 12	-
55a	*Quercus lobata*	Valley oak	22.5	55 x 55	-
56	*Quercus lobata*	Valley oak	3	5 x 5	-
57	*Quercus lobata*	Valley oak	6	8 x 8	-
58	*Quercus lobata*	Valley oak	6	15 x 10	-
59	*Quercus lobata*	Valley oak	15	20 x 40	-
60	*Quercus lobata*	Valley oak	41	100 x 100	-
61	*Quercus lobata*	Valley oak	18	20 x 70	-
62	*Quercus lobata*	Valley oak	2.5/3*	10 x 10	-
63	*Salix goodingii*	Goodding's willow	2.5/2/3	15 x 15	-
64	*Quercus lobata*	Valley oak	13	20 x 25	-
65	*Quercus lobata*	Valley oak	15	20 x 30	-
66	*Quercus lobata*	Valley oak	16	30 x 30	-
67	*Quercus lobata*	Valley oak	11	25 x 30	-
68	*Quercus lobata*	Valley oak	9	20 x 20	-
69	*Quercus lobata*	Valley oak	23	60 x 60	-
70	*Quercus lobata*	Valley oak	6.5	15 x 30	-
71	*Salix goodingii*	Goodding's willow	2/2/2/2/1/2/2/7*	3 x 3	-
72	*Quercus lobata*	Valley oak	13	40 x 40	-
73	*Quercus lobata*	Valley oak	19	60 x 70	-
74	*Populus fremontii*	Fremont's	6	12 x 12	Tree topped (trimmed)

Tree #	Scientific Name	Common Name	DBH (inches)	Canopy Dimensions (length x width [feet])	Notes (Tree condition; nests or cavities for wildlife)
		cottonwoods			
75	*Quercus lobata*	Valley oak	5	10 x 10	-
76	*Salix goodingii*	Goodding's willow	4/2/2/1*	10 x 10	-
77	*Quercus lobata*	Valley oak	19	30 x 40	-
78	*Salix goodingii*	Goodding's willow	8/8/3/1*	35 x 15	-
79	*Quercus lobata*	Valley oak	23.5	50 x 50	-
80	*Quercus lobata*	Valley oak	18	50 x 50	-
81	*Quercus lobata*	Valley oak	15/3	40 x 30	-
82	*Quercus lobata*	Valley oak	41	70 x 70	-
83	*Quercus lobata*	Valley oak	15	25 x 25	Tree topped (trimmed)
84	*Quercus lobata*	Valley oak	21	35 x 35	Tree topped (trimmed)
85	*Pinus* sp.	Ornamental pine	16/13.5*	40 x 20	-
86	*Quercus lobata*	Valley oak	17/12/13*	30 x 30	-
87	*Quercus lobata*	Valley oak	15	25 x 25	-
88	*Quercus lobata*	Valley oak	40	50 x 30	Tree topped (trimmed)
89	*Quercus lobata*	Valley oak	18	70 x 70	-
90	*Quercus lobata*	Valley oak	12	20 x 20	-
91	*Quercus lobata*	Valley oak	12	30 x 20	-
92	*Quercus lobata*	Valley oak	3/3*	8 x 8	-
93	*Quercus lobata*	Valley oak	12	30 x 30	-
94	*Quercus lobata*	Valley oak	8.5	20 x 12	-
95	*Quercus lobata*	Valley oak	14/19/12*	30 x 10	-
96	*Quercus lobata*	Valley oak	24	25 x 50	-
97	*Quercus lobata*	Valley oak	17	15 x 25	-
98	*Quercus lobata*	Valley oak	18	15 x 15	Tree topped (trimmed)
99	*Quercus lobata*	Valley oak	25	40 x 40	-
100	*Quercus lobata*	Valley oak	7	12 x 12	-
101	*Quercus lobata*	Valley oak	4	6 x 6	-
102	*Quercus lobata*	Valley oak	7	10 x 15	-
103	*Quercus lobata*	Valley oak	7	12 x 8	-
104	*Salix goodingii*	Goodding's willow	4/2/1/10*	8 x 15	-
105	*Quercus lobata*	Valley oak	7	10 x 25	-
106	*Quercus lobata*	Valley oak	20	90 x 40	-
107	*Quercus lobata*	Valley oak	5	12 x 12	-
108	*Quercus lobata*	Valley oak	21	70 x 70	-
109	*Quercus lobata*	Valley oak	12	20 x 30	-
110	*Quercus lobata*	Valley oak	8	15 x 20	-
111	*Quercus lobata*	Valley oak	15.5	20 x 40	-
112	*Quercus lobata*	Valley oak	13	12 x 20	-

Tree #	Scientific Name	Common Name	DBH (inches)	Canopy Dimensions (length x width [feet])	Notes (Tree condition; nests or cavities for wildlife)
113	*Quercus lobata*	Valley oak	7	12 x 12	-
114	*Quercus lobata*	Valley oak	18.5	30 x 70	-
115	*Quercus lobata*	Valley oak	29	80 x 80	-
116	*Quercus lobata*	Valley oak	12	40 x 30	-
117	*Quercus lobata*	Valley oak	10	20 x 30	-
118	*Quercus lobata*	Valley oak	--[1]	40 x 30	-
119	*Populus fremontii*	Fremont's cottonwoods	--[1]	15 x 10	-
120	*Populus fremontii*	Fremont's cottonwoods	--[1]	15 x 10	-

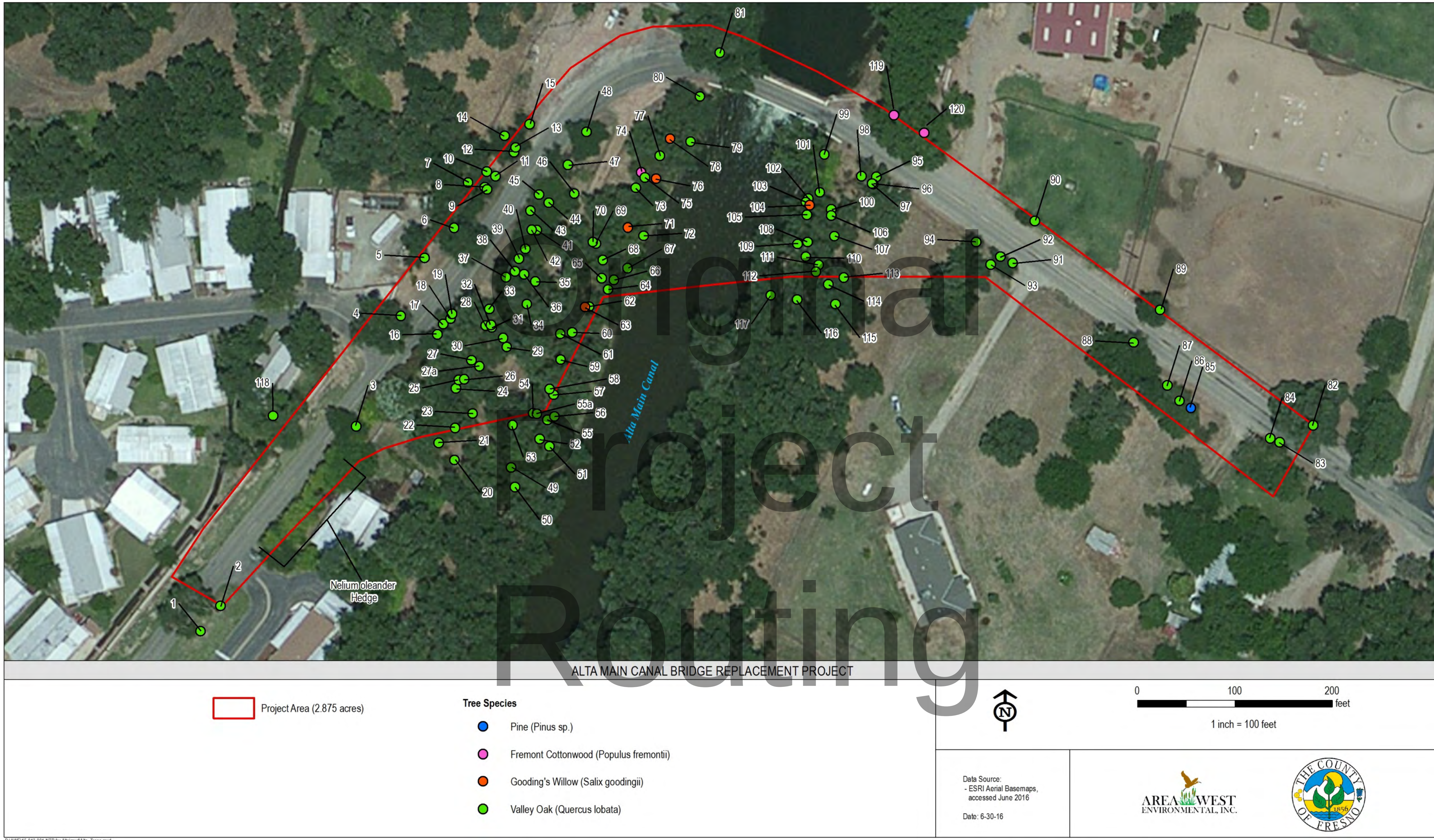
DBH (diameter at breast height), measured at 4.5 feet from the base of the tree.
* Multiple numbers represent individual DBH measurements for multi-trunk trees.
[1] Tree # 118-120 DBH were not measured due to their being on private property, though canopy overhangs the road.

Attachment 2

Tree Locations

Original Project Routing

Original Project Routing



Attachment 2- Tree Locations

Original
Project
Routing

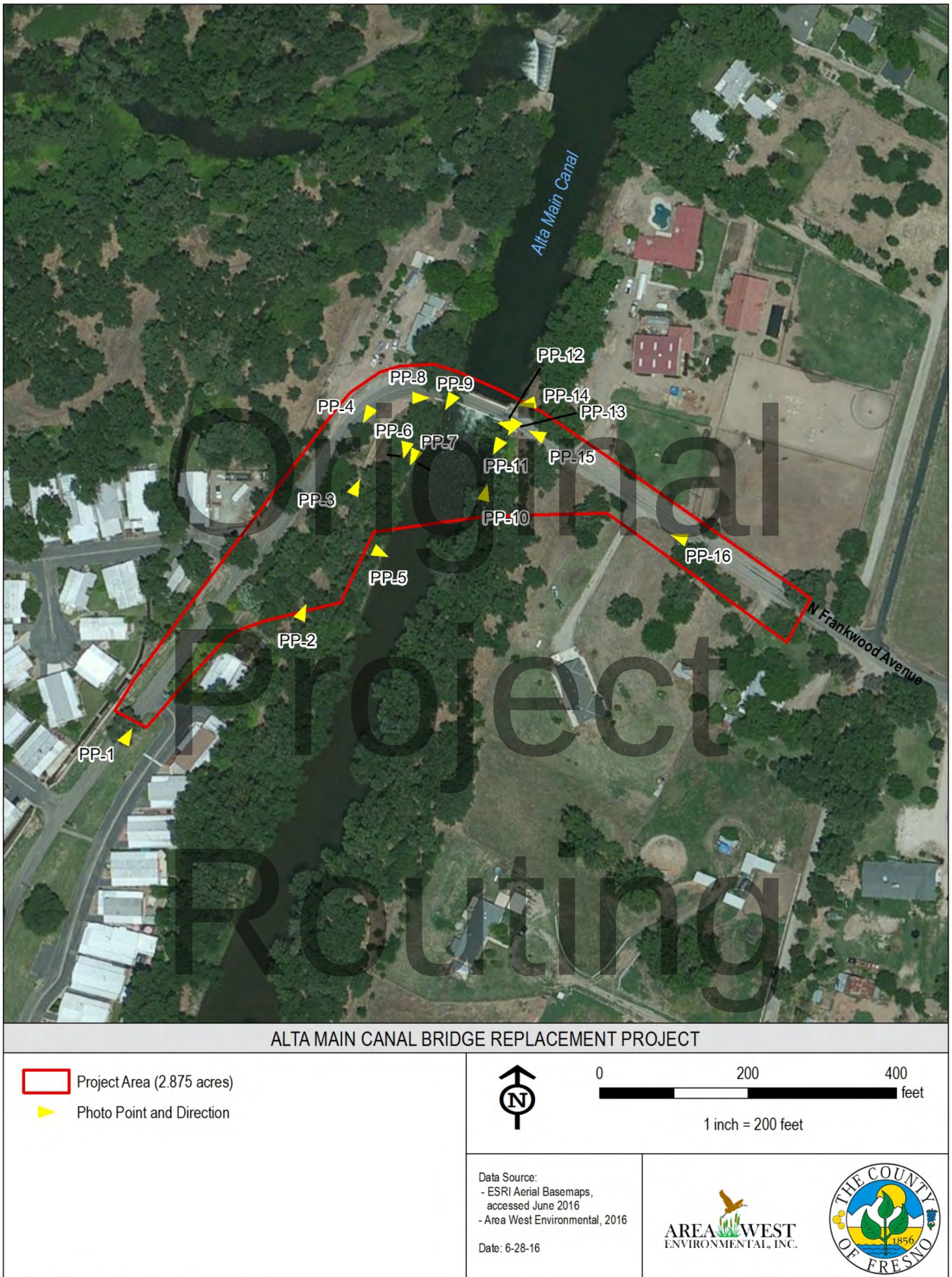
Appendix D

Representative Biological Study Area Photographs

(Photos taken June 10, 2016)

Original Project Routing

Original
Project
Routing



D:\AWE\15-013-001 NTP for Alta\mxd\Alta_Photo_Points.mxd

Map of Photo Points within the BSA

Photo Point 1. Developed/ornamental habitat along North Frankwood Avenue (facing north).

Photo Point 2. Access road within valley oak riparian habitat (facing north).

Photo Point 3. Access road within valley oak riparian habitat (facing north).

Photo Point 4. Developed/ornamental habitat (right), valley oak riparian habitat (left), with valley oak woodland habitat (background) (facing south).

Photo Point 5. Canal (foreground) with valley oak riparian habitat (background) (facing east).

Photo Point 6. Valley oak riparian habitat understory (facing north).

Photo Point 7. Artificial seasonal wetland habitat and canal (facing south). Valley oak riparian on opposite bank (left).

Photo Point 8. Existing bridge (developed/ornamental habitat) (facing east).

Photo Point 9. Artificial seasonal wetland habitat (right) and canal (left) (facing south).

Photo Point 10. Valley oak riparian habitat (right) and canal (left) (facing north).

Photo Point 11. Edge of canal habitat as it meets the valley oak riparian habitat (facing south).

Photo Point 12. Existing bridge (developed/ornamental) and canal (left) downstream of weir (facing west).

Photo Point 13. Valley oak riparian habitat (left) and canal (right) (facing south).

Photo Point 14. Canal upstream of existing bridge/weir (facing west).

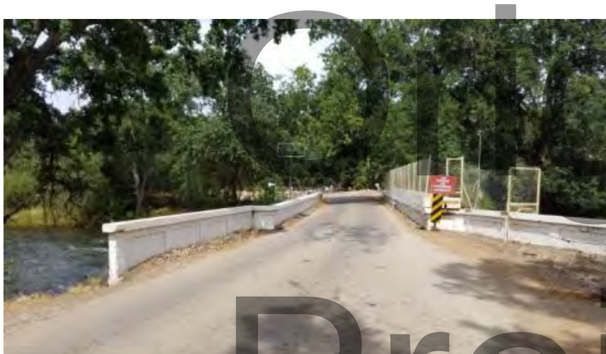


Photo Point 15. Existing bridge (developed/ornamental habitat) (facing west).

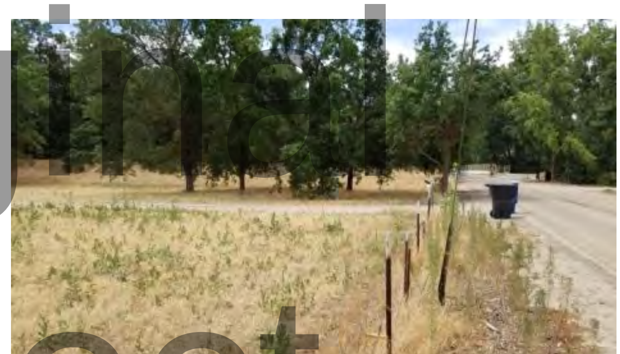


Photo Point 16. Annual grassland habitat (foreground) with valley oak woodland (background) (facing west).

SUMMARY FLOODPLAIN ENCROACHMENT REPORT*

Dist. 6 **Co.** Fresno **Rte.** N. Frankwood Ave **P.M.** 1.15 Mi South of Piedra Road
Federal-Aid Project Number: BRLO-5942(247) **Bridge No.** 42C0289

Limits: Along North Frankwood Avenue north of E. Kings Canyon Road and south of N. Piedra Road. Bridge is nearly adjacent to Sherwood Forrest Golf Club

Floodplain Description: Alta Irrigation District has indicated that the Alta Main Canal is not a natural stream. There is no natural drainage that enters the canal. Water is released into the canal by the Alta Irrigation District. The channel through the existing bridge reach is concrete lined. The historical maximum flow of 1,200 cfs is within the banks of the incised channel. A flow of 1,800 cfs was also modeled and it is also within the banks of the channel. Also according to Flood Insurance Rate Map (FIRM) Panel 2180 of 3525, the project area lies in a Zone X described as areas determined to be outside the 0.2% annual chance floodplain.

		No	Yes
1.	Is the proposed action a longitudinal encroachment of the base floodplain?	X	
2.	Are the risks associated with the implementation of the proposed action significant?	X	
3.	Will the proposed action support probable incompatible floodplain development?	X	
4.	Are there any significant impacts on natural and beneficial floodplain values?	X	
5.	Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain.	X	
6.	Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q).	X	
7.	Are Location Hydraulic Studies that document the above answers on file? If not explain.		X

PREPARED BY: Om Prakash, Ph.D., P.E., WEST Consultants, Inc., Folsom, CA

[Registered Professional Engineer, CA] No. 82853, EXP 09/30/2018

03/29/2017

Signature - Hydraulic Engineer Date

I Concur:

3/30/2017

Signature - Dist. Hydraulic Engineer Date

3/30/17

Signature - Dist. Environmental Branch Chief Date

3/30/17

Signature - Dist. Project Engineer Date

* Same as Figure 804.7B Floodplain Evaluation Report Summary located in Chapter 804 of the Highway Design Manual

Tallac Applied Ecology & Design
Landscape Architecture • Environmental Restoration • Interpretive Planning

September 19, 2016

Alexis Rutherford
County of Fresno, Public Works Department
2220 Tulare Street, 7th Floor
Fresno, CA 93721

RE: Review of Visual Impact Technical Memorandum for the Alta Main Canal Bridge Replacement Project – BRLO-5942(247)

Dear Ms. Rutherford,

I have reviewed the following Visual Impact Technical Memorandum for the Alta Canal Bridge Replacement Project. I have provided Area West nvironmental staff with comments and recommendations to clarify the visual impacts that will occur.
It is my professional opinion that this Technical Memorandum is the appropriate level of evaluation for this project and I concur with the overall assessment.

If you have any questions, please feel free to contact me.

Sincerely,

Sheryl C. Brown, CA RLA #4245
"Landscape Architects are licensed by the State of California."

Landscape Architects are licensed and regulated by the State of California. Any questions concerning a Landscape Architect may be referred to the Landscape Architects Technical Committee at: 2420 Del Paso Road, Suite 105, Sacramento, CA 95834; (916) 575-7230; latc@dca.ca.gov.

602 Redbud Way • Nevada City, CA 95959 • ph-fax 530.545.3718
sheribrowndion@yahoo.com

Original
Project
Routing

September 19, 2016

Alexis Rutherford
County of Fresno, Public Works Department
2220 Tulare Street, 7th Floor
Fresno, CA 93721

SUBJECT: Visual Impact Technical Memorandum for the Alta Main Canal Bridge Replacement Project – BRLO-5942(247)

Dear Ms. Rutherford:

This report presents the results of a visual impact assessment conducted for the Alta Main Canal Bridge Replacement Project (Project) in Fresno County (County), California (Figure 1). The Project has been reviewed for potential impacts to visual resources. A questionnaire to determine the appropriate Visual Impact Assessment (VIA) level for the Project was completed and is attached to this memorandum (Attachment A).

Project Location

The proposed Project is located approximately 9 miles northeast of the City of Sanger, California and 2.5 miles east of the unincorporated community of Centerville, California (Figure 1). Specifically, the proposed Project is located in Section 2, Range 23 East, and Township 14 South of the Wahtoke U.S. Geological Survey (USGS) 7.5-minute quadrangle map (Figure 2). The 2.9-acre Project area (Figure 3) consists of areas of permanent and temporary alteration.

Project Description

The County, in cooperation with the California Department of Transportation (Caltrans), is proposing to replace the existing bridge on North Frankwood Avenue over the Alta Main Canal (Canal) with the construction of a new bridge built to current standards on a new alignment. Construction of the new bridge would require the realignment and widening of North Frankwood Avenue. This realignment and widening will soften the existing curve in the road and improve overall sight distance.

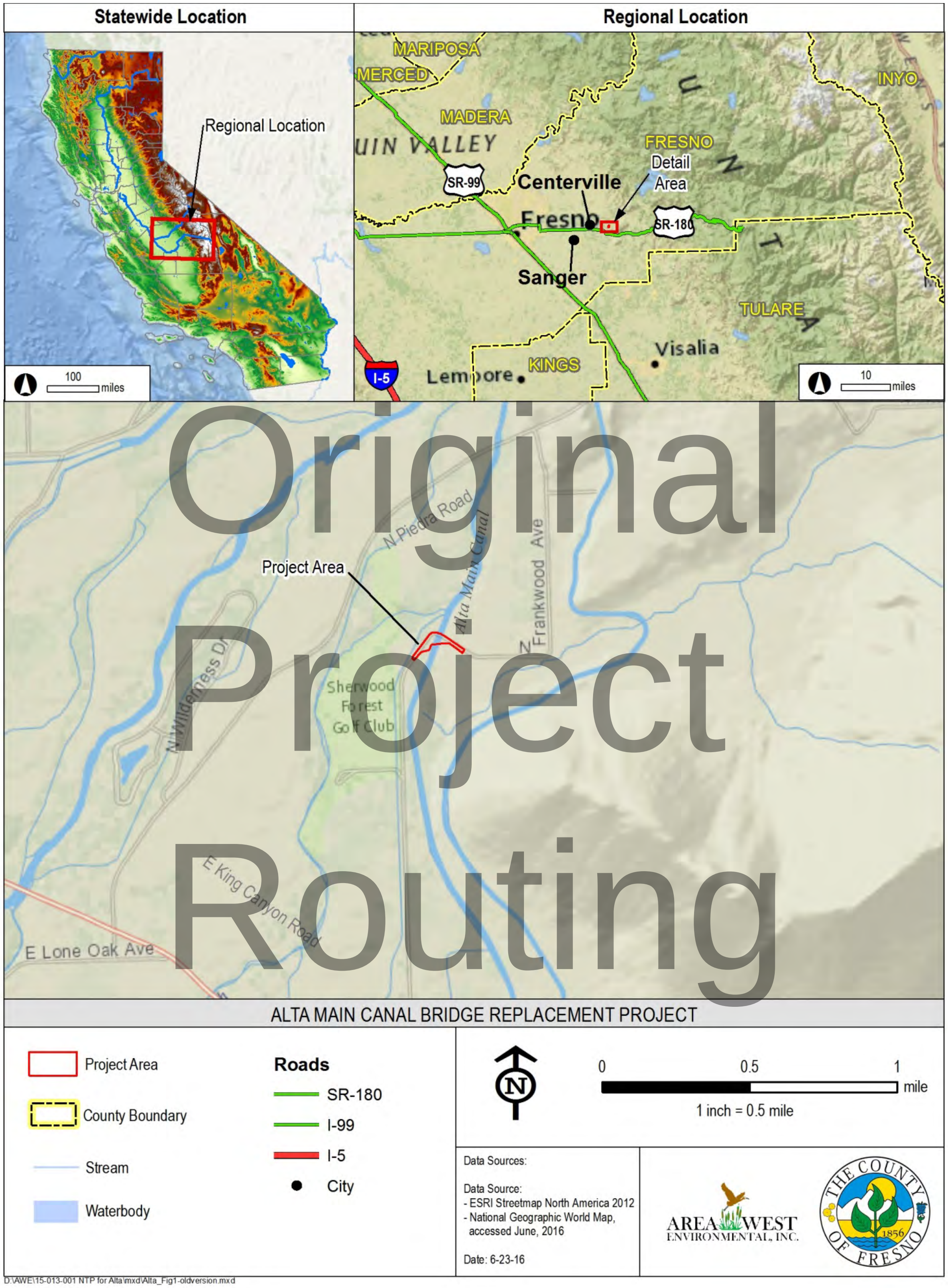


Figure 1. Regional Location

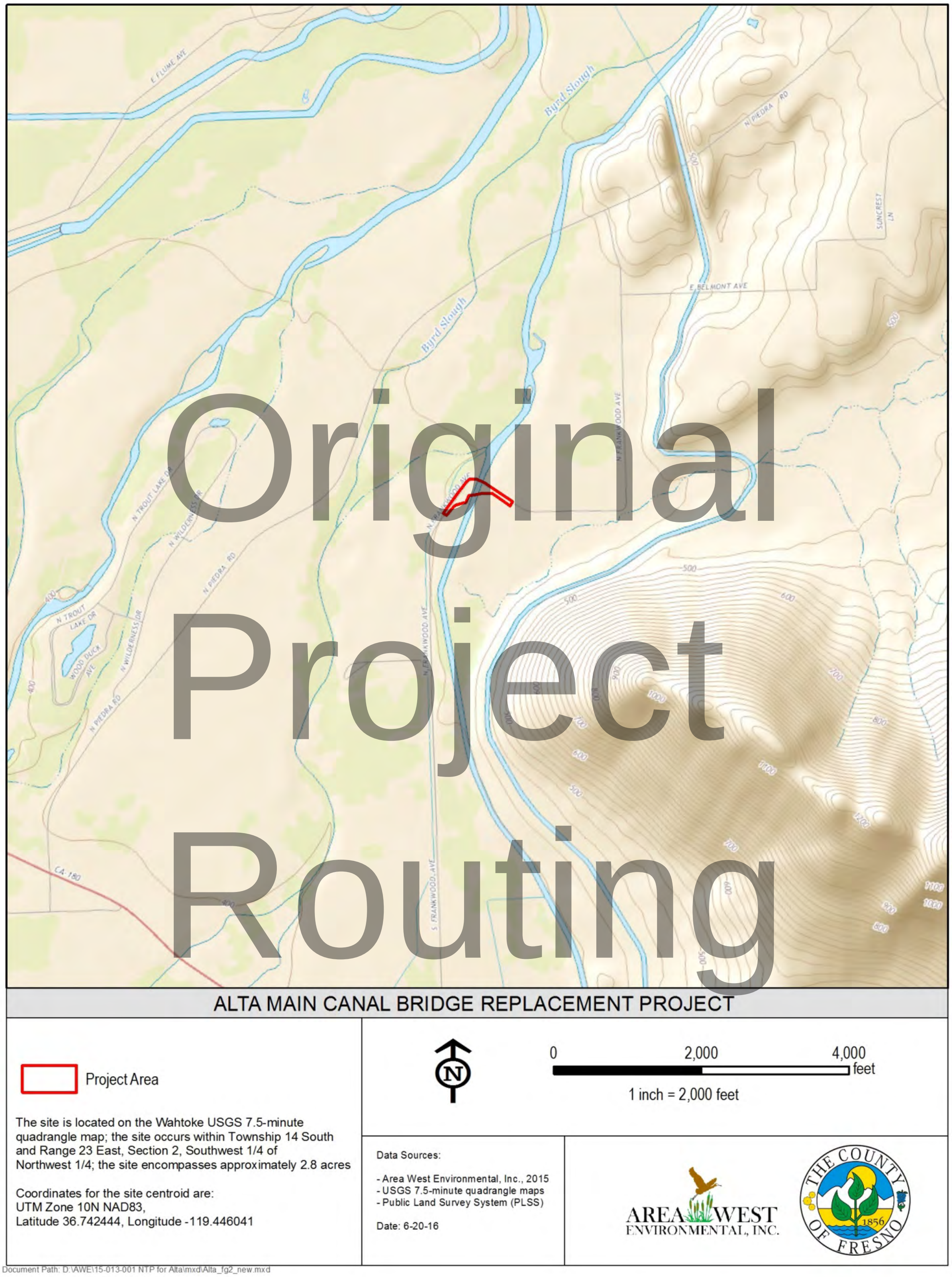


Figure 2. Topographic Location of the Project Area

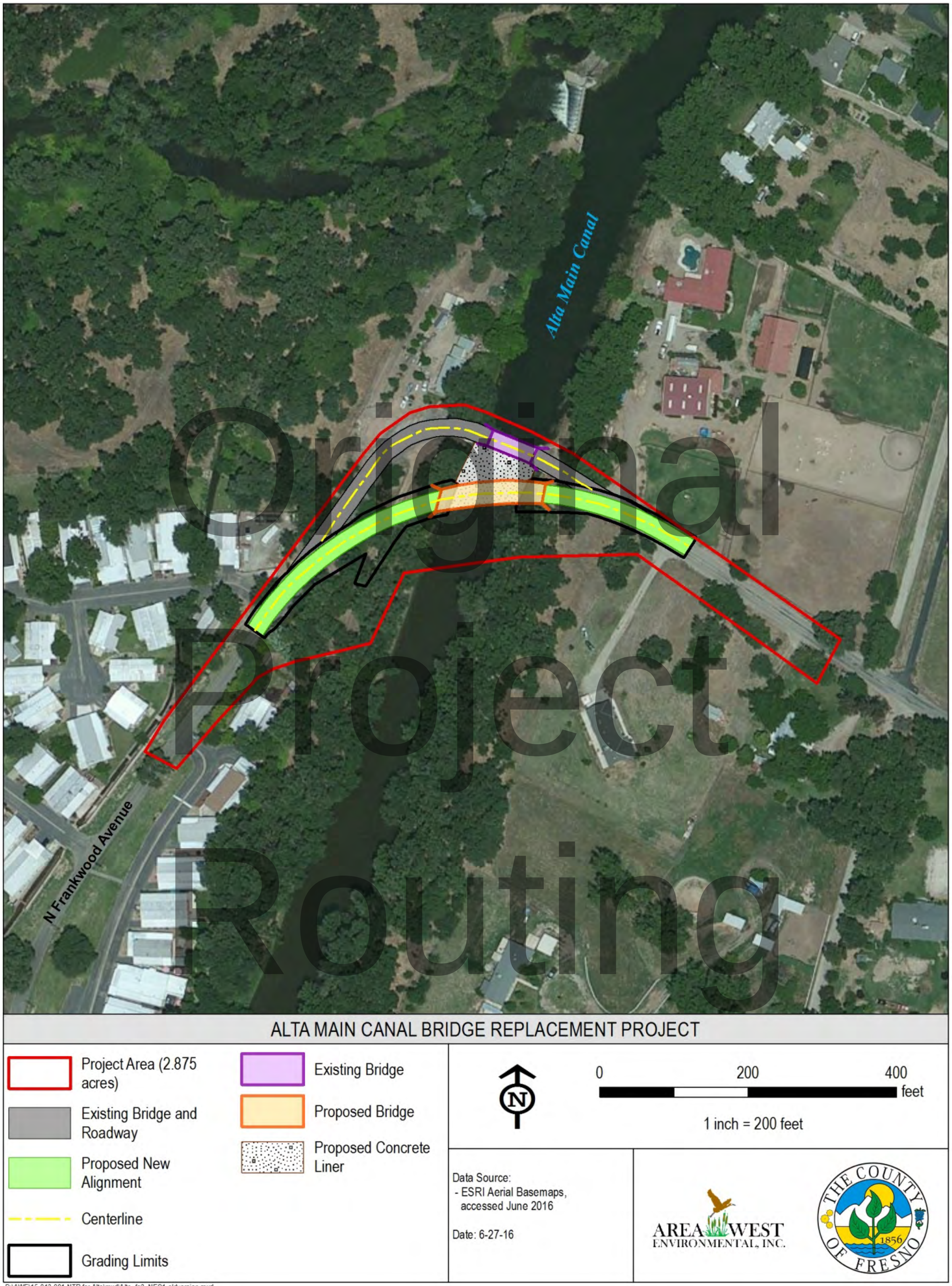


Figure 3. Proposed Project

The existing two-lane bridge (Bridge No. 24C0289), located on North Frankwood Avenue, 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180, is integrated with a controlled weir structure that stretches the full length of the bridge and is owned and operated by the Alta Irrigation District. The existing bridge was built in 1925 and is a four-span cast-in-place/reinforced concrete bridge with asphalt surfacing on the deck.

The proposed two-lane bridge would be an approximately 145-foot-long, four-span, cast-in-place, concrete slab bridge located downstream of the existing bridge (Exhibit A, attached). The proposed bridge will have a curb-to-curb width of 32 feet, while the existing bridge only has a width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot shoulders in each direction, whereas the existing bridge has none. The total width of the bridge deck would be 34.8 feet. Concrete footings would be placed outside the invert of the canal and would be excavated to a depth of about 5.5 feet. All these improvements would meet or exceed American Association of State Highway and Transportation Officials (AASHTO) standards.

The proposed Project would widen the bridge approaches from 19 feet to 32 feet to accommodate the new structure and realign North Frankwood Road to the new bridge location. The alignment change would improve sight distance to the bridge compared to existing conditions. The west bridge approach conform would extend approximately 460 feet from the bridge and the east conform would extend about 345 feet from the bridge, as graphically depicted in Figure 3. The new roadway alignment will require the driveways that serve the properties north of Frankwood to be modified to conform to the new roadway alignment and profile. The access to the Alta Irrigation District (AID) field office (northwest of bridge) may need to be realigned to conform to the new roadway alignment. The roadway and bridge profile is designed to slope from the east to the west, with the maximum slope of 1.15% occurring across the bridge. The intent is for the bridge deck elevation to approximate the elevation of the existing bridge while providing the canal freeboard desired by AID. The preliminary profile shows it will be necessary to partially degrade the north and south banks of the canal to accommodate the realigned Frankwood Avenue. The roadway and bridge realignment will require the acquisition of right-of-way from AID and the Project construction would most likely require temporary construction easements from adjacent property owners. The road right-of-way for the existing bridge and the portions of North Frankwood Avenue that will no longer be needed will be relinquished to AID and possibly gated to control access.

To alleviate access constraints on maintenance activities and to minimize scour, the County is considering the placement of a concrete liner in the canal between the existing bridge and the downstream limit of the proposed bridge. The use of rip-rap is not proposed at this time.

The existing bridge and roadway alignment would function as an onsite detour for vehicular traffic during construction of the Project. Once the Project is completed, the existing bridge would remain intact and continue to serve as an irrigation control structure. Access to the bridge will be limited to the Alta Irrigation District.

Existing Visual Environment

North Frankwood Avenue is not designated by Caltrans as a scenic highway, nor has it been identified by the County as a scenic roadway. The closest officially designated scenic highway to the Project area is State Route 180, which is located approximately 1.5 miles south of the Project (Caltrans, 2016).

Landscape

The Project is located in a rural community in the eastern portion of unincorporated Fresno County, an area that is visually characterized by open expanses of agricultural fields with corridors of native vegetation that border the Kings River and its tributaries. On the west side of Alta Canal, within the Project area, landform along North Frankwood Avenue is generally flat, with terrain east of the road gently sloping upwards towards an unpaved service road/berm that runs parallel to the canal, before sloping back down towards the canal. East of the canal, the landform along the roadway corridor is also flat, with terrain south of the road gently sloping down towards the canal.

There are three forms of land cover within the Project area: water, vegetation, and built development. The primary aquatic feature within the Project area is the Alta Main Canal. The canal, which diverts water from the Kings River, bisects the Project area and flows from north to south. Flows in the canal are controlled by a system of weirs, so water is only present within the portion of the canal south of the existing bridge for approximately four months (May through August) in an average year (Alta Irrigation District, 2016) for irrigation deliveries. The canal and its banks are not concrete lined; the canal is lined with large cobbles (riprap) covered with a sparse layer of herbaceous plants. Alta Irrigation District manages vegetation growth in the channel using herbicide application when the canal is dry.

Vegetation within the Project area consists of both non-native plant species, as well as valley oak woodland and valley oak riparian. Non-native (ornamental) vegetation is primarily located near residential development on either side of North Frankwood Avenue, and includes shrubs and trees such as oleander and weeping cherry. Clusters of valley oak woodland can also be found on the non-canal-fronting sides of the road. Lastly, dense valley oak riparian vegetation is located on either bank of the Alta Main Canal.

Within the Project area, the primary developed features include the road itself, the existing bridge/weir, and a mix of rural residential and mobile homes. Mobile home parks are located on either side of North Frankwood Avenue, west of the canal. A single residential property is also located at the end of the road before it turns east and crosses the canal. On the east side of Alta Main Canal, rural residential properties are located on the north and south sides of the road (see photos in Attachment B).

Visual Receptors and Viewsheds

The primary visual receptors that would be affected by the proposed Project would be local residents and motorists traveling on North Frankwood Avenue. Viewsheds for residents on the west side of North Frankwood Avenue (west of the canal) consist primarily of the road itself, the berm adjacent to the canal, and trees associated with the valley oak riparian corridor along the canal (see Photos 1, 3 and 5 in Attachment B). However, it's worth noting that views from these residents are obscured by a privacy wall that separates the mobile homes from the North Frankwood Avenue. For the resident located at the end of the road (west of the canal and north of the existing bridge/weir), the viewshed includes the roadway corridor, the existing bridge, and the canal and its associated riparian vegetation and unpaved service road (see Photos 2 and 3). Viewsheds for residents on the east side of the canal include the roadway, other rural residential uses, riparian vegetation associated with the canal, and foothills located further east of the Project area (see Photos 9 and 10).

Viewsheds for motorists vary depending on which direction they are traveling on North Frankwood Avenue. Generally, however, for motorists traveling north or south on the road west of the canal, the viewshed is linear and framed by dense vegetation on the east side of the road and a mix of development (residential) and ornamental vegetation on the west side of North Frankwood Avenue (see Photos 1 and 5). For northbound motorists east of the canal, viewsheds open up, providing more expansive views of the surrounding agricultural lands and foothills beyond the Project area (see Photo 6). Meanwhile, southbound motorists on North Frankwood Avenue (east of the canal) have views of the existing bridge, the riparian vegetation along the canal's corridor, and rural residential uses on the north and south sides of the road (see Photo 9).

Visual Impacts Assessment

An assessment of the Project area and preliminary Project plans indicate that construction of the proposed bridge and roadway realignment would result in the removal of approximately 31 trees within the oak riparian habitat along the canal corridor (Figure 4), the creation of additional paved surface, partial degrading of the north and south banks of the canal, and the placement of an additional developed structure over the Alta Main Canal.

Given the current road and bridge, the introduction of additional roadway pavement and the new bridge would not be inconsistent with the setting of the Project area or the existing visual elements within the viewsheds of local residents and motorists. Removal of valley oak riparian habitat along the canal would constitute a loss of scenic resources; however, the new road and bridge are in general alignment with an existing overhead powerline, the maintenance of which has required substantial pruning and subsequent disfiguring of the trees along its route.

Approximately half of the trees to be removed are along this corridor (Figure 4). Placing the roadway in this location reduces the number of mature picturesque oaks to be removed and, assuming the powerline is relocated in a more appropriate location beyond the reach of growing trees, will reduce future tree-trimming maintenance on the powerline easement. . For residents on the east side of the canal, removal of vegetation and construction of the new bridge and roadway alignment would not result in significant degradation to their viewsheds, given that their homes are substantially offset from the existing road and generally obscured by other vegetation. Additionally, areas disturbed by construction of the Project, but not permanently paved over, will be re-seeded; thus reducing the overall effect of removed vegetation.

Motorists traveling on North Frankwood Avenue are less likely to be affected by changes to viewsheds within the Project area, as their focus is primarily on the road and there are no stop signs or signals that would cause them to pause in this area. Furthermore, while the realignment of North Frankwood Avenue will be noticeable to local motorists familiar with this particular stretch of road, the softening of the turn onto the proposed bridge and lowering of the canal banks will create a more open viewshed, particularly for travelers heading north; enhancing the site's overall scenic value by providing views of visual elements beyond the Project area, such as the distant hillsides to the east.

Given the mix of developed and natural resources within the Project area, the fact that views of the proposed bridge and road realignment would be obscured to most residents, and that softening of the alignment of North Frankwood Avenue would open up views of the surrounding area for northbound motorists, implementation of the proposed Project would not result in substantial, adverse impacts to the visual environment or adversely affect any "Designated Scenic Resource" as defined by the California Environmental Quality Act or Caltrans policy.

Please call me or Phil Wade at (916) 987-3362 with any questions.

Sincerely,

Aimee Dour-Smith

Aimee Dour-Smith

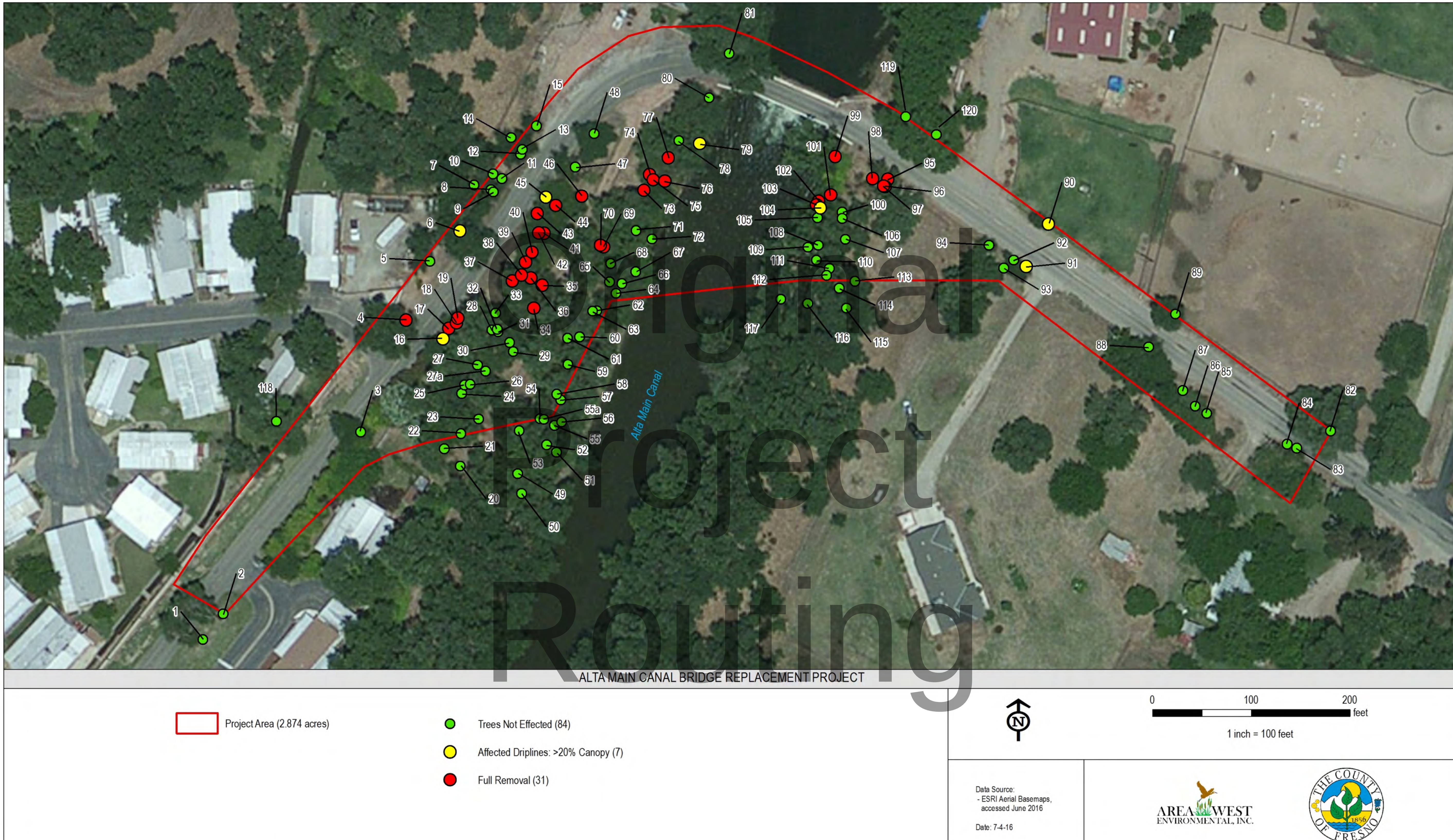


Figure 4. Trees in the Project Area

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Original Project Routing

References

Alta Irrigation District, 2016. Personal email communication with Javier Cavazos on June 14, 2016.

Caltrans, 2016. California Scenic Highway Mapping System. Accessed at http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/ on June 21, 2016.

Attachments

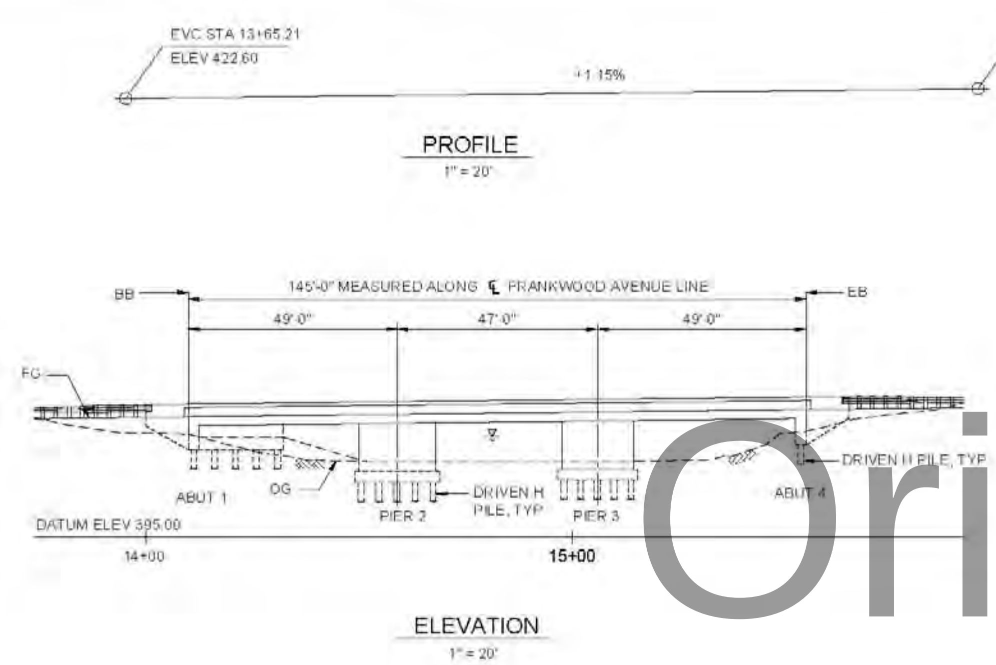
Exhibit A. Preliminary Bridge Design
Attachment A. Questionnaire to Determine VIA Level
Attachment B. Representative Photographs

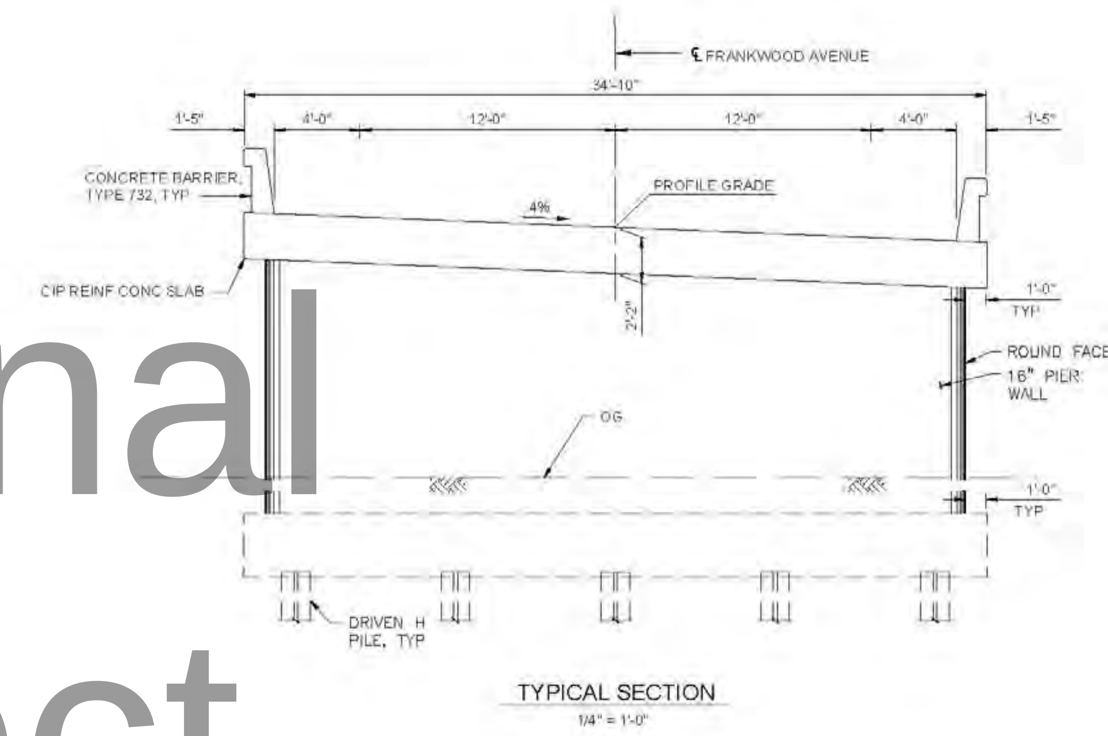
Original Project Routing

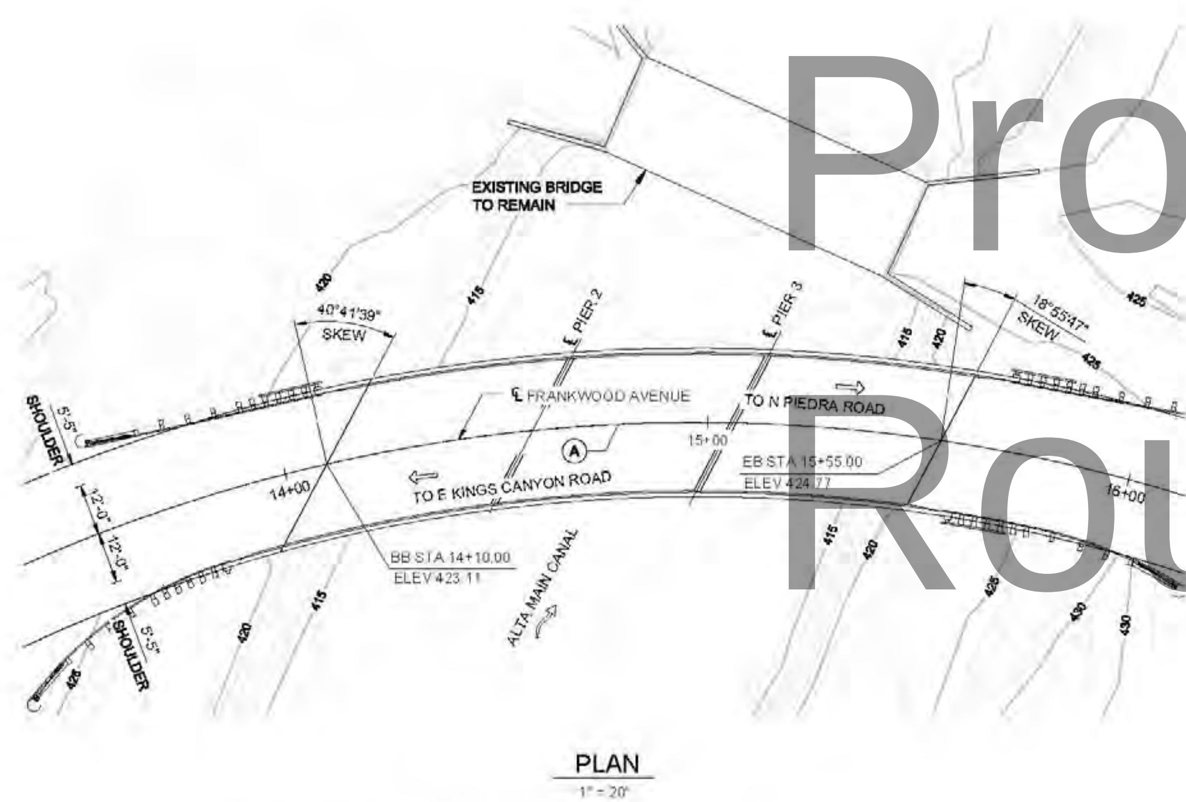
Original Project Routing

Exhibit A: Preliminary Bridge Design

Original Project Routing







LEGEND

⇨ INDICATES DIRECTION OF TRAFFIC

⇝ INDICATES DIRECTION OF FLOW

CURVE DATA TABLE

NO	CURVE STATION BEGIN	CURVE STATION END	RADIUS (FT)	LENGTH (FT)	TANGENT (FT)	DELTA (°)
A	11+49.68	17+39.43	390.00	589.75	367.81	86°38'57.6"

3-SPAN CIP REINF CONCRETE SLAB ALTERNATIVE (2 FT FREEBOARD)

	DATE	RECORD DRAWING		SCALE
DESIGNED TH	01/01/2016	RESIDENT ENGINEER	DATE	PLAN 0 20' 40' HZ
DRAWN KW	05/30/2016			
CHECKED RES	05/30/2016			

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER — DATE

REGISTERED PROFESSIONAL ENGINEER R. E. SENNETT No. 3878 Exp. 12/31/16 STRUCTURAL STATE OF CALIFORNIA

PROJECT
ALTA MAIN CANAL BRIDGE REPLACEMENT ON N. FRANKWOOD AVENUE
1.7 MILES NORTH OF SR 180
ROAD NO. N/A BRIDGE NO. 42C-0298

THE COUNTY OF FRESNO

DEPARTMENT OF PUBLIC WORKS AND PLANNING

GENERAL PLAN
BRIDGE

DRAWING NO. — SHEET NO. 1 TOTAL 10

Original
Project
Routing

Attachment A: Questionnaire to Determine VIA Level

Original Project Routing

Questionnaire to Determine Visual Impact Assessment (VIA) Level

Use the following questions and subsequent score as a guide to help determine the appropriate level of VIA documentation. This questionnaire assists the VIA preparer (i.e. Landscape Architect) in estimating the probable visual impacts of a proposed project on the environment and in understanding the degree and breadth of the possible visual issues. The goal is to develop a suitable document strategy that is thorough, concise and defensible.

Enter the project name and consider each of the ten questions below. Select the response that most closely applies to the proposed project and corresponding number on the right side of the table. Points are automatically computed at the bottom of the table and the total score should be matched to one of the five groups of scores at the end of the questionnaire that include recommended levels of VIA study and associated annotated outlines (i.e., minor, moderate, advanced/complex).

This scoring system should be used as a preliminary guide and should not be used as a substitute for objective analysis on the part of the preparer. Although the total score may recommend a certain level of VIA document, circumstances associated with any one of the ten question-areas may indicate the need to elevate the VIA to a greater level of detail. For projects done by others on the State Highway System, the District Landscape Architect should be consulted when scoping the VIA level and provide concurrence on the level of analysis used.

Calculate VIA Level Score

PROJECT NAME: Alta Main Canal Bridge Replacement on Frankwood Avenue	
CHANGE TO VISUAL ENVIRONMENT	
1. Will the project result in a noticeable change in the physical characteristics of the existing environment? *Consider all project components and construction impacts - both permanent and temporary, including landform changes, structures, noise barriers, vegetation removal, railing, signage, and contractor activities.*	Low Level of Change (1 point)
2. Will the project complement or contrast with the visual character desired by the community? Evaluate the scale and extent of the project features compared to the surrounding scale of the community. Is the project likely to give an urban appearance to an existing rural or suburban community? Do you anticipate that the change will be viewed by the public as positive or negative? Research planning documents, or talk with local planners and community representatives to understand the type of visual environment local residents envision for their community.	High Compatibility (1 point)
3. What level of local concern is there for the types of project features (e.g., bridge structures, large excavations, sound barriers, or median planting removal) and construction impacts that are proposed? Certain project improvements can be of special interest to local citizens, causing a heightened level of public concern, and requiring a more focused visual analysis.	Low Concern (1 point)
4. Will the project require redesign or realignment to minimize adverse change or will mitigation, such as landscape or architectural treatment, likely be necessary? Consider the type of changes caused by the project, i.e., can undesirable views be screened or will desirable views be permanently obscured so a redesign should be considered?	Mitigation Likely (1 point)
5. Will this project, when seen collectively with other projects, result in an aggregate adverse change (cumulative impacts) in overall visual quality or character? Identify any projects (both Caltrans and local) in the area that have been constructed in recent years and those currently planned for future construction. The window of time and the extent of area	Cumulative Impacts Unlikely to Occur (1 point)

applicable to possible cumulative impacts should be based on a reasonable anticipation of the viewing public's perception.	
VIEWER SENSITIVITY	
1. What is the potential that the project proposal will be controversial within the community, or opposed by any organized group? This can be researched initially by talking with Caltrans and local agency management and staff familiar with the affected community's sentiments as evidenced by past projects and/or current information.	Low Potential (1 point)
2. How sensitive are potential viewer-groups likely to be regarding visible changes proposed by the project? Consider among other factors the number of viewers within the group, probable viewer expectations, activities, viewing duration, and orientation. The expected viewer sensitivity level may be scoped by applying professional judgment, and by soliciting information from other Caltrans staff, local agencies and community representatives familiar with the affected community's sentiments and demonstrated concerns.	Low Sensitivity (1 point)
3. To what degree does the project's aesthetic approach appear to be consistent with applicable laws, ordinances, regulations, policies or standards? Although the State is not always required to comply with local planning ordinances, these documents are critical in understanding the importance that communities place on aesthetic issues. The Caltrans Environmental Planning branch may have copies of the planning documents that pertain to the project. If not, this information can be obtained by contacting the local planning department. Also, many local and state planning documents can be found online at the California Land Use Planning Network.	High Compatibility (1 point)
4. Are permits going to be required by outside regulatory agencies (i.e., Federal, State, or local)? Permit requirements can have an unintended consequence on the visual environment. Anticipated permits, as well as specific permit requirements - which are defined by the permitted, may be determined by talking with the project Environmental Planner and Project Engineer. Note: coordinate with the Caltrans representative responsible for obtaining the permit prior to communicating directly with any permitting agency.	Yes (3 points)
5. Will the project sponsor or public benefit from a more detailed visual analysis in order to help reach consensus on a course of action to address potential visual impacts? Consider the proposed project features, possible visual impacts, and probable mitigation recommendations.	No (1 point)
Calculate Total It is recommended that you print a copy of these calculations for the project file.	
PROJECT SCORE: 12	

Select An Outline Based Upon Project Score

The total score will indicate the recommended VIA level for the project. In addition to considering circumstances relating to any one of the ten questions-areas that would justify elevating the VIA level, also consider any other project factors that would have an effect on level selection.

SCORE 6-9

No noticeable visual changes to the environment are proposed and no further analysis is required. Print out a copy of this completed questionnaire for your project file or Preliminary Environmental Study (PES).

SCORE 10-14

Negligible visual changes to the environment are proposed. A brief Memorandum (see sample) addressing visual issues providing a rationale why a technical study is not required.

SCORE 15-19

Noticeable visual changes to the environment are proposed. An abbreviated VIA is appropriate in this case. The assessment would briefly describe project features, impacts and any avoidance and minimization measures. Visual simulations would be optional. Go to the Directions for using and accessing the Minor VIA Annotated Outline.

SCORE 20-24

Noticeable visual changes to the environment are proposed. A fully developed VIA is appropriate. This technical study will likely receive public review. Go to the Directions for using and accessing the Moderate VIA Annotated Outline.

SCORE 25-30

Noticeable visual changes to the environment are proposed. A fully developed VIA is appropriate that includes photo simulations. It is appropriate to alert the Project Development Team to the potential for highly adverse impacts and to consider project alternatives to avoid those impacts. Go to the Directions for using and accessing the Advanced/Complex VIA Annotated Outline.

Original Project Routing

Original

Attachment B: Representative Photographs

Project

Routing

Original Project Routing

ALTA MAIN CANAL BRIDGE REPLACEMENT PROJECT

Project Area

Photo Point and Direction

N

0 200 400 feet

1 inch = 200 feet

Data Source:
- ESRI Aerial Basemaps, accessed June 2016

Date: 6-22-16

AREA WEST ENVIRONMENTAL, INC.

THE COUNTY OF FRESNO 1856

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 Photo 1. Mobile home park and privacy wall (left) along North Frankwood Avenue (facing north). This view would not change with new construction. Taken on June 10, 2016.	 Photo 2. Access road within valley oak riparian habitat (facing north). The new roadway and bridge would cross the center of this image. Trees on both sides of the access road would be removed. The dirt access road would remain. Taken on June 10, 2016.
 Photo 3. North Frankwood Avenue (facing south). The trees on the right-hand side of the photo would remain. The background trees on the left would be removed. The new road would be constructed just beyond the large foreground tree on the left. Taken on June 10, 2016.	 Photo 4. Alta Main Canal and associated oak woodland riparian habitat (facing east). This view would remain unchanged, but be visible on the new bridge. Taken on June 10, 2016.

Photo 5. Mobile home park and privacy fencing (left), roadway signage and ornamental vegetation (right) along North Frankwood Avenue (facing north). The new road would begin approximately here, and trees and shrubs on the right-hand side of the photo would be removed.
Taken on June 10, 2016.

Photo 6. Existing bridge (facing east).
Taken on June 10, 2016. This view would not change with new construction.

Photo 7. Alta Main Canal and existing bridge (facing north). New bridge would cross through the center of this photo. The trees on the right-hand bank would be removed.
Taken on June 10, 2016.

Photo 8. Existing bridge (facing west). This view would not change with new construction.
Taken on June 10, 2016.

Photo 9. Rural residential property (left) located east of the canal (facing west). The new road would rejoin the existing road just behind the foreground trees, which would remain. Taken on June 10, 2016.

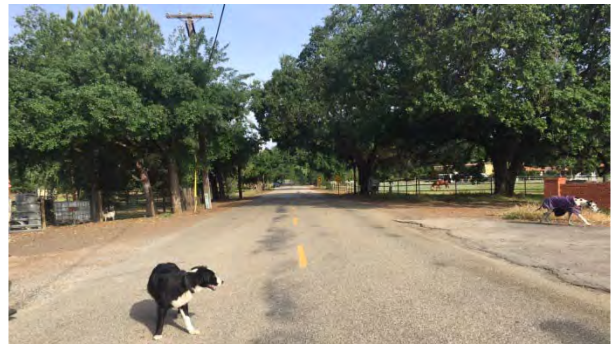

Photo 10. North Frankwood Avenue (east of canal) facing west. This view would not change with new construction. Taken on April 29, 2016.

Alta Main Canal Bridge Replacement Project

Bridge No. 42C-0289

Water Quality Technical Memorandum

Fresno County, California
Wahtoke 7.5-Minute Quadrangle,
Township 9 South, Range 23 East, Section 2
Caltrans, District 6
BRLO-5942(247)

October 2016

Original
Project
Routing

Water Quality Technical Memorandum

Alta Main Canal Bridge Replacement Project

Fresno County, California

Caltrans District 6 – Fresno County

BRLO-5942 (247)

October 2016

STATE OF CALIFORNIA

Department of Transportation

Prepared by: ______________________ Date: 10/17/16

Becky Rozumowicz, QSD/QSP (#20991)
(916) 987-3362
Area West Environmental
6248 Main Avenue, Suite C,
Orangevale CA 95662

Recommended for Acceptance by: ______________________ Date: 11/7/16

Pedram Mafi, Transportation Engineer
(559) 445-6470
Caltrans District 6
Local Assistance

Accepted by: ______________________ Date: 11/8/16

Shane Gunn, Branch Chief
(559) 445-6310
Caltrans District 6
Environmental Analysis, Planning and Local Programs

Original Project Routing

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Shane Gunn, San Joaquin Valley Management Branch, 855 "M" Street, Ste. 200, Fresno, CA 93721, (559) 445-6310 (Voice), or use the California Relay Service 1(800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

EXECUTIVE SUMMARY

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is proposing to replace the existing two-lane, bridge No. 42C0289 on North Frankwood Avenue over the Alta Main Canal (Project) with the construction of a new bridge built to current standards on a new alignment. Replacement of the bridge would also require the realignment and widening of North Frankwood Avenue, softening the existing curve in the road, and improving overall sight distance. The existing bridge would remain in place and continue to function as a weir and maintenance access for the Alta Irrigation District. Additionally, the County is considering the placement of a concrete liner in the canal between the existing bridge and the downstream limit of the proposed bridge to minimize scour. Alternatively, rock slope protection could be placed around the piers to address scour potential. The proposed Project will be funded by the Federal Highway Bridge Program and therefore requires both compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The lead agency for CEQA compliance is the County; the federal lead agency for NEPA compliance is Caltrans, as authorized under the NEPA Assignment Memorandum of Agreement between Caltrans and Federal Highway Administration.

Existing Conditions

The Alta Main Canal, operated by the Alta Irrigation District, diverts surface flow from the Kings River for irrigation deliveries. Water quality within the canal is dependent upon the water quality of the Kings River at the entry point at Cobbles Weir. The Alta Irrigation District's Agricultural Water Management Plan (Alta Irrigation District 2015) includes regulations protecting water quality from trash or debris and discharge into the canal system.

Water Quality Impacts

Construction activities would result in disturbance within and adjacent to the canal. Project construction would not result in a substantial change in runoff or discharge direction. The increase in impervious surface from roadway construction and canal lining could lead to an increase in stormwater runoff rates or volumes. There is potential for erosion to occur from areas along the levee slopes where trees and other vegetation is removed for the new road alignment.

A storm water pollution prevention plan (SWPPP) would identify Project-specific best management practices (BMPs) to protect water quality from construction activities. Compliance with the construction general permit (CGP) and SWPPP would ensure that water quality standards would not be violated. There are no known concurrent construction projects within the Project vicinity that would affect water quality in Alta Main Canal; therefore, no cumulative impacts are expected.

Anticipated Permits

The following permits may be required for the Project:

- A National Pollutant Discharge Elimination System (NPDES) permit and waste discharge requirements (WDRs) or waiver of WDRs from the Central Valley Regional Water Quality Control Board (CVRWQCB)
- California Department of Fish and Wildlife (CDFW) Section 1602 Streambed Alteration Agreement
- Central Valley Flood Protection Board (CVFPB) encroachment permit

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Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
AASHTO	American Association of State Highway and Transportation Officials
AGR	Agricultural Supply (irrigation and stock watering)
Basin Plan	Tulare Lake Basin RWQCB Water Quality Control Plan
BMP	best management practice
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CGP	Construction General Permit
CIDH	cast-in-drilled hole
County	County of Fresno
CVFPB	Central Valley Flood Protection Board
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DSA	disturbed surface area
DWR	California Department of Water Resources
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GWR	Groundwater Recharge
HUC	Hydrologic Unit Code
LEDPA	least environmentally damaging practicable alternative
Memorandum	Water Quality Technical Memorandum
MS4	Municipal Separate Storm Sewer System
MUN	municipal and domestic supply
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTU	nephelometric turbidity units
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PRO	Industrial Process Supply
Project	Alta Main Canal Bridge Replacement Project
REC-1	Water Contact Recreation
REC-2	Non-water Contact Recreation
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SFHA	Special Flood Hazard Areas
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load

USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WARM	Warm Freshwater Habitat
WDR	Waste Discharge Requirements
WILD	Wildlife Habitat
WRCC	Western Regional Climate Center
WPCP	Water Pollution Control Plan
WQCP	Water Quality Control Plan

Chapter 1 INTRODUCTION

The County of Fresno (County), in cooperation with the California Department of Transportation (Caltrans), is proposing to replace the existing bridge on North Frankwood Avenue over the Alta Main Canal (Canal) with the construction of a new bridge built to current standards on a new alignment (Project). Construction of the new bridge would require the realignment and widening of North Frankwood Avenue. This realignment and widening will soften the existing curve in the road and improve overall sight distance. The proposed Project will be funded by the Federal Highway Bridge Program and therefore requires both compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The lead agency for CEQA compliance is the County; the federal lead agency for NEPA compliance is Caltrans, as authorized under the NEPA Assignment Memorandum of Agreement between Caltrans and Federal Highway Administration.

The existing two-lane bridge (Bridge No. 24C0289), located on North Frankwood Avenue 1.15 miles south of Piedra Road and 1.7 miles north of State Route 180, is integrated with a controlled weir structure that stretches the full length of the bridge, and is owned and operated by the Alta Irrigation District. The existing bridge was built in 1925 and is a four-span cast-in-place/reinforced concrete bridge with asphalt surfacing on the deck.

1.1 Purpose and Need

The purpose of the proposed Project is to construct a new, wider bridge and bridge approaches that meet current design standards, improve sight distance and improve the curve radius to eliminate the 15 mile per hour curve at the west end of the existing bridge. The existing bridge has been listed by Caltrans as functionally obsolete. Deficiencies in the Alta Main Canal Bridge include: transverse deck cracking over the bents, longitudinal and pattern cracking, insufficient curb-to-curb clear width, narrow traffic lanes and shoulders, narrow and winding approach roads with sight distance, and guardrails and railings that do not meet American Association of State Highway and Transportation Officials (AASHTO) standards. The Project is needed to replace a functionally deficient bridge and improve overall safety conditions along North Frankwood Avenue.

1.2 Project Location

The proposed Project is located approximately 9 miles northeast of the City of Sanger, California and 2.5 miles east of the unincorporated community of Centerville, California (Figure 1-1). Specifically, the proposed Project is located in Section 2, Range 23 East, and Township 14 South of the Wahtoke U.S. Geological Survey (USGS) 7.5-minute quadrangle map (Figure 1-2).

The Project area consists of North Frankwood Avenue where it crosses over the Alta Main Canal, an artificial irrigation canal that diverts flows from the Kings River. The Project area consists mainly of riparian woodland habitat, paved road (North Frankwood Avenue), and dirt access roads. The Project area encompasses the limits of work, which would consist of areas of permanent (e.g. new roadway, bridge footings, etc.) and temporary (e.g., construction staging areas) alteration. Surrounding land uses consist of agriculture/pasture fields and low-density rural residential housing. A mobile home community and a golf course is located immediately southwest of the proposed Project.

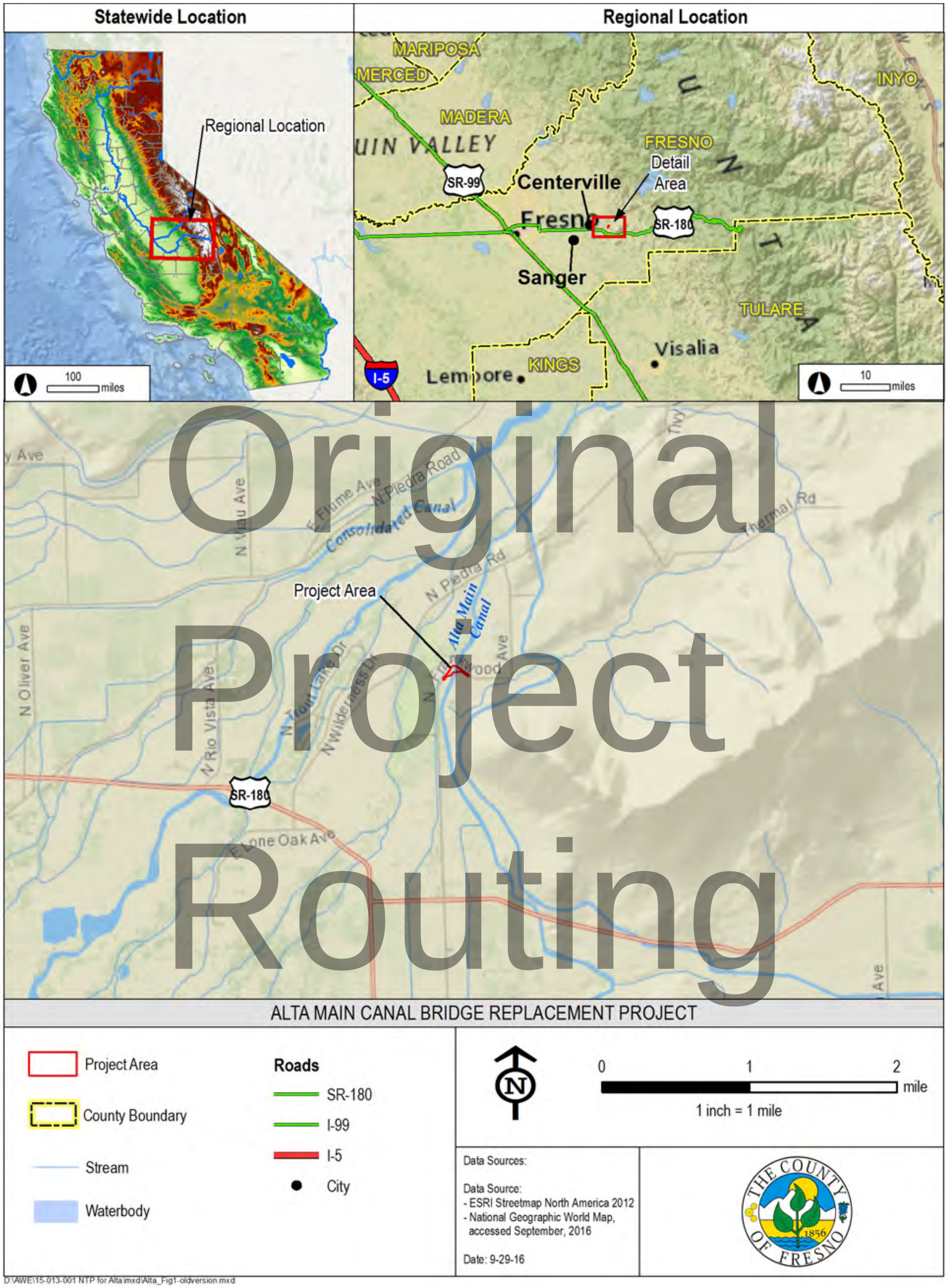

Figure 1-1. Project Vicinity

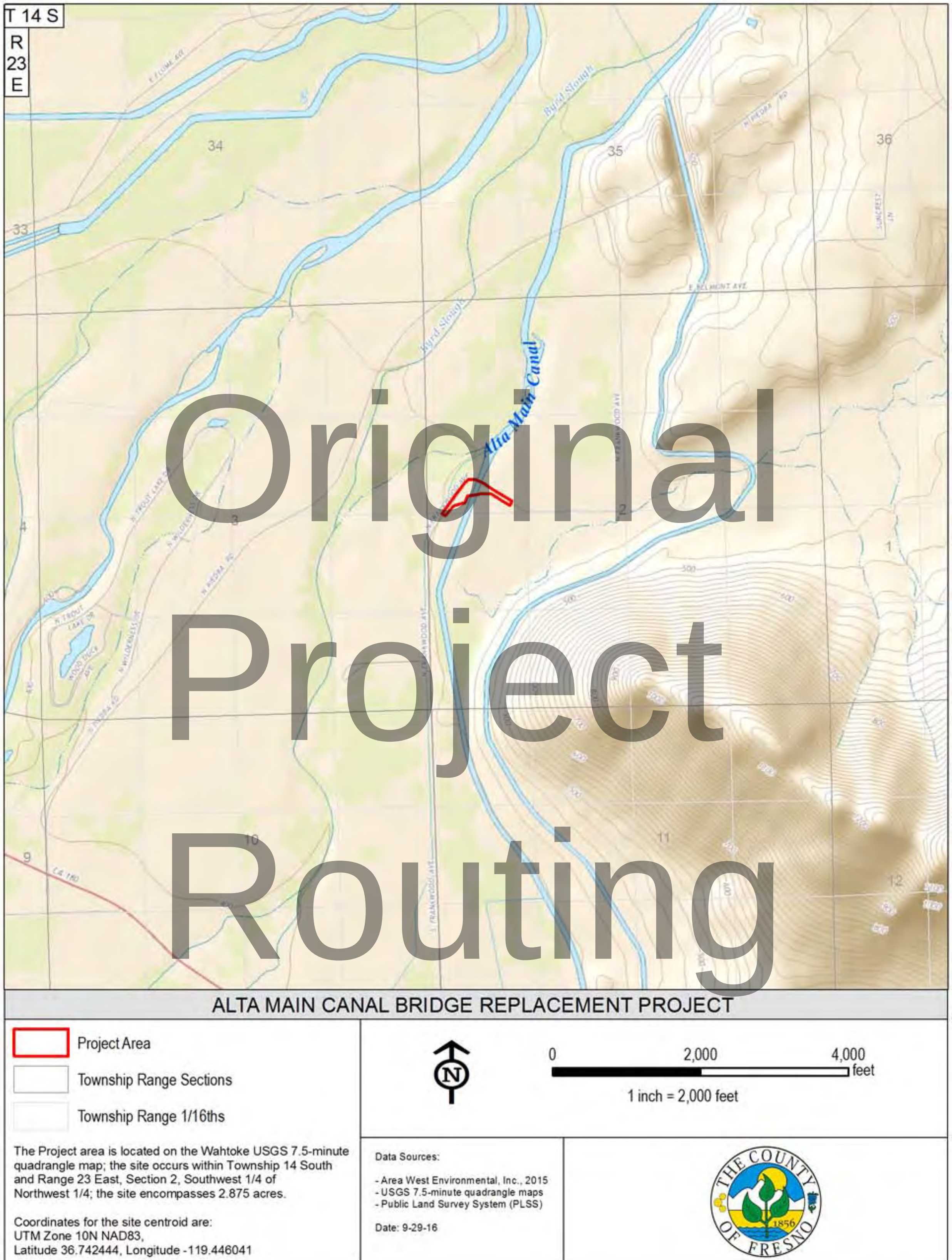

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Figure 1-2. Project Location

1.3 Proposed Project

The proposed two-lane bridge would be an approximately 145-foot-long, three-span, cast-in-place, concrete slab bridge located downstream of the existing bridge (Figure 1-3). The proposed bridge will have curb-to-curb width of 32 feet, while the existing bridge only has a width of 16.4 feet. This would increase lane widths from 8.2 feet to 12 feet. Construction of the proposed bridge would also add 4-foot shoulders in each direction, whereas the existing bridge has none. The total width of the bridge deck would be 34.8 feet (Figure 1-4). Concrete footings would be placed outside the invert of the canal and would be excavated to a depth of about 5.5 feet. All these improvements to the existing bridge would meet or exceed AASHTO standards.

The proposed Project would widen the bridge approaches from 19 feet to 32 feet to accommodate the new structure and realign North Frankwood Road to the new bridge location. The alignment change would improve sight distance to the bridge compared to existing conditions. The west bridge approach conform extends about 460 feet from the bridge and the east conform extends about 345 feet from the bridge. The new roadway alignment will require the driveways that serve the properties north of Frankwood Avenue to be modified to conform to the new roadway alignment and profile. The access to the Alta Irrigation District field office (northwest of bridge) will need to be realigned to conform to the new roadway alignment. The roadway and bridge profile is designed to slope from the east to the west, with the maximum slope of 1.15% occurring across the bridge. The intent is for the bridge deck elevation to approximate the elevation of the existing bridge while providing the canal freeboard desired by the Alta Irrigation District. The preliminary profile shows it will be necessary to partially degrade the north and south banks of the canal to accommodate the realigned Frankwood Avenue, but will not encroach on the canal freeboard. The roadway and bridge realignment will require the acquisition of right-of-way from Alta Irrigation District, and the Project construction would most likely require temporary construction easements from adjacent property owners.

The existing bridge and roadway alignment would function as an onsite detour for vehicular traffic during construction of the Project. Once the Project is completed, the existing bridge would remain intact and continue to serve as an irrigation control structure; access to the bridge will be limited to the Alta Irrigation District.

To alleviate access constraints on maintenance activities and to minimize scour, the County is considering the placement of a concrete liner in the canal between the existing bridge and the downstream limit of the proposed bridge. The use of rip-rap is not proposed at this time. However, if the concrete liner is not constructed, rock slope protection may be placed around the piers to address scour potential.

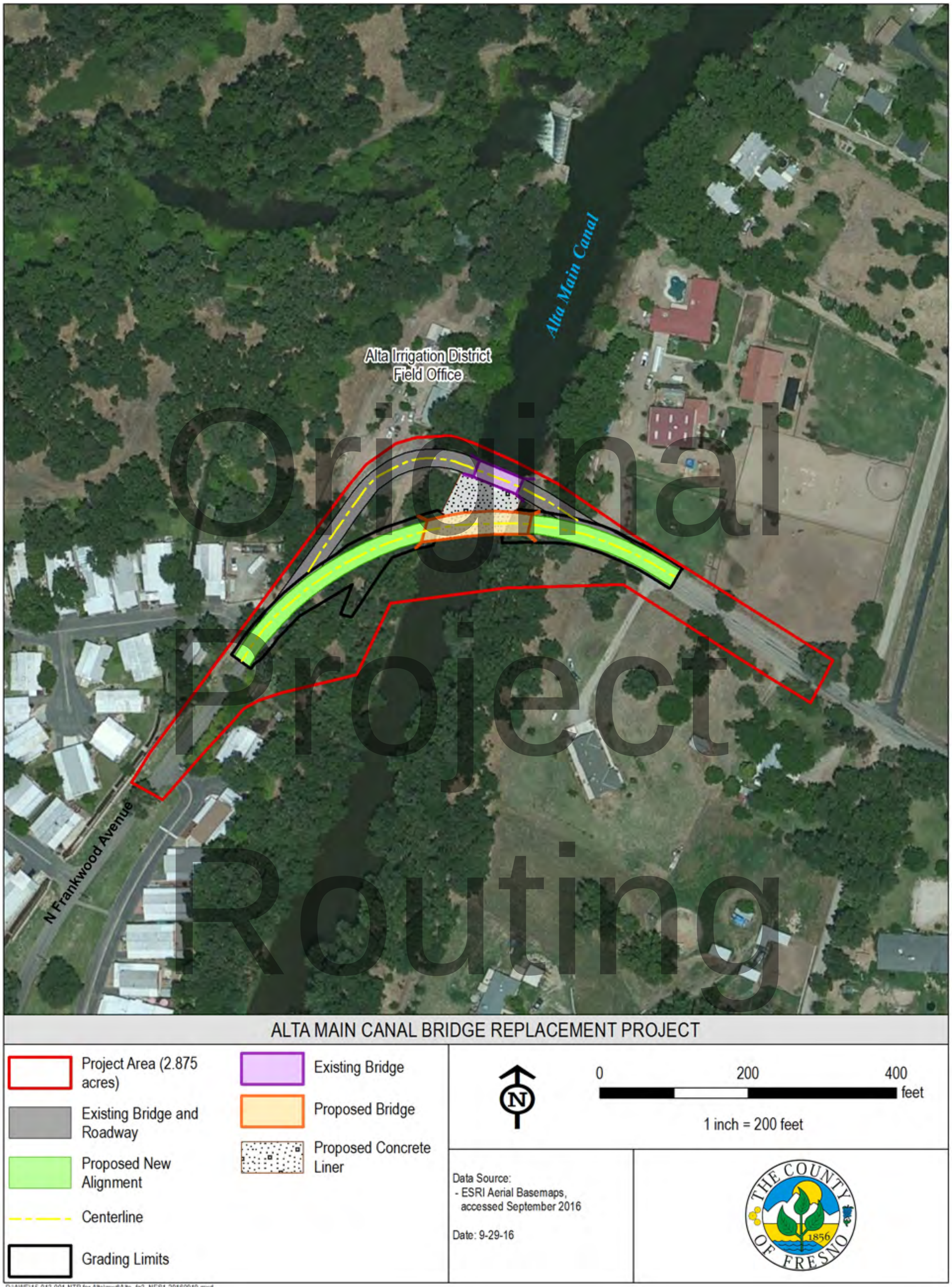

Figure 1-3. Project Location with Proposed Alignment

Original Project Routing

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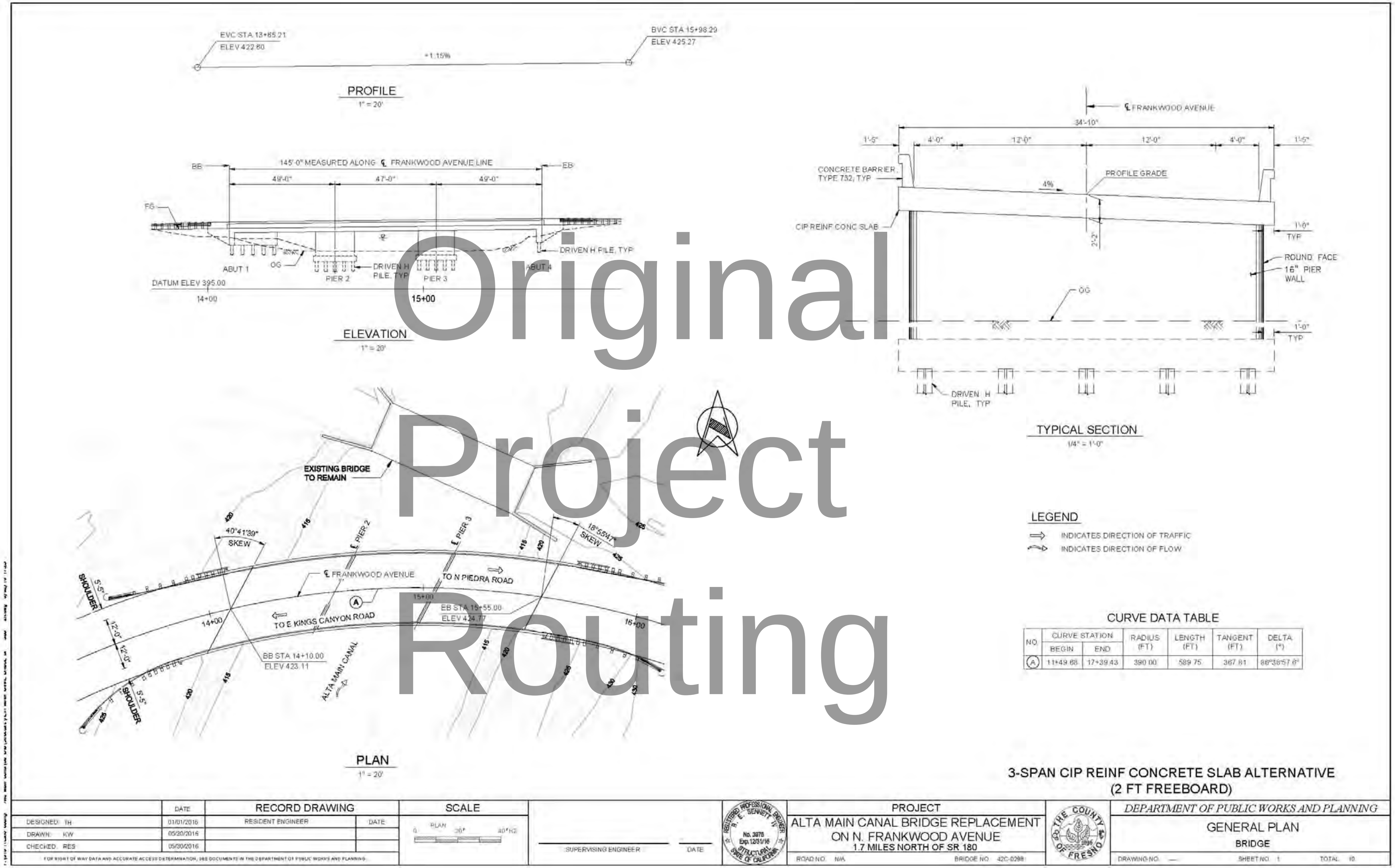

Figure 1-4. Preliminary Bridge Design

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1.3.1.1 Construction Methods and Schedule

New bridge construction will require temporary access to the canal to provide temporary formwork for the new abutments and piers. It is anticipated that bridge abutments would be diaphragm abutments supported on driven "H" piles. At the pier locations, driven "H" piles would support solid pier walls that would be aligned with the centerline of the canal. Because Alta Irrigation District operates the canal during the spring/summer irrigation season (typically May through August), bridge construction will occur during the fall/winter season when the canal is not in operation and will have minimal flow. The canal gates on the control structure do not seal; therefore, it will be necessary to install a temporary water diversion within the channel to divert canal flows from the work area. Based on preliminary estimates, the project is anticipated to require one construction season and approximately 100-120 working days (5 to 6 months) to complete.

Construction staging would occur within the Project area (Figure 1-3), including areas that are paved or have been previously disturbed in the Project area, or in other areas negotiated by the contractor. The disturbed surface area (DSA) is estimated at 2.875 acres, with the same boundaries as the Project area, as staging and construction activities could occur throughout the Project area. The contractor would be responsible for ensuring environmental clearance for any staging areas outside the Project area evaluated in this report. Expected activities in staging areas include but are not limited to the following:

- Worker parking;
- Assembly area for formwork and active equipment use (e.g., cranes, concrete pump trucks);
- Overnight parking and temporary storage of construction equipment;
- Fueling and maintenance of construction equipment;
- Temporary storage of construction materials; and
- Construction trailers for the contractor, resident engineer, and/or inspector (if needed).

Typical construction equipment will include, but is not limited to, those listed in Table 1-1 below.

1.4 No Build Alternative

The No Build Alternative assumes that no changes would be made to the existing bridge and alignment. Adopting the No Build Alternative would not meet the Project purpose of improving safety at the bridge crossing and meeting AASHTO design standards.

Table 1-1. Proposed Construction Equipment

Equipment	Construction Purpose
Asphalt Concrete Paver	Paving roadways
Backhoe	Soil manipulation and drainage work
Bobcat	Fill distribution
Bulldozer/Loader	Earthwork construction, cleaning and grubbing
Crane	Placement of placing of forms and rebar
Concrete Truck	Concrete delivery
Concrete Pump	Concrete placing
Dump Truck	Fill material delivery/surplus removal
Excavator	Soil manipulation
Front –end Loader	Dirt or gravel manipulation
Grader	Ground leveling
Haul Truck	Earthwork construction; clearing and grubbing
Pile Driving Hammers and Equipment	Bridge pile placement
Roller / Compactor	Earthwork construction
Scraper	Earthwork construction; clearing and grubbing
Truck with Seed Sprayer	Landscaping
Water Truck	Earthwork construction; clearing and grubbing; dust suppression

1.5 Approach to Water Quality Technical Memorandum

The primary purpose of this Water Quality Technical Memorandum (Memorandum) is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and provide information, to the extent possible, for the National Pollution Discharge Elimination System (NPDES) permitting. Section 1.1 of this Memorandum provided a description of the proposed Project. The following sections include the regulatory framework with respect to water quality and physical setting of the Project area. Data on surface water and groundwater resources within the Project area is also provided. Potential water quality impacts that could arise from construction are documented, and recommendations for best management practices (BMPs) to minimize potential adverse impacts on water quality are proposed.

Chapter 2 REGULATORY SETTING

Water resource protection in California is governed by a complex network of federal and State regulations, enforced by the State under the supervision of the U.S. Environmental Protection Agency (USEPA). Both federal and State laws have been created to protect surface water quality for use as domestic, agricultural, industrial supply, recreation, freshwater fish and aquatic invertebrate habitat. Federal and State laws have also been developed to protect the quality of groundwater resources to meet drinking water standards and anti-degradation objectives. Although most of the initial regulatory programs focused on point sources of contamination, such as municipal and industrial facilities, recent programs are intended to address non-point sources. Water quality protection regulations relevant to this Project are summarized below.

2.1 Federal Laws and Requirements

2.1.1 Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to waters of the U.S. from any point source unlawful unless the discharge is in compliance with a NPDES permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit requirements. Important CWA sections include:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines. The federal Clean Water Act requires states to identify and make a list of surface water bodies that are polluted. These water bodies, referred to in law as "water quality limited segments," do not meet water quality standards even after discharges of wastes from point sources have been treated by the minimum required levels of pollution control technology. States must compile these waterbodies into a list, referred to as the "Clean Water Act Section 303(d) list of Water Quality Limited Segments," and develop Total Maximum Daily Loads (TMDLs) to improve water quality.

- Section 401 requires applicants for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act (most frequently required in tandem with a Section 404 permit request; see below).

- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of stormwater from industrial/construction and Municipal Separate Storm Sewer Systems (MS4s).

- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

- USACE issues two types of 404 permits: Standard and General permits. For General permits there are two types: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of project activities with no more than minimal effects to waters of the U.S. Nationwide permit 14 covers activities required for the construction, expansion, modification, or improvement of linear transportation projects that cause a loss of less than ½-acre of non-tidal waters of the U.S. subject to conditions.

CWA Section 404 permit and CWA Section 401 certification will not be required as the Project area does not support waters of the U.S., and the Project is not within an MS4 area.

2.2 State Laws and Requirements

The State Water Resource Control Board (SWRCB) adjudicates water rights; sets water pollution control policy; issues water board orders on matters of statewide application; and oversees water quality functions throughout the state by approving water control plans TMDLs and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility. The California Department of Fish and Wildlife (CDFW) has responsibility for lakes and streambeds under the California Fish and Game Code (CFGC).

2.2.1 Porter-Cologne Water Quality Control Act

California's Porter-Cologne Water Quality Control Act (Porter-Cologne Act), enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge, or proposed discharge, of waste (liquid, solid, or gas) to land or surface waters that could affect the quality of waters of the State. It predates the CWA and regulates discharges to waters of the State. The Porter-Cologne Act defines waters of the State as "any surface water or ground water, including saline waters, within the boundaries of the state." Some waters that qualify as waters of the State, such as isolated wetlands, do not necessarily qualify as waters of the U.S. Additionally, the Porter-Cologne Act prohibits discharges of "waste," with a broader definition than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable RWQCB Water Quality Control Plan (WQCP). In California, RWQCBs designate beneficial uses for all waterbody segments in their jurisdictions, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular waterbody segments are based on the designated use and vary depending on such use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of TMDLs. TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed. Alta Main Canal is not under a TMDL, though it comes from and returns to the Kings River, which is under a TMDL for Chlorpyrifos and Unknown Toxicity (RWQCB 2010).

Alta Main Canal may meet the criteria as a water of the State, and construction in the canal would likely require a general WDR/NPDES permit under the low-threat discharge order for construction dewatering activities.

2.2.2 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility. The Central Valley Regional Water Quality Control Board (CVRWQCB) originally adopted the first edition of the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) on July 25 1975, which became effective following approval by the State Water Board on August 21 1975. While several revisions of the Basin Plan have been adopted and approved since 1975, the most recent update of the Basin Plan occurred in January 2015 (CVRWQCB 2015).

2.2.3 NPDES Program: Construction General Permit

The SWRCB and RWQCBs regulate discharges of waste into waters of the State through NPDES permits, authorized under Section 402 of the CWA for waste discharges to waters of the U.S., and through WDRs authorized under the state's Porter-Cologne Act. Construction General Permit (Order No. 2009-009-DWQ, as amended by 2010-0014-DWG and 2012-0011-DWQ) (CGP), adopted on September 19, 2012, became effective on July 1, 2013. The permit regulates stormwater discharges from construction sites which result in a DSA of 1 acre or greater, and/or are smaller sites that are part of a larger common plan of development. For all projects subject to the CGP, applicants are required to develop and implement an effective Stormwater Pollution Prevention Plan (SWPPP). In accordance with the Caltrans' Standard Specifications, a WQCP is necessary for projects with DSA less than 1 acre. Construction activity that results in soil disturbances of less than 1 acre is subject to this CGP if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop SWPPPs; implement sediment, erosion, and pollution prevention control measures; and obtain coverage under the CGP.

The CGP separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined.

Projects that include dewatering must comply with the General Waste Discharge Requirements/NPDES Permit for Dewatering and Other Low Threat Discharges to Surface Waters (Order No. R5-2008-0081 and NPDES Permit No. CAG995001). A Notice of Intent (NOI) must be submitted to the CVRWQCB for approval before dewatering may commence. After dewatering is completed, a Notice of Termination Form must be submitted to the CVRWQCB.

The Project would require authorization under the CGP and compliance with the WDR/NPDES permit under the low-threat discharge order for construction dewatering activities. The County must submit a Notice of Intent (NOI) to the CVRWQCB and prepare a SWPPP for the Project.

2.2.4 California Department of Fish and Wildlife

The CDFW reviews applications and issues Streambed Alteration Agreement Permits under Section 1602 of the California Fish and Game Code (CFGC) to persons or entities seeking to alter a streambed. Notifications to CDFW must be made for all activities that may divert water, change bed material, or deposit sediment in or near a river, stream, or lake that flows at least intermittently through a bed or channel. If CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a streambed alteration agreement will be prepared. The streambed alteration agreement includes reasonable conditions necessary to protect those resources and must comply with the CEQA. The entity may proceed with the activity in accordance with the final streambed alteration agreement.

Alta Main Canal may meet the criteria as a water of the State, provides habitat for wildlife, and receives managed water flow from the Kings River. As such, work within the canal would likely be regulated by the CDFW, requiring a Section 1602 Streambed Alteration Agreement (SAA).

2.2.5 Central Valley Flood Protection Board

The Central Valley Flood Protection Board (CVFPB) oversees the flood management system in California's Central Valley, as authorized under the California Water Code and Title 23 of the California Code of Regulations (23 CCR §112). The CVFPB identifies Regulated Streams and Designated Floodways, which are not the same as floodplains mapped by the Federal Emergency Management Agency (FEMA). Any proposed projects that are located within a Designated Floodway or within 30-feet from the bank of a Regulated Stream will require a CVFPB permit.

The CVFPB has identified the Alta Main Canal as a Regulated Stream both upstream and downstream of the bridge/weir (California Department of Water Resources 2016; 23 CCR §112, Table 8.1). Therefore, a CVFPB encroachment permit may be required for the new bridge.

2.3 Regional and Local Requirements

2.3.1 Fresno County General Plan

The Fresno County General Plan (Fresno County 2000) Open Space and Conservation Element identifies various procedures for addressing water quality impacts to both ground and surface water. The Fresno County General Plan also seeks to protect wetland and riparian habitat. Specific measures include ground and surface water monitoring programs and require the use of BMPs and other measures designed to protect surface water and groundwater from the adverse effects of construction activities. The County supports the "no-net-loss" of wetland policies of the USACE and SWRCB (Fresno County 2000).

Chapter 3 AFFECTED ENVIRONMENT

3.1 Existing Conditions

The following sections describe the existing conditions within the Project area and surrounding region.

3.1.1 Topography

Elevation within the Project area is approximately 430 feet at the top of the canal levee, and approximately 412-415 feet along the canal's bottom (Fresno County 2016). Slopes are steep (25 percent) from the canal bottom up to the top of the levee. On the west side of the canal, the western edge of the levee slopes steeply to the road. Along the eastern side of the canal, the levee slopes down slightly to the surrounding properties. The canal has a gentle slope, with an abrupt drop under the existing bridge allowing water to flow in a southern direction.

3.1.2 Precipitation and Climate

Climate details in the Project area are based on historical data collected by a Western Regional Climate Center (WRCC) monitoring station at Fresno 5 Northeast, located approximately 13.5 miles west of the Project area. The WRCC station at Fresno 5 Northeast has records from 1999-2016, and collects data on daily temperature (minimum and maximum), precipitation, snowfall, and snow depth. Temperatures range from an average high in July of 98.1 degrees Fahrenheit ($^{\circ}$F) to an average low in January of 37.7 $^{\circ}$F (WRCC 2016). The average annual temperature in is approximately 66 $^{\circ}$F, and an average of 10.63 inches of precipitation falls annually. Precipitation occurs throughout the year, with the least occurring from July through September. Precipitation falls primarily in the form of rain.

3.1.3 Regional and Local Hydrology

The Project lies within the Tulare-Buena Vista Lakes Subbasin, part of the Tulare Lake Basin (Basin), which comprises the San Joaquin Valley south of the San Joaquin River (Watershed Boundary Dataset 2016). The Project is located in the Cole Slough-Kings River watershed, and the Byrd Slough subwatershed (Figure 3-1; USGS Hydrologic Unit Code [HUC] 180300120203). Irrigated agriculture accounts for most of the water use within the Basin (CVWQCB 2015). Surface waters from the Basin only drain into the San Joaquin River during extreme rainfall years (CVWQCB 2015).

The Alta Main Canal is an artificial irrigation canal that diverts flows from the Kings River. The Alta Irrigation District transports surface and ground water through the Alta Main Canal for irrigation deliveries typically from May through August. Water flow within the Alta Main Canal through the Project area is controlled by the Alta Irrigation District, with an average annual flow of 150,261 acre feet (Alta Irrigation District 2010). Water is diverted into the canal from the Kings River at the Cobbles Weir near Piedra, California, approximately 2.75 miles northeast of the Project area. From the canal, water flows through a series of distribution facilities (canals and ditches) to agricultural sites throughout the Alta Irrigation District.

During normal operations, all water entering the Alta Main Canal is utilized. During emergency canal and levee repairs, flows in the canal can be diverted into Wahtoke Creek (Figure 3-2).

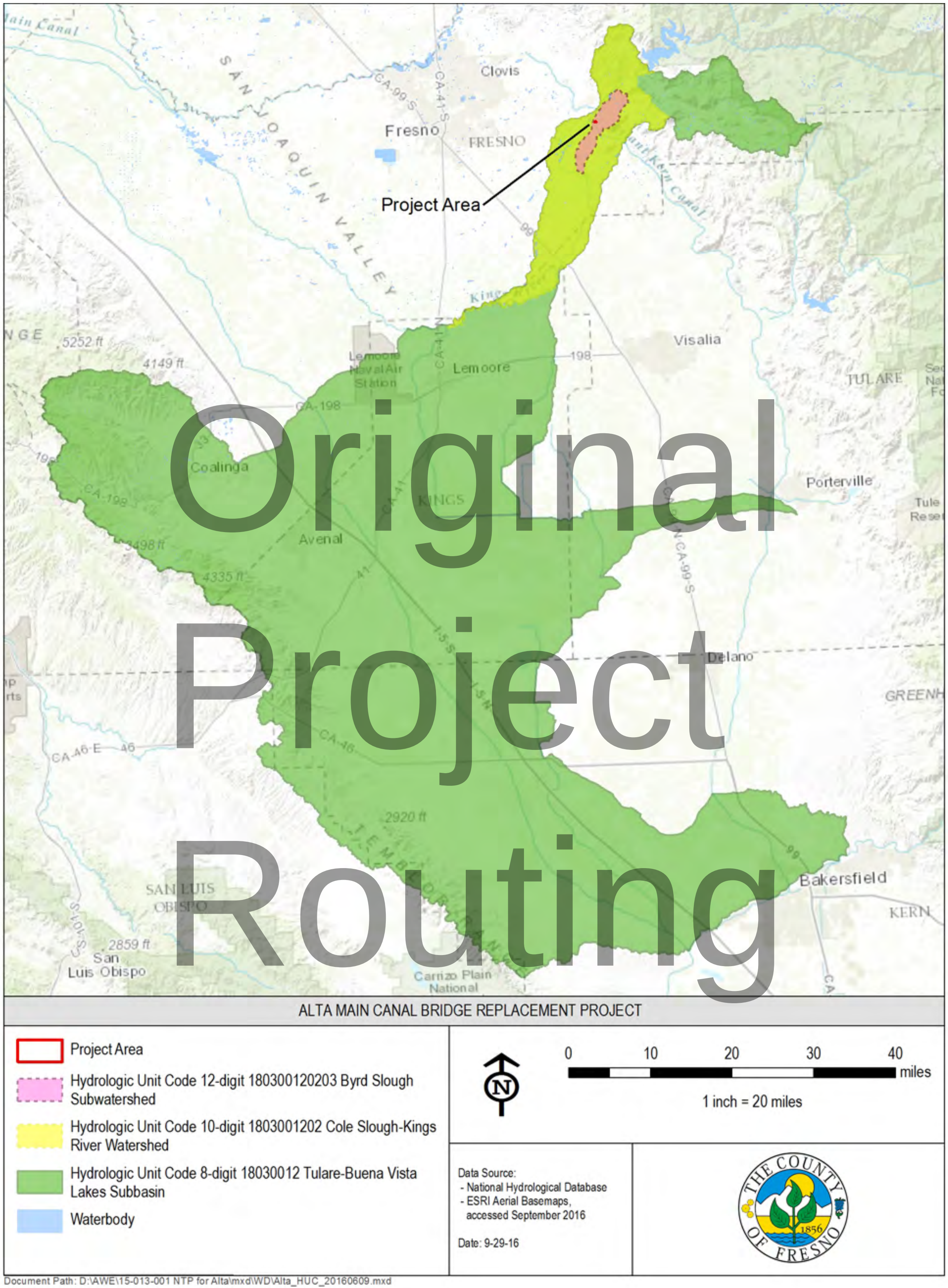

Figure 3-1. Hydrologic Unit Watershed Map

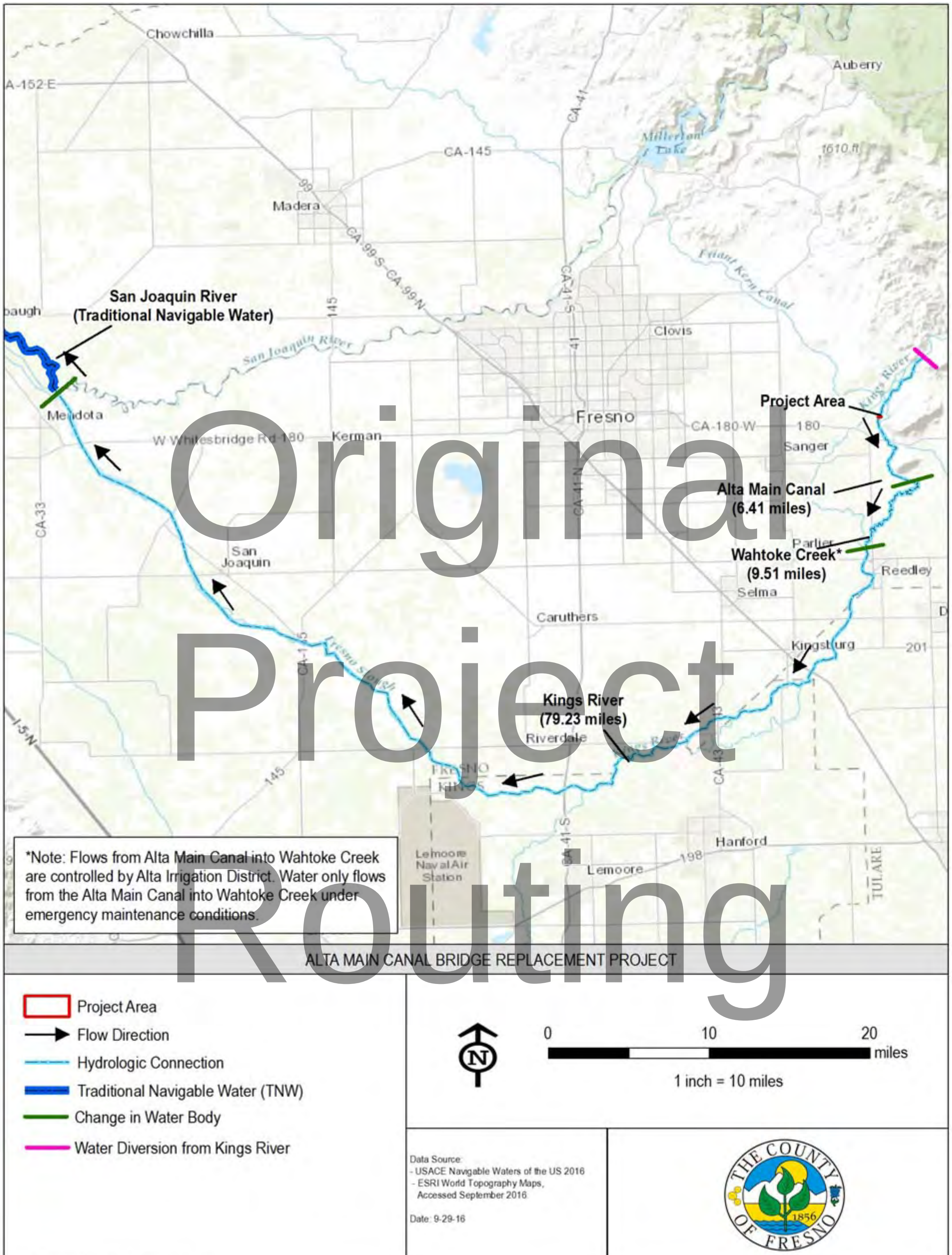

Figure 3-2. Regional Hydrology and Hydrologic Connection to Nearest Navigable Waterway

During these unscheduled events, water diverted into the creek flows 9.5 miles before reaching the Kings River, which can flow for 79.2 miles during extreme rainfall years to reach the San Joaquin River (Figure 3-2). However, in most years, water from the Alta Main Canal is used entirely for irrigation water delivery and Kings River flows do not reach the San Joaquin River, a traditional navigable water.

3.1.3.1 Floodplains

The Project is located within the 06019C2180H Flood Insurance Rate Map (FIRM) (Figure 3-3). Portion of the Project area upstream of the existing bridge/weir is designated as Zone A, which is defined as, "Special Flood Hazard Areas (SFHA) Subject to Inundation by the 1% Annual Chance Flood Event". For the area downstream of the existing bridge/weir, Federal Emergency Management Agency (FEMA) has not evaluated flood conditions along the canal. (FEMA 2016)

3.1.4 Groundwater Hydrology

The Project is within the Kings groundwater subbasin, which is part of the San Joaquin Valley Groundwater Basin. The Kings subbasin encompasses approximately 976,000 acres (1,530 square miles). The San Joaquin Valley Groundwater Basin is surrounded by the Coast Ranges in the west, the Sierra Nevada Ranges to the east, the Sacramento-San Joaquin Delta to the north, and the San Emigdio and Tehachapi Mountains to the south. (DWR 2006)

The Kings groundwater subbasin includes the San Joaquin River along the northern border, and the Kings River towards the middle, both running from northeast to southwest. The subbasin is critically overdrafted according to the California Department of Water Resources (DWR), and levels have been monitored for over 75 years. The average overdraft is approximately 22,000 acre feet per year. (Alta Irrigation District 2010)

3.1.5 Waters of the U.S. and State

A field visit was completed on June 10, 2016, to delineate waters of the U.S. and State in the Project area. During the field visit, the segment of the Alta Main Canal within the Project area consisted of open, flowing water directed and controlled by the Alta Irrigation District. The canal feature was defined by a clear ordinary high water mark (OHWM). Along the western edge of the canal, south of the existing bridge and upslope of the OHWM, a gradual slope supports a transition area from the canal to valley oak riparian habitat. This fringe area of saturated soils and hydrophytic vegetation was delineated as an artificial seasonal wetland.

Although it exhibits an ordinary high water mark (OHWM), the Alta Main Canal did not meet the criteria of a water of U.S. Within the Project area, the Alta Main Canal is completely artificial. The canal is an engineered ditch excavated within uplands and built in the 1880's. Due to the system of weirs and control structures upstream, within, and downstream from the Project area, the hydrology of the Alta Main Canal within the Project area is artificially supported. The canal is not a tributary (i.e., regularly contribute flow to downstream waters), was not excavated in a tributary, and does not drain wetlands. Therefore the Project would be not be regulated under Section 404 or Section 401 of the CWA.

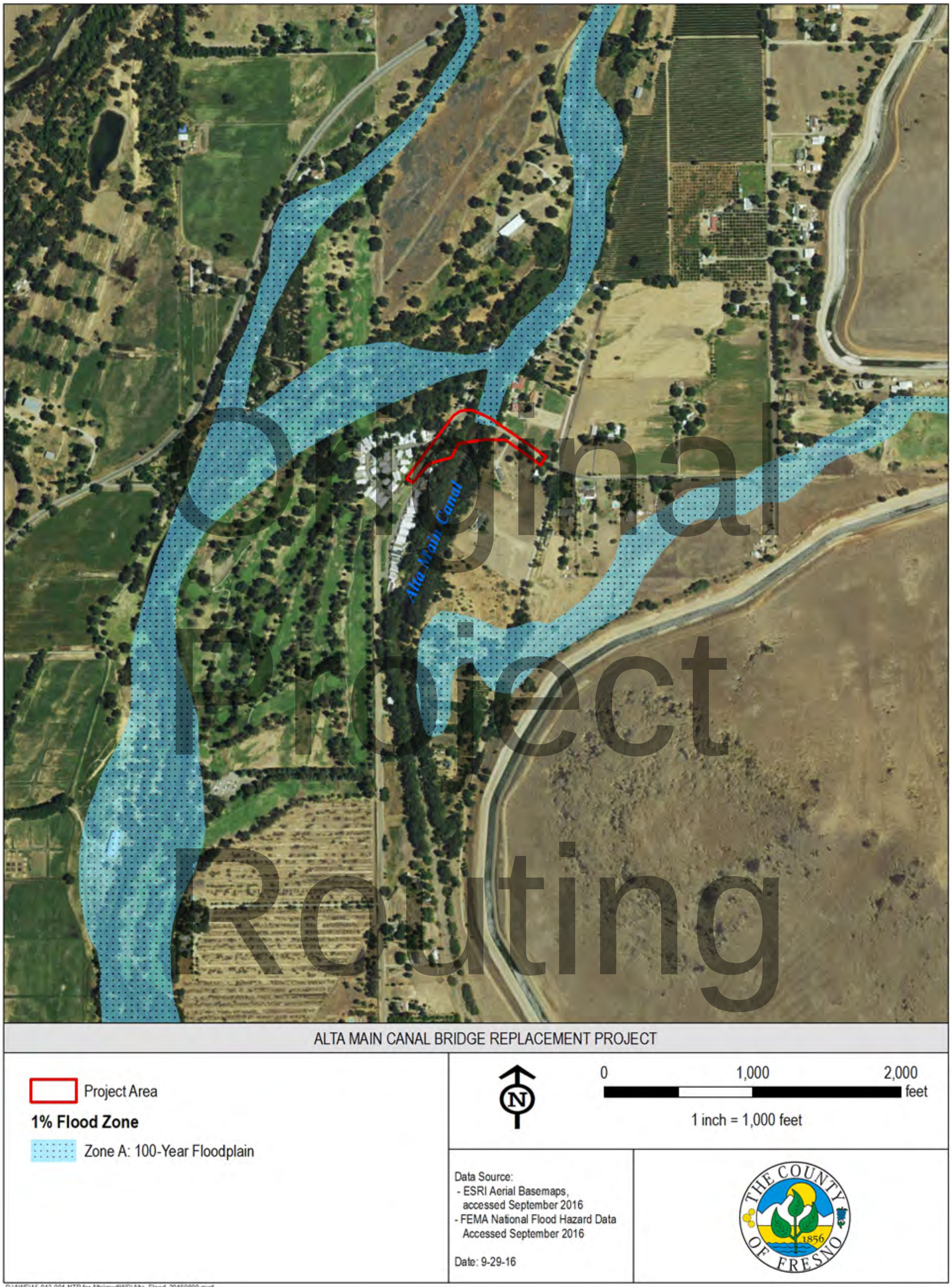

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Figure 3-3. FEMA Flood Hazard Map

While it does not meet the criteria as a water of the U.S., the Alta Main Canal in the Project area likely meets the requirements as a water of the State, as waters of the State are more broadly defined than waters of the U.S. The Alta Main Canal receives surface water flows from the Kings River through a series of control weirs and supports wildlife along its corridor. Although the section of the canal in the Project area was excavated in uplands, portions of the canal between the Cobbles Weir and the Frankwood Weir consist of channelized natural accessory channels of the Kings River. As a water of the State, work within the canal would require a WDR/NPDES permit under the Porter Cologne Act and a Section 1602 SAA.

3.1.6 Geology and Soil Erosion Potential

The Web Soil Survey indicates that the Project area has five soil map units (Figure 3-4). The soils are predominantly Hesperia fine sandy loam, moderately deep, saline-alkali (Natural Resources Conservation Service [NRCS] 2016). Due to the series of weirs along the Alta Main Canal between the Project area and the point of diversion along the Kings River, any hydric soils that formed within this portion of the Project area formed under artificial conditions.

Overall, the Project has a moderate to high erosion hazard rating. The revised Universal Soil Loss Equation erosivity factor (K) was 0.28, where the range is 0.02-0.69 with higher values equating higher erosion susceptibility. A rating of moderate to high indicates that erosion is possible under ordinary climatic conditions. Along a few areas of the canal's edge, soil is visibly eroding where water has scoured vegetation from the soil. Refer to Table 3-1 for more information about the soils within the ESL. (NRCS 2016)

Table 3-1. Soils within the Project Area

Soil Map Unit Symbol and Name	Parent Material	Soil Profile	Depth to Restrictive Layer (inches)	Drainage Class	K Factor
Hn Hanford fine sandy loam, gravelly substratum	Alluvium derived from granite	0 to 16 inches: fine sandy loam 16 to 36 inches: fine sandy loam 36 to 72 inches: gravelly sandy loam	More than 80 inches	Well drained	0.24
Hst Hesperia fine sandy loam moderately deep	Alluvium derived from granite	0 to 11 inches: fine sandy loam 11 to 32 inches: fine sandy loam 32 to 43 inches: fine sandy loam 43 to 60 inches: silt	More than 80 inches	Well drained	0.28
Hsy Hesperia fine sandy loam, moderately deep, saline-alkali	Alluvium derived from granite	0 to 11 inches: fine sandy loam 11 to 32 inches: fine sandy loam 32 to 43 inches: fine sandy loam 43 to 60 inches: silt	More than 80 inches	Well drained	0.28
TzeB Tujunga soils, channeled, 0 to 9 percent slopes	Alluvium derived from granite	0 to 4 inches: gravelly sand 4 to 60 inches: stratified extremely gravelly sand to loamy sand	More than 80 inches	Somewhat excessively drained	0.02
W Water	--	--	--	--	--

Source: NRCS 2016

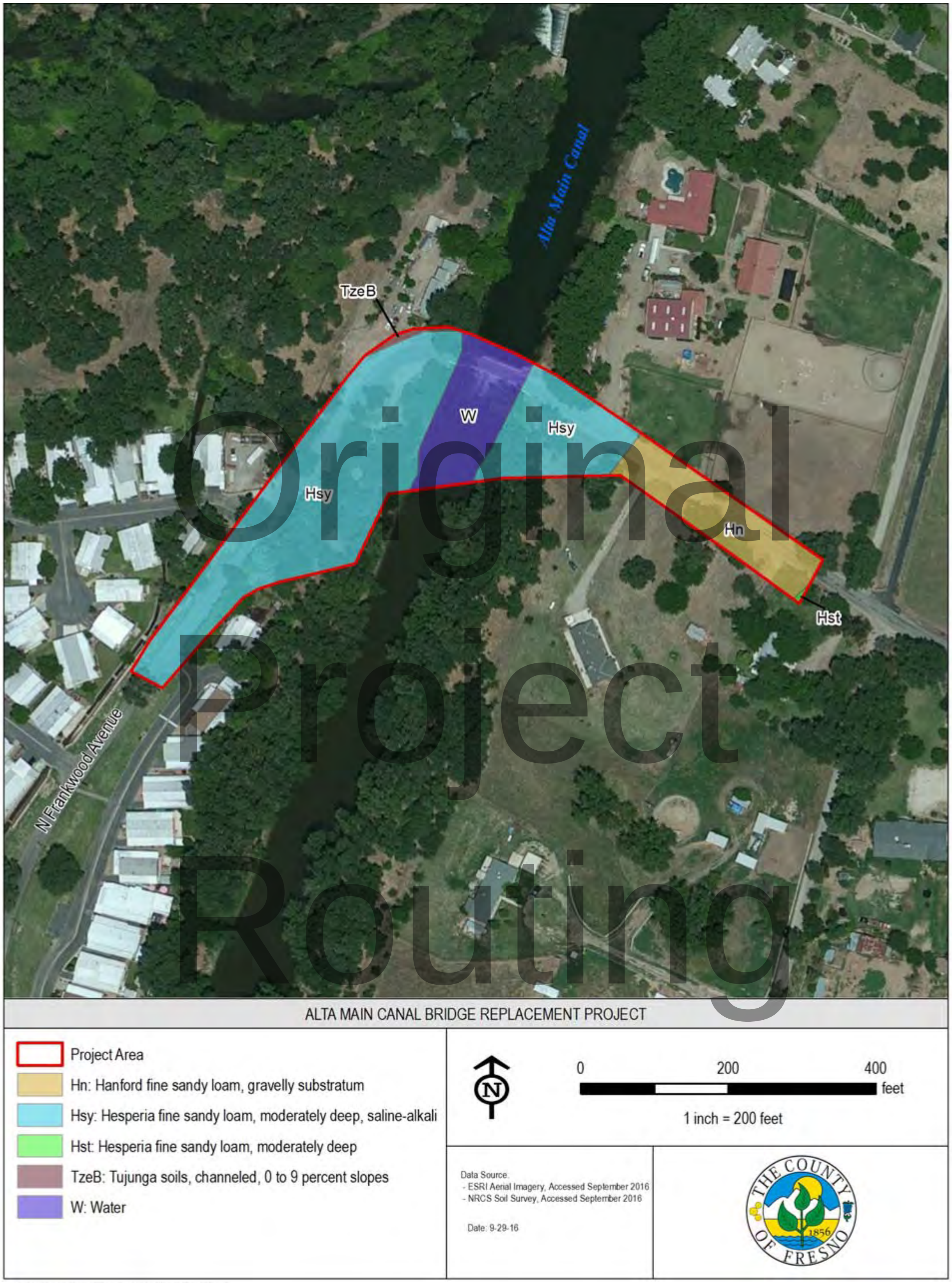

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Figure 3-4. Soils within the Project Area

3.1.7 Biological Communities

The Project area supports six generalized vegetation communities: canal, artificial seasonal wetland, developed/ornamental, annual grassland, riparian oak woodland, and valley oak woodland). Figure 3-5 shows the habitats within the Project area. A description of the communities that may be regulated by RWQCB and CDFW is provided below.

3.1.7.1 Canal

During the June 10, 2016 field survey, the segment of the Alta Main Canal within the Project area consisted of open, flowing water. As observed during a site visit on April 29, 2016, when conditions were dry, the lining of the Alta Main Canal consists of large cobble covered with a sparse layer of herbaceous hydrophytes. Flanking a low-flow channel approximately 80 feet wide, each side of the Alta Main Canal consists of a shallow bench 9 feet wide that is under approximately 1 foot of water during scheduled water releases. Based on the results of the April site visit, the Alta Irrigation District sprays herbicide within the Alta Main Canal during dry periods, to prevent the establishment of emergent vegetation (e.g., cattails [*Typha* sp.]and tules [*Schoenoplectus* sp.]). Due to the controlled release of water within the Alta Main Canal, open water habitat exhibited a defined OHWM based on a change in vegetation cover, species composition, and substrate. Although the canal vegetation community exhibits an OWHM, it does not qualify as a water of the U.S. due to its artificially maintained hydrology in the man-made Alta Main Canal. This community would be considered a water of the State.

3.1.7.2 Valley Oak Riparian

This vegetation community occurs on the levees that flank the Alta Main Canal. While dominated by valley oaks, this vegetation community type is structurally diverse, with a small midstory component of black willows (*Salix gooddingii*) in low-lying areas near the edge of the canal. A vine stratum of Japanese honeysuckle (*Lonicera japonica*) is also present. Due to the steeper slope of the eastern levee, the valley oak riparian vegetation community along the eastern side appears more xeric, and more closely resembles the valley oak woodland vegetation community. Along the eastern edge of the canal, sporadic hydrophytes are present, including Himalayan blackberry (*Rubus armeniacus*) and Fremont cottonwood (*Populus fremontii*).

3.2 Water Quality Objectives/Standards and Beneficial Uses

The Basin Plan identifies water quality objectives, standards, and beneficial uses for surface water along the Kings River, but not within Alta Main Canal. Water quality objectives for the section of Kings River where water is diverted into Alta Main Canal are discussed below. The Project area is part of the Alta Irrigation District, and as such has its own water management plan for agriculture water. The water quality in the canal is mostly distinguished by the Kings River water being diverted into the canal.

Surface water quality objectives/standards for the Kings River between Pine Flat Dam and Friant Kern Canal come from the Basin Plan, unless otherwise noted. These objectives/standards are summarized in Table 3-2. (CVWQCB 2015)

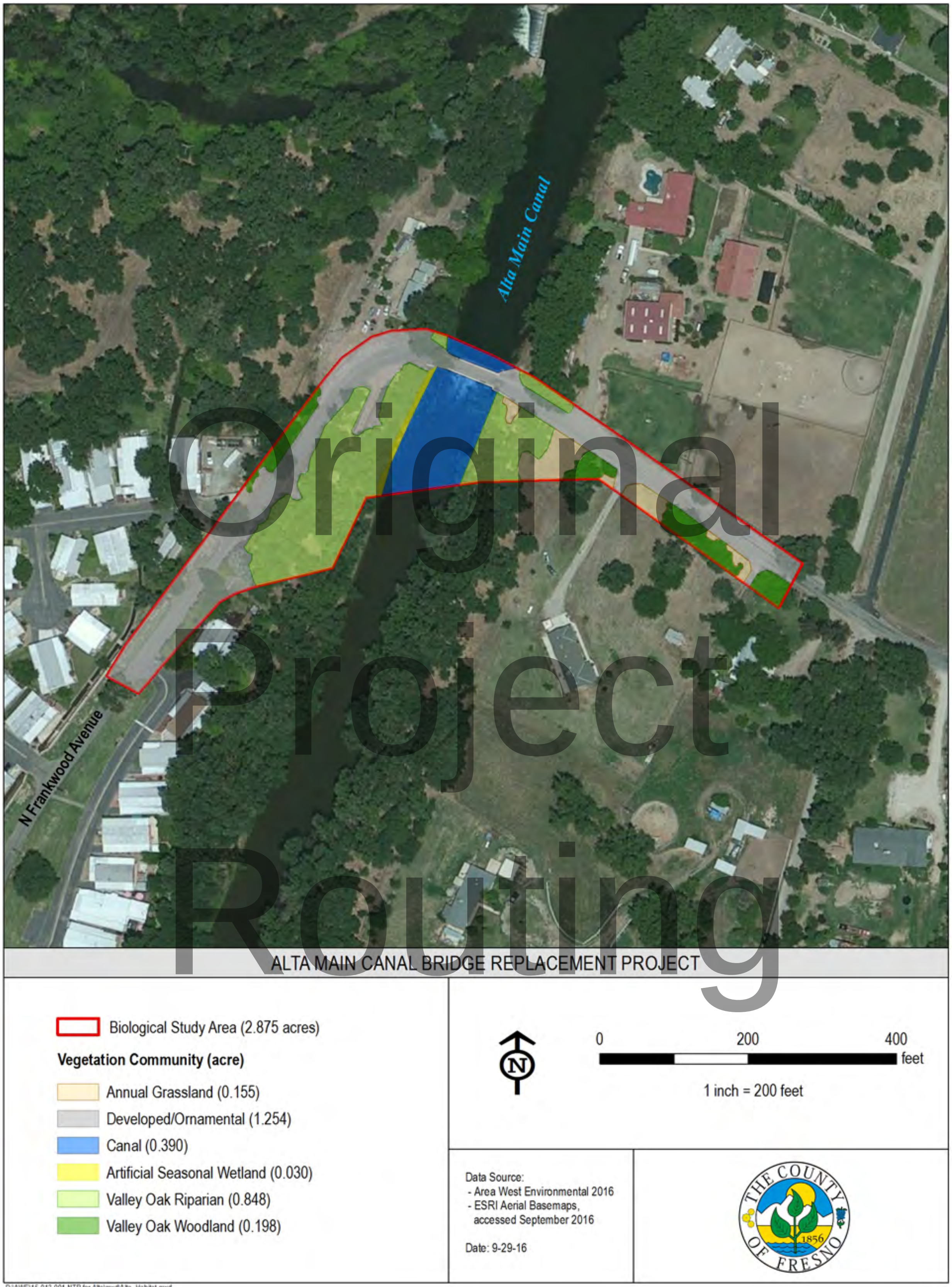

Figure 3-5. Vegetation Communities within the Project Area

Table 3-2. Surface Water Quality Objectives of the Tulare Basin Plan

Constituent	Water Quality Objective
Ammonia	Waters shall not contain un-ionized ammonia in amounts, which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH^3) to exceed 0.025 milligrams per liter (mg/l) (as N) in receiving waters.
Bacteria	In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed 200/100 milliliters (ml), nor shall more than 10 percent of the total number of samples taken during any 30-day period exceed 400/100 ml.
Biostimulatory Substances	Water shall not contain biostimulatory substances in concentrations that promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
Chemical Constituents	Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Section 64431, 64444, and 64449. At a minimum, waters designated MUN shall not contain lead in excess of 0.015 mg/l.
Color	Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses.
Dissolved Oxygen	For surface waters, the monthly median of the mean daily DO concentration shall not fall below 85 percent saturation, and the 95 percentile shall not fall below 75 percent saturation. At no time shall the concentrations be reduced below the following minimum levels at any time: ▪ Waters designated WARM 5.0 mg/L ▪ For the section of Kings River where Wahtoke creek exits, the minimum DO is 9.0 mg/l.
Electrical Conductivity	For the section of the Kings River where Wahtoke Creek enters, from Alta Main Canal, the maximum electrical conductivity is 100 umhos/cm.
Floating Material	Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.
Oil and Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water, or otherwise adversely affect beneficial uses.
Pesticides	No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no bioaccumulation of pesticide concentrations found in bottom sediments or aquatic life.
pH	The pH shall not go below 6.5 or above 8.3, or changed at any time

Constituent	Water Quality Objective
	more than 0.3 units from normal ambient pH.
Radioactivity	Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or indigenous aquatic life. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Section 64442 and 64443 of the California Code of Regulations.
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Settleable Material	Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.
Suspended Material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
Tastes and Odors	Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance or adversely affect beneficial uses.
Temperature	Natural water temperatures should not be altered in a way that adversely affects beneficial uses. At no time or place shall the temperature of any COLD or WARM water be increased by more than 5ºF above natural receiving water temperature.
Toxicity	All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the RWQCB.
Turbidity	Where natural turbidity is between 0 and 5 nephelometric turbidity units (NTU), increases in turbidity shall not exceed 1 NTU. Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent. Where natural turbidity is equal to or between 50 and 100 NTUs, increases shall not exceed 10 NTUs. Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

Source: CVWQCB 2015

The Basin Plan designates beneficial uses specific for the section of Kings River where Alta Main Canal water is diverted from (Cobbles Weir): these uses are listed in Table 3-3.

Table 3-3. Beneficial Uses for Surface Waters of Kings River – Pine Flat Dam to Friant Kern

Beneficial Use	Description
Agricultural Supply (AGR) (irrigation and stock watering)	Farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.
Cold Freshwater Habitat (COLD)	Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Freshwater Replenishment (FRSH)	Uses of water for natural or artificial maintenance of surface water quantity or quality.
Groundwater Recharge (GWR)	Natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
Municipal and Domestic Supply (MUN)	Community, military, or individual water supply systems including, but not limited to, drinking water supply.
Hydropower Generation (POW)	Uses of water for hydropower generation
Water Contact Recreation (REC-1)	Recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
Non-Contact Water Recreation (REC-2)	Recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Spawning, Reproduction, and/or Early Development (SPWN)	Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.
Warm Freshwater Habitat (WARM)	Warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Table 3-3. Beneficial Uses for Surface Waters of Kings River – Pine Flat Dam to Friant Kern

Beneficial Use	Description
Wildlife Habitat (WILD)	Terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Source: CVWQCB 2015

3.3 Existing Water Quality

Water quality within the canal is most dependent upon the water quality of the Kings River at the entry point of Cobbles Weir. The Alta Irrigation District's Agricultural Water Management Plan includes regulations protecting water quality from trash or debris and discharge into the canal system. The Alta Irrigation District diverts water through the canal when Kings River surface flows are high enough to not cause detrimental effects downstream, relying on groundwater in years where surface flow is not sufficient. (Alta Irrigation District 2015)

The 76 Land and Water Company (currently the Alta Irrigation District) was formed in 1882 and began construction on the 76 Channel (now the Alta Main Canal) the same year (Mead and Smythe 1901). The 76 Channel diverts flows from the Kings River via the Cobbles Weir, approximately 5 miles upstream of the Project area. Between the Cobbles Weir and the Frankwood bridge/weir within the Project area, the canal consists of channelized portions of natural accessory channels of the Kings River. Although the first few miles of the 76 Channel downstream of Cobbles Weir was constructed by modifying a natural waterway, aerial photographs, topographical mapping (including historic maps), and a historical account of the 76 Land and Water Company (now Alta Irrigation District) from 1898 indicate that the canal at Frankwood Avenue is an engineered ditch that was built in 1882-1884 (McMorris pers comm). Therefore, within the Project area, the Alta Main Canal is completely artificial, having been excavated within uplands. Due to the system of weirs and control structures upstream, within, and downstream from the Project area, the hydrology of the Alta Main Canal within the Project area is entirely artificially maintained.

3.3.1 Regional Water Quality

Water with the Basin rarely exits into the San Joaquin River because of the heavy agricultural uses in the Central Valley (CVRWQCB 2015). The Basin is essentially a closed system. Water within the Alta Main Canal is diverted from the Kings River and is distributed to agricultural operations.

3.3.2 Surface Water Quality Sampling in the Project Area

On June 10, 2016 biologists Mark Noyes and Samuel Price of Area West Environmental, Inc. collected limited surface water quality data just south of the existing bridge, on the west side of the canal. These measurements cannot be used to characterize water quality, but provide a snapshot in time. A water quality sample was taken on June 10, 2016 at 11:55 AM with a Horiba U-52G. Water temperature was measured at 13.91 °Celsius ([°C], 57 °Fahrenheit [F]) and pH at 5.85. Turbidity was measured at 4.8 Nephelometric Turbidity Units (NTUs), and dissolved oxygen was 8.0 mg/l.

3.3.3 List of Impaired Waters

Waters within the Project area are not listed on the 2010 CWA Section 303(d) list of impaired waters (RWQCB 2010). Water is diverted from the Kings River, which is on the 303(d) list for Chlorpyrifos and Unknown Toxicity. (RWQCB 2010).

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Chapter 4 ENVIRONMENTAL CONSEQUENCES

This section provides an overview of the potential consequences of the Project on surface water and groundwater quality as well as site drainage. Based on the analysis, the Project is not anticipated to cause or contribute to the permanent violation of water quality standards or water quality objectives, nor would it affect the beneficial use of downstream receiving waters. There may be temporary, manageable water quality effects during Project construction.

The analysis of the Project identified the following water quality concerns:

- sediment discharges and turbidity increases caused by construction activities,
- accidental release of pollutants during construction,
- an increase in impervious surface, increasing the volume or rate of storm water runoff,
- short-term and long-term fill of waters of the State, and
- removal of riparian vegetation.

These impacts are described below.

4.1 Short-term Impacts

Construction activities would result in disturbance within and adjacent to the canal. Earthmoving, excavation, and pile drilling needed to construct the new bridge and the new approach roads could result in a temporary increase in sediment loads, turbidity, and siltation in the canal. There is potential for erosion to occur from areas along the levee slopes where trees and other vegetation is removed to clear for the new road alignment and provide equipment access. The Project would be constructed when the canal is not being utilized to transport water for irrigation. Since construction of the bridge abutments and piers, and installation of the concrete lining, would take place outside the seasonal water operation of the canal, direct changes in turbidity in canal waters from debris and dust would be minimized. North Frankwood Avenue, an existing paved road, will be utilized for access to the construction site, minimizing disturbance and erosion potential.

The use of construction equipment and other vehicles could result in accidental spills of oil, grease, gasoline, brake fluid, antifreeze, or other vehicle-related pollutants. Improper handling, storage, or disposal of materials and fuels could also cause water quality degradation. Large construction equipment will grade areas leading up to the canal, and within the channel during the creation of a concrete liner between the existing bridge and the new bridge. Concrete contacting water prior to drying completely could potentially impact water quality. During construction, construction materials and wastes could be tracked offsite by construction vehicles and then deposited onto roads where it may be picked up and transported into waterways. Also, saw cutting, grinding, drilling, concrete mixing, painting, and paving during construction can produce residues. Implementation of BMPs to protect water quality and reduce the risk of accidental releases of oil, grease, and chemical pollutants would minimize this potential impact.

The proposed Project would comply with the CGP including preparing and implementing a SWPPP that identifies project-specific erosion, sediment, and stormwater BMPs to protect water quality during project construction (see Chapter 5, "Avoidance and Minimization Measures". The SWPPP would identify Project specific BMPs to protect water quality from construction activities. If the disturbed area is less than one acre, a required Water Pollution Control Plan (WPCP) will address the implementation of BMPs for potential stormwater pollutants. Compliance with the CGP and SWPPP/WPCP would ensure that water quality standards would not be violated.

4.2 Long-term Impacts

Implementation of the Project would not permanently alter the configuration of Alta Main Canal or substantially modify sources of water pollutants. Agricultural and industrial practices in the Kings River watershed would remain the primary sources of water pollutants at the Project area. The Project is not expected to significantly alter the number of vehicles traveling on North Frankwood Avenue or other nearby land uses in the watershed. Therefore, there would not be an increase in the load of pollutants as a result of the Project.

Other long-term water quality impacts could occur from changes in the amount of impervious surface in the Project area, changes in the canal's hydraulic capacity during storm events

The Project could result in an increase in the amount of water entering the canal and the area's stormwater drainage system due to increased impervious surface area. Project construction would not result in a substantial change in runoff patterns, though an increase in impervious surface could affect stormwater runoff volume and rates. Based on preliminary design, the project features (roadway approaches and canal lining) would increase impervious surface area by less than 0.5 acre. By building a new bridge and roadway, there would be additional impervious area; however, the total impervious area would be minimal compared to the watershed area of Kings River, and would therefore have insignificant impacts on watershed runoff and the floodplain. It is anticipated that the existing drainage system will be sufficient to accommodate the new roadside drainage and no change to current drainage patterns would occur.

The Project would not significantly affect flood control functions or floodplain conditions in the Project area. While a portion of the Project area is within the FEMA special flood hazard area (Figure 3-3), the Project design would not change the rate of peak stormwater runoff appreciably.

Long-term effects on the aquatic environment include removal of riparian vegetation. The Project would permanently remove approximately 0.24 acre of riparian vegetation. Measures to compensate for permanent Project effects on waters of the State and riparian habitat would be determined in consultation with RWQCB and CDFW during Project permitting.

4.3 Cumulative Impacts

There are no known concurrent construction projects within the Project vicinity that would affect water quality in Alta Main Canal. Preparation and implementation of BMPs in the SWPPP would ensure that the Project does not result in considerable incremental effects to water quality. No cumulative impacts are expected.

Chapter 5 AVOIDANCE AND MINIMIZATION MEASURES

To prevent potential impacts on receiving waters resulting from Project construction activities and operations, temporary and permanent measures would be implemented in accordance with applicable storm water regulations and standards.

Stormwater management for the Project would include both short-term and long-term measures. Short-term measures would focus on scheduling and implementing construction site BMPs aimed at reducing erosion and subsequent sediment transport as well as preventing accidental spills during construction. Long-term permanent measures would consider factors such as permanent stabilization of disturbed soil areas. These measures would reduce erosion and sediment transport to receiving waters, address the potential for accidental spills and leaks during construction, and avoid and minimize impacts on aquatic habitat.

The overall BMP measures for potential water quality impacts are a condition of the NPDES permit and other permits and agreements anticipated for the Project. Permanent treatment BMP measures to control stormwater discharges must be considered for new or reconstructed facilities. The measures would be incorporated into the final design of the Project. Because the potential DSA for the Project is greater than 1 acre, before any ground-disturbing activities, the contractor shall prepare and implement a SWPPP that includes erosion control measures and construction waste management measures to ensure that waters of the U.S. and State are protected during and after Project construction. Per requirements of the CGP and SWPPP, conditions need to be stabilized before giving a notice of termination.

The avoidance and minimization measures described in this section are taken primarily from the Caltrans Stormwater Management Plan (SWMP) (Caltrans 2003) and construction site BMP guidance manual.

5.1 Best Management Practices

The Project design includes measures to reduce erosion and sediment transport, and ensure flood control functions. Design measures and treatment BMPs would be incorporated into the Project in accordance with applicable storm water regulations and standards.

The project would comply with the Provisions of the CGP (Order 2009-0009-DWQ). Before any ground-disturbing activities, the contractor would prepare a SWPPP that includes erosion-control measures and construction waste containment measures so that waters of the State are protected during and after project construction.

The SWPPP shall be prepared with the following objectives: (a) to identify pollutant sources, including sources of sediment, that may affect the quality of stormwater discharges from Project construction; (b) to identify BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the Project area during construction; (c) to outline and provide guidance for BMP monitoring; (d) to identify Project discharge points and receiving waters; (e) to address post-construction BMP implementation and monitoring; and (f) to address sedimentation, siltation, turbidity, and non-visually detectable pollutant monitoring, and outline a sampling and analysis strategy. The SWPPP shall describe the BMPs that the contractor would use to prevent erosion and sedimentation during and after Project construction.

The SWPPP shall include a waste management section that shall provide procedural and structural BMPs for collecting, handling, storing, and disposing wastes generated by Project construction, to prevent the accidental release of pollutants during construction. The SWPPP also shall include measures to report, contain, and mitigate for any accidental spills during construction. Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) shall be cleaned up in accordance with applicable local, state, and/or federal regulations.

Construction site BMPs will be used to control and minimize the impacts of construction-related activities, materials, and pollutants on the watershed. The Project SWPPP will be continuously updated to adapt to changing conditions during the construction phase. The following temporary construction site BMPs are anticipated:

- Schedule in-canal construction outside water delivery season and manage any flow should be stopped during the in-canal construction period
- Re-establishment of native vegetation or other stabilization measures (mulch, geotextiles, etc.) on disturbed soil areas and newly constructed levee slopes
- Fiber rolls and/or silt fences
- Stabilized construction entrance and exit to the Project area(s)
- Spill control and prevention measures

5.2 Permits

The following permits are expected for the Project.

- RWQCB WDR/NPDES permit.
- CDFW Section 1602 SAA.
- CVFPB encroachment permit.

Chapter 6 REFERENCES

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WRCC. *See* Western Regional Climate Center.

Chapter 7 REPORT CONTRIBUTORS

Organization/ Individual	Years of Experience	Qualifications
Area West Environmental, Inc.		
Becky Rozumowicz, Senior Reviewer, Technical Advisor	21	QSP/QSD (#2099); CPESC (#6472); B.S., Soil and Water Science
Aimee Dour-Smith, Environmental Analyst	22	B.S., Environmental Policy and Planning
Samuel Price, Biologist, Researcher	6	B.S., Wildlife Management and Conservation; M.S., Geographic Information Science and Technology
County of Fresno Public Works Department		
Alexis Rutherford		
Jeffrey Edell		

Frankwood Avenue over Alta Main Canal Bridge Replacement - BRLO-5942(247)
Fresno County, CA
Bridge Design Hydraulic Study Report

October 2016

Prepared By:
WEST Consultants, Inc.
Folsom, CA

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Introduction

WEST Consultants, Inc. is a subconsultant to MGE Engineering for the design of a new bridge to replace the North Frankwood Avenue bridge over the Alta Main Canal in Fresno County. MGE was contracted by Fresno County to perform the analysis. Alta Main Canal is an irrigation canal owned and operated by Alta Irrigation District (AID) (www.altaid.org). WEST Consultants will be performing the hydrologic and hydraulic analyses. This includes:

1. Data Review and Coordination
2. Field reconnaissance
3. Hydrologic Analysis
4. Hydraulic Analysis
5. Bridge Location Hydraulic Study
6. Scour Analysis
7. Bridge Design Hydraulic Stude Report (This report)
8. Central Valley Flood Protection Board permitting

These items will be covered in this report. This report will not discuss bridge design, only general bridge information as it relates to the hydraulics. Figure 1 is a map showing the project location.

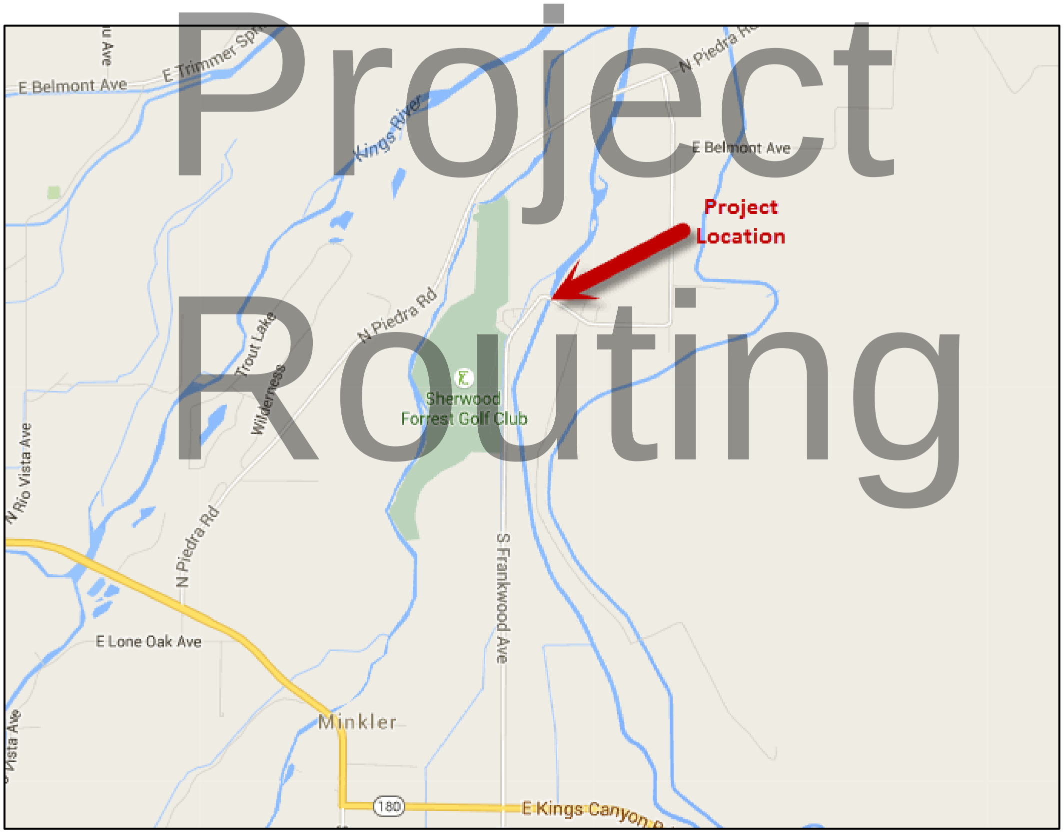

Figure 1 – N. Frankwood Bridge over Alta Main Canal (Google Maps)

Purpose and Background

The purpose of this study was to analyze the hydraulic impacts of the proposed new bridge over the Alta Canal. Alta Canal is an irrigation canal. Discussions with AID indicated that the canal does not have any natural drainage. All water in the canal which flows through the bridge location is governed by gates which are under the existing N. Frankwood Road Bridge. Figure 2 is an aerial view of the existing Frankwood Road Bridge.

FIGURE 2 - EXISTING FRANKWOOD ROAD BRIDGE

Water flows from top of picture towards the bottom of the picture (NNE to SSW). There are gates under the existing bridge. Water ponds upstream of these gates. The gates are operated to release water into the canal for irrigation downstream. The current plan is for the existing bridge and gates to stay in place. The new bridge will be constructed just downstream of the existing bridge. Figure 5 shows the gates on the upstream side of Frankwood Road Bridge. Figure 4 shows the downstream side of the existing bridge.

Figure 3 - Upstream Side of Frankwood Road Bridge

FIGURE 4 - DOWNSTREAM SIDE OF EXISTING FRANKWOOD ROAD BRIDGE

Figure 5 provides two possible alignments for the new bridge. The selected alignment is the one just downstream of the existing bridge. This is the location that has been analyzed for this effort.

The hydraulics of the canal were modeled using the US Army Corps of Engineers, Hydrologic Engineering Center's River Analysis System (HEC-RAS) software, version 4.1. Canal flows were provided by AID. Since Alta Canal does not have any natural drainage into it, no hydrologic analysis was performed. The AID flows were used in the HEC-RAS model.

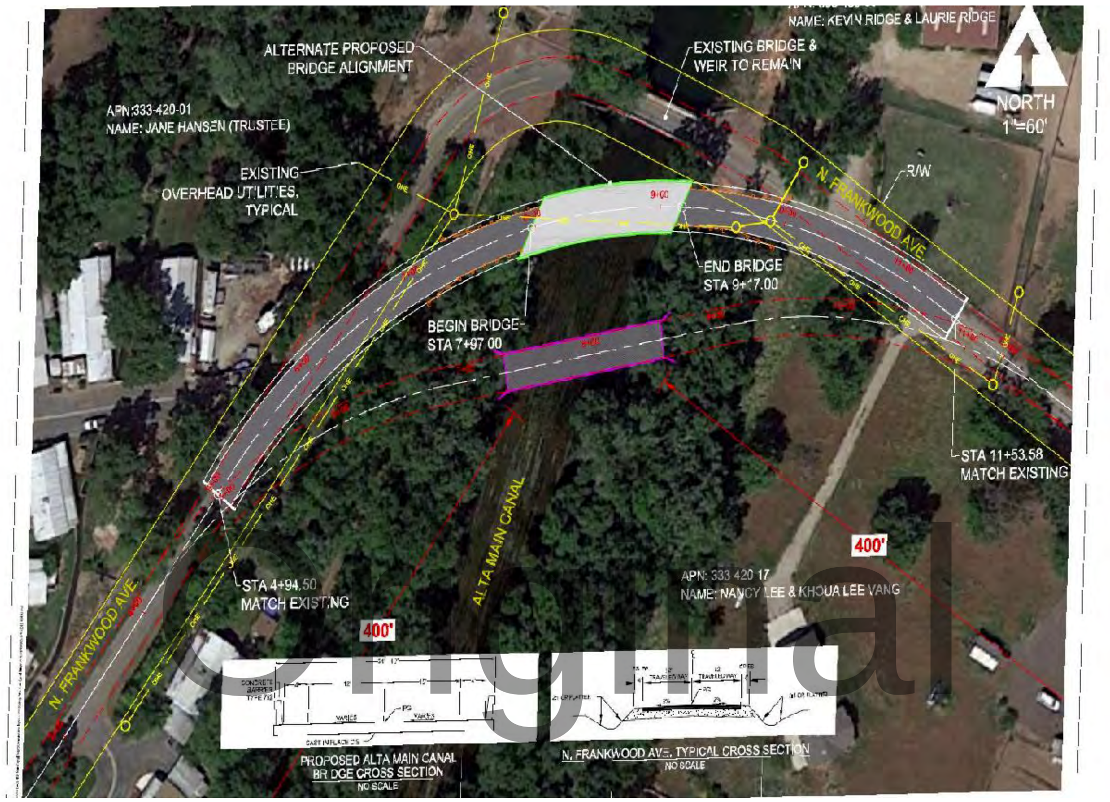

Figure 5 - Suggested Bridge alignments

Data Review and Reconaissance

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Hydrologic Analysis

A detailed hydrologic analysis was not performed for this study. Discussions with AID indicated that no natural flow enters the Alta Canal. Flow only enters the canal when upstream gates are opened along Kings River along N. Piedra Road downstream from Winton Park (See Figure 6). AID provided the Historic high flow of 1,200 cfs in the Canal. The flow values used in the HEC-RAS model are shown in Table 1. The flow of 700 cfs was supplied by AID and is the average irrigation season flow over the period of 2011 to 2015. The +/- values of the historic event were run for sensitivity. 700-, 1,200- and 1,800-cfs are used in the scour calculations.

Table 1 - HEC-RAS Flow Values

Flow (cfs)	Note
700	Normal Irrigation Flow
1,200	Historic High Flow
600	Historic -50%
900	Historic -25%
1500	Historic +25%
1800	Historic +50%

FIGURE 6 - ALTA CANAL DIVERSION FROM KINGS RIVER

HYDRAULIC ANALYSIS

HEC-RAS was used to model the canal through the existing and new bridge locations. Figure 2 shows the reach upstream of the existing bridge. The pond in this area is created by gates which are in place under the existing bridge. A diversion structure is located in the top-middle of Figure 2. This structure diverts water to an adjacent canal and is not modeled for this effort.

Figure 7 through Figure 9 show pictures of the upstream and downstream side of the existing Frankwood Road Bridge. This bridge will not be removed and the new bridge will be placed immediately downstream of the existing bridge as depicted in Figure 5. This reach of Alta Canal was modeled without including the gates under Frankwood Bridge which create the diversion pond upstream of the bridge. The decision to model this reach without an internal boundary gate was selected since it would provide the most significant velocity impacts through the new bridge location.

FIGURE 7 – EXISTING FRANKWOOD ROAD BRIDGE UPSTREAM SIDE

FIGURE 8 – EXISTING FRANKWOOD ROAD BRIDGE DOWNSTEAM SIDE

FIGURE 9 – EXISTING FRANKWOOD ROAD BRIDGE DOWNSTREAM SIDE CLOSEUP

TOPOGRAPHY

The terrain data for the canal and adjacent area was supplied by Fresno County in the form of Autocad drawings. These were imported into ArcGIS and HEC-GeoRAS was used to extract cross-scetion data. Figure 10 depicts the digital terrain data used to extract the canal cross sections. Figure 11 shows the extent of the HEC-RAS model which includes both the existing bridge and the new bridge.

FIGURE 10 - DIGITAL TERRAIN

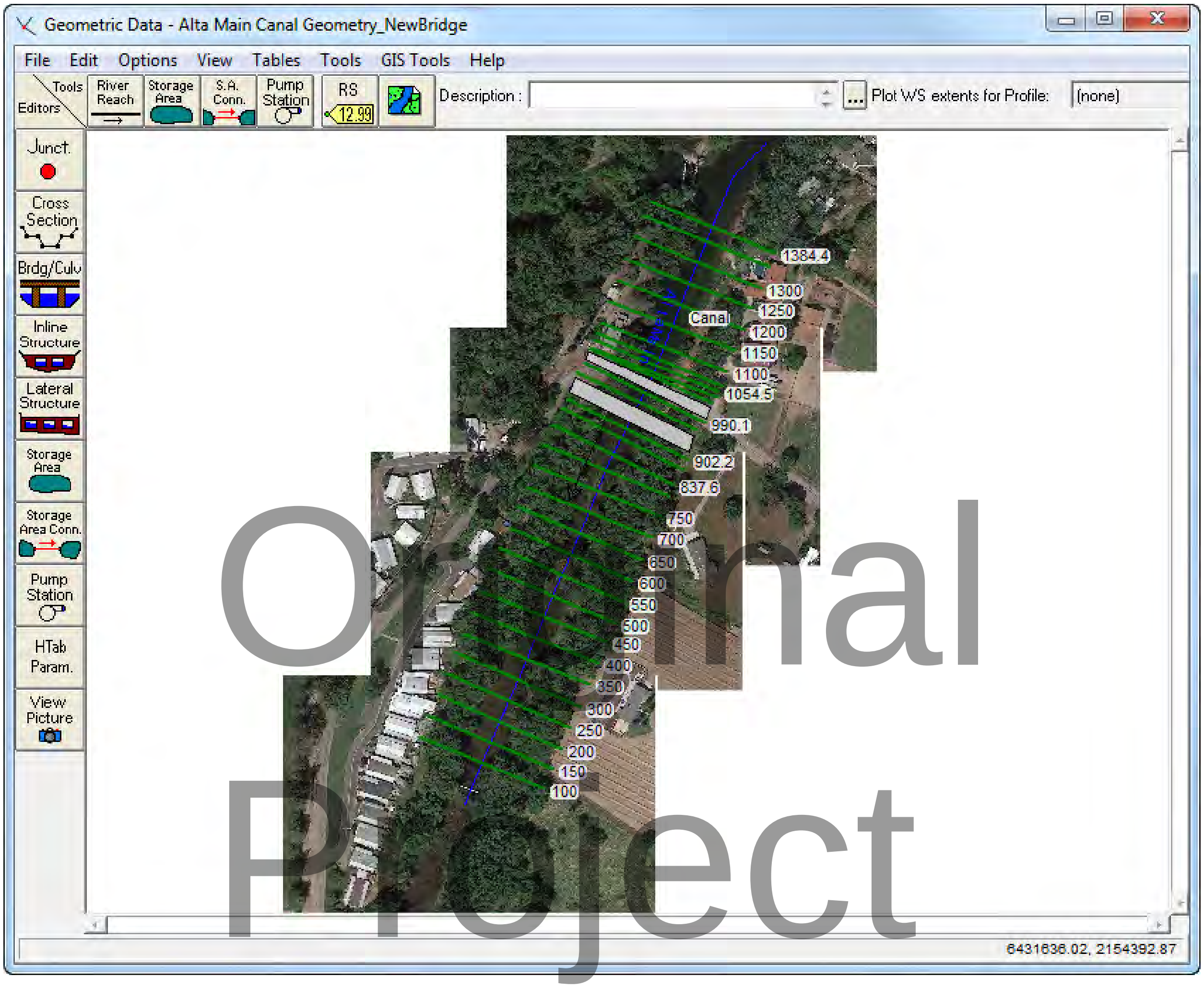


FIGURE 11- HEC-RAS MODEL COVERAGE

Figure 12 shows a typical cross section for the modeled reach of Alta Canal.

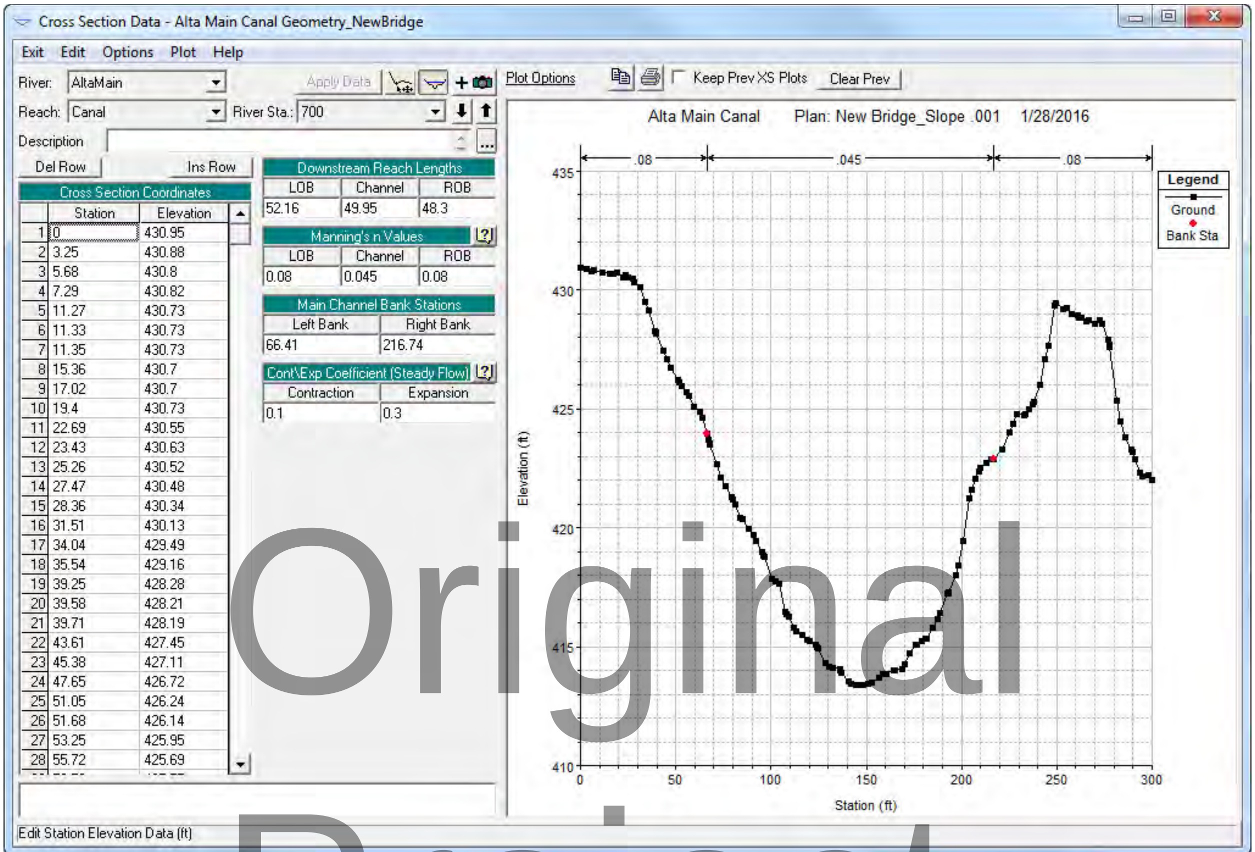


FIGURE 12 - TYPICAL HEC-RAS CROSS SECTION (STATION 700)

BRIDGE MODELING

The existing bridge and new bridge were modeled in HEC-RAS using the As-Built drawing for the existing bridge and design drawings for the new bridge. Figure 13 and Figure 14 show the existing Frankwood Road Bridge and the New Bridge, respectively, as modeled in HEC-RAS.

RESULTS

Figure 15 depicts the computed profiles for all six of the flows listed in Table 1. HEC-RAS model geometry, bridge and pier modeling input and HEC-RAS Standard Table 1 results are shown in Appendix A. Table 2 presents the computed water surface elevation at the upstream side of the new bridge.

TABLE 2 - WATER SURFACE ELEVATIONS AT UPSTREAM FACE OF NEW BRIDGE

Flow (cfs)	Elevation (ft) NGVD88
600	417.78
700	418.07
900	418.59
1,200	419.27
1,500	419.76
1,800	420.30

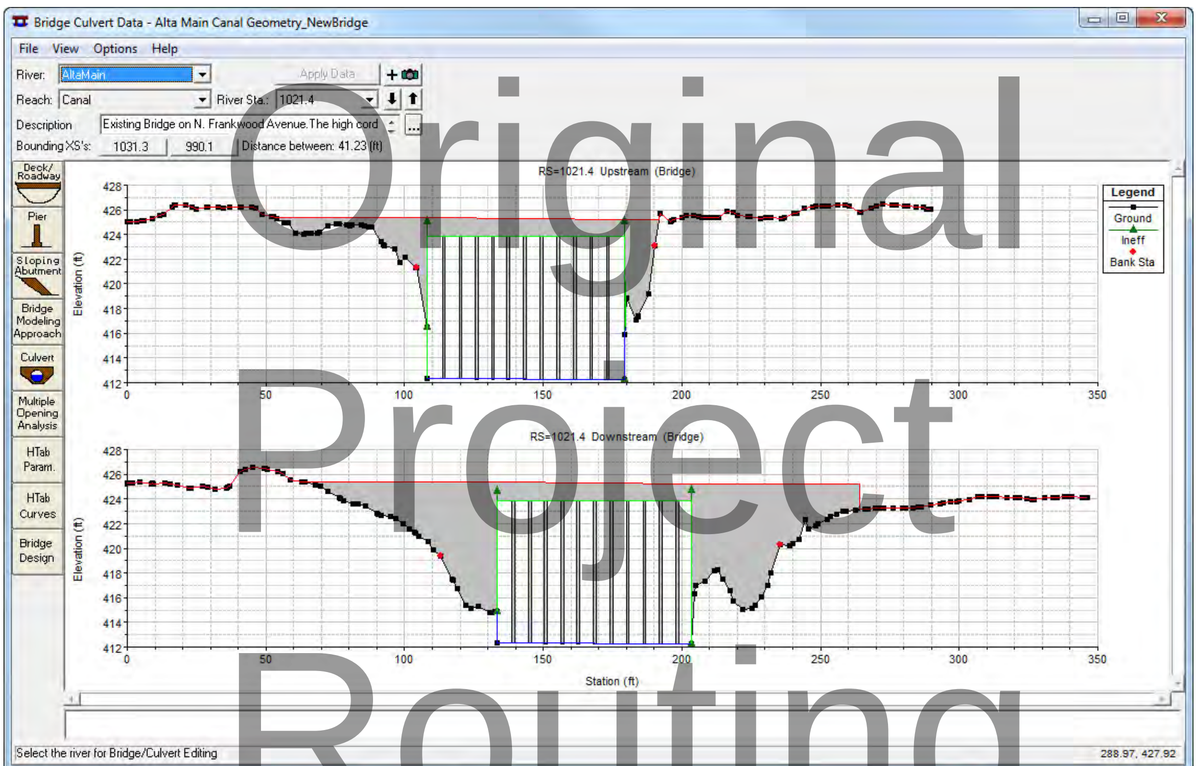


FIGURE 13 - EXISTING FRANKWOOD BRIDGE CROSSING

FIGURE 14 - NEW BRIDGE

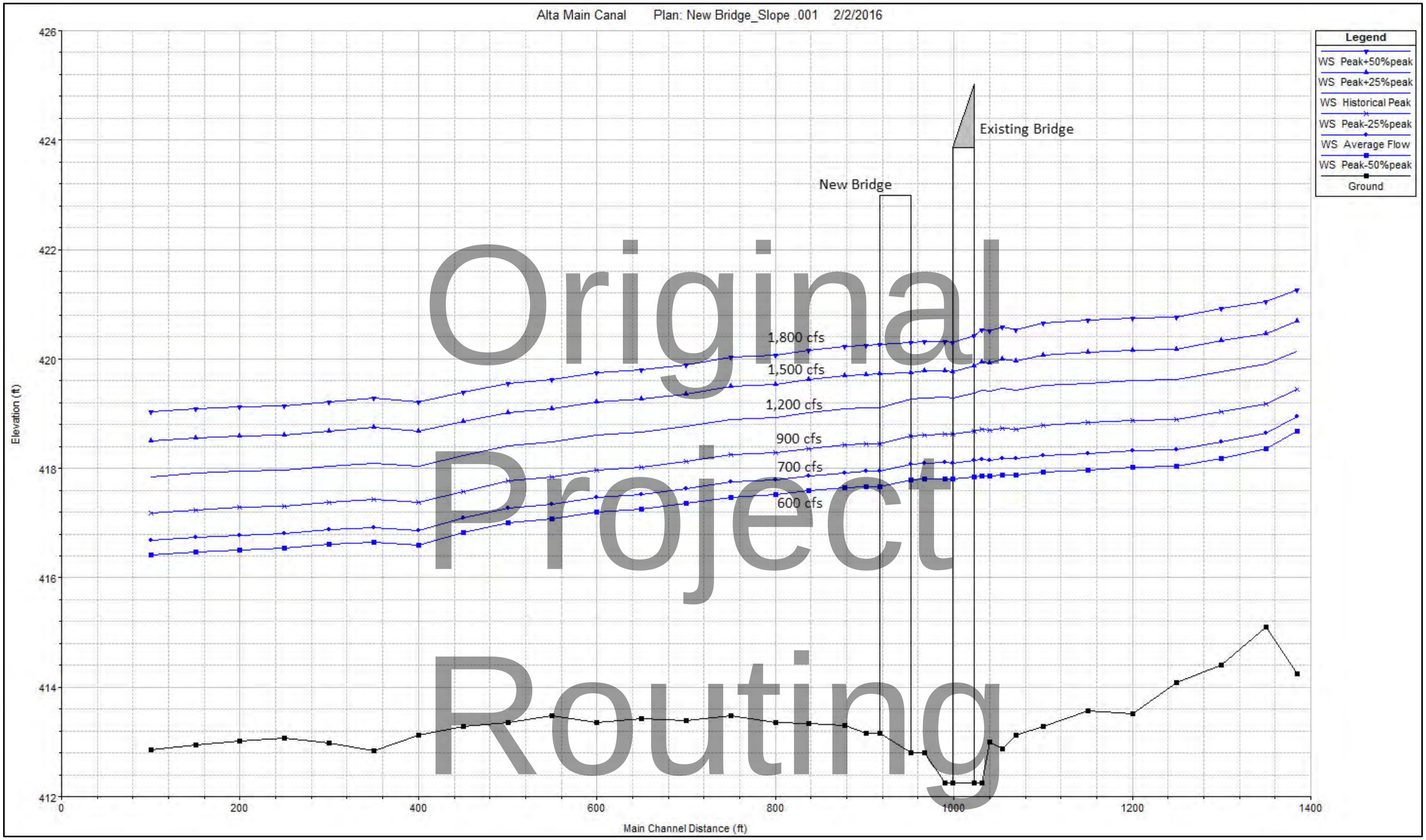


FIGURE 15 - WATER SURFACE PROFILES

Bridge Location Hydraulic Report

The Bridge Location Hydraulic Report will be completed in accordance with Cal Trans Environmental Handbook, Volume 1, Guidance for Compliance. Chapter 17 of Volume 1 discusses Preparing a Locations Hydraulics Study and generation of the Location Hydraulic Study.

Scour Analysis

Potential scour at the new bridge over the Alta Main Canal was evaluated using the guidelines outlined in the Federal Highway Administration (FHWA) publications HEC-18, *Evaluating Scour at Bridges* (FHWA, 2012). The following three flows profiles were evaluated: historical peak+50% (1,800 cfs), historical peak (1,200 cfs), and average (700 cfs).

The total scour at the structure is the sum of three components: (1) long-term degradation of the river bed, (2) general scour at the structure, including contraction and/or bend scour, and (3) local scour at piers or abutments. A brief description of each scour component is provided below.

Long-Term Degradation

Long-term degradation is associated with streambed lowering over a significant stream length, over an extended time period (i.e., not on a seasonal basis). The time scale for long-term degradation is usually in the order of magnitude of the life of the structure, such as 50 to 100 years or more. There was no indication of long-term degradation observed during the site visit and the bottom of the channel includes a layer of cobbles in the bridge vicinity. Based on these observations, long-term degradation is assumed to be negligible.

General Scour

General scour involves lowering of the streambed across the stream at the bridge or culvert, and is typically associated with contraction of the flow, but may also result from the presence of a bend in the stream channel. General scour may be cyclic and is associated with a flood event.

Bend scour is not applicable for the proposed bridge due to the straight canal alignment. Horizontal contraction scour is caused by the contraction of flow due to the embankments encroaching into the floodplain and/or the main channel, or the contraction of flow due to piers. The flow area is reduced, increasing velocities and shear stresses on the bed of the channel, potentially causing the channel at the bridge to scour.

Contraction scour was computed for the proposed bridge based on two 2.0-foot wide piers. Geotechnical information or a grain size distribution was not available for the bridge. Several grain sizes were assumed in the sand range (0.2 mm to 5 mm) and the contraction scour was computed to be zero for the three flow profiles.

Local Scour

Local scour involves scour around bridge piers, abutments, and embankments. It is usually cyclical in nature and is caused by acceleration of flow and cross currents induced by obstructions. Factors such as pier width, angle of attack, flow depth, and flow velocities have a direct influence on the amount of local scour.

Pier Scour: Local scour at the piers is a function of the flow characteristics and the obstruction caused by the geometry of the piers. Pier scour is caused by the formation of vortices at the base of the piers (known as horseshoe vortices) and vertical vortices downstream of the piers (wake vortex). Pier width has a direct influence on the depth of scour. Pier length has no appreciable effect as long as the pier is aligned with the flow. The proposed bridge pier is aligned with the flow. The HEC-18 modified version of the CSU (Colorado State University) equation was used to calculate pier scour of 4.1 feet for the historical peak+50% profile.

Abutment Scour: Abutment scour depends on the interaction of the overbank flow obstructed by the abutment, the roadway approach, and the flow in the main channel at the abutment. Abutment scour is neglible for the new bridge because there is no flow being trapped by the abutments.

Scour Depth Recommendations

The total scour depth estimate is the sum of the computed long-term degradation, local pier scour, and contraction scour. Scour calculations are provided in Appendix B.

Potential scour was computed at the proposed bridge for the three flow profiles (1,800 cfs, 1,200 cfs, and 700 cfs). For the three flood events, contraction scour and long-term degradation were determined to be negligible, therefore the total scour depth is the pier scour depth. The lowest invert elevation in the vicinity of the proposed bridge is 412.3, therefore the total scour elevation was determed by subtracting the pier scour depth from this elevation, Table 3.

TABLE 3 - POTENTIAL SCOUR FOR PROPOSED ALTA CANAL BRIDGE

Scour Type	Pier Scour Depth (feet)		
	Peak + 50% Peak (1,800 cfs)	Historical (1,200 cfs)	Average (700 cfs)
Pier Scour Depth	4.1	3.7	3.3
Reference Invert Elevation	412.3	412.3	412.3
Total Scour Elevation	408.2	408.6	409.0

Original
Project
Routing

References

Federal Highway Administration (2012). *Evaluating Scour at Bridges*, Fifth Edition, Hydraulic Engineering Circular No. 18 (HEC-18), April 2012.

Appendix A

HEC-RAS Model Input and Results

Geometric Data

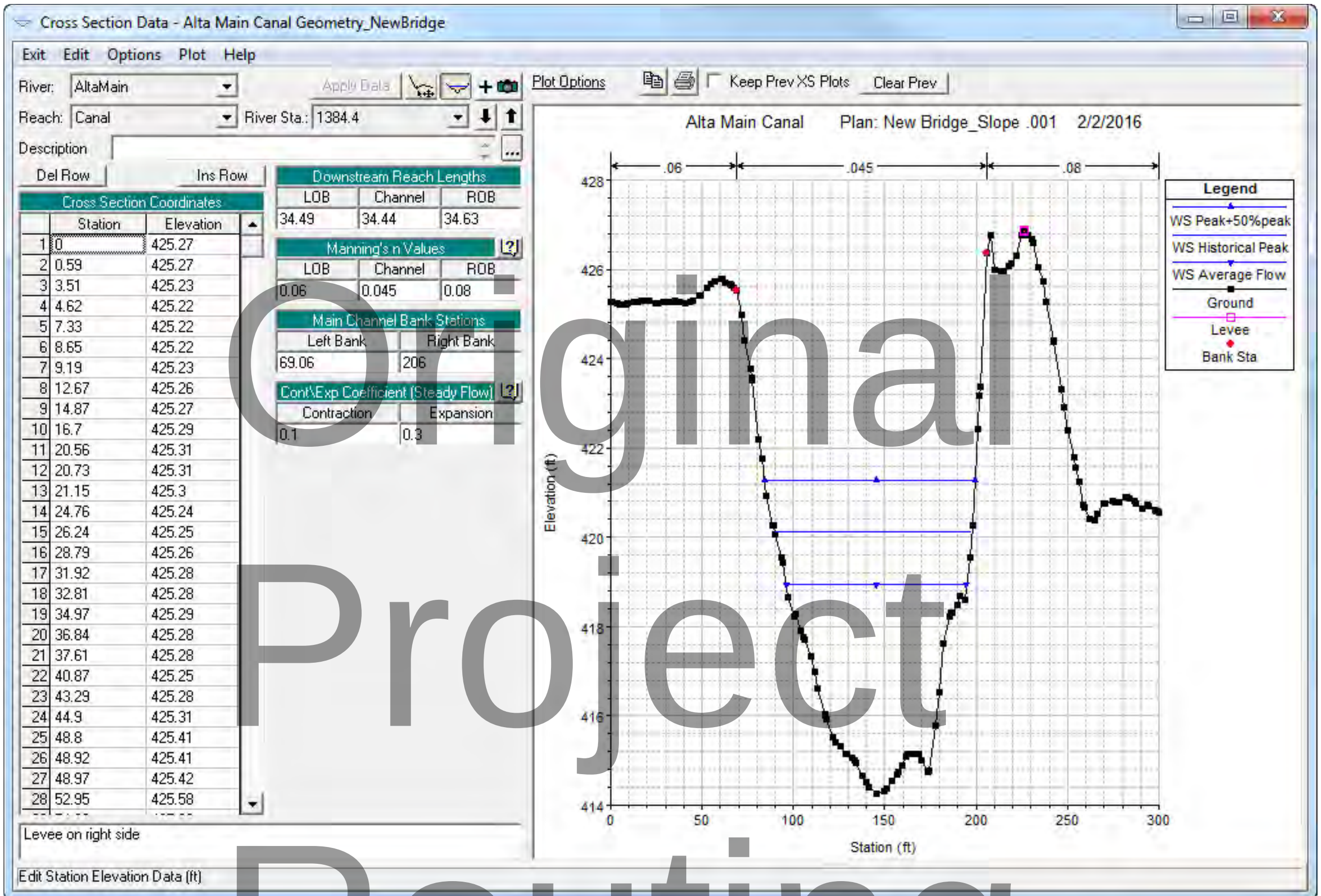


Figure 16 - Cross Section 1384.4

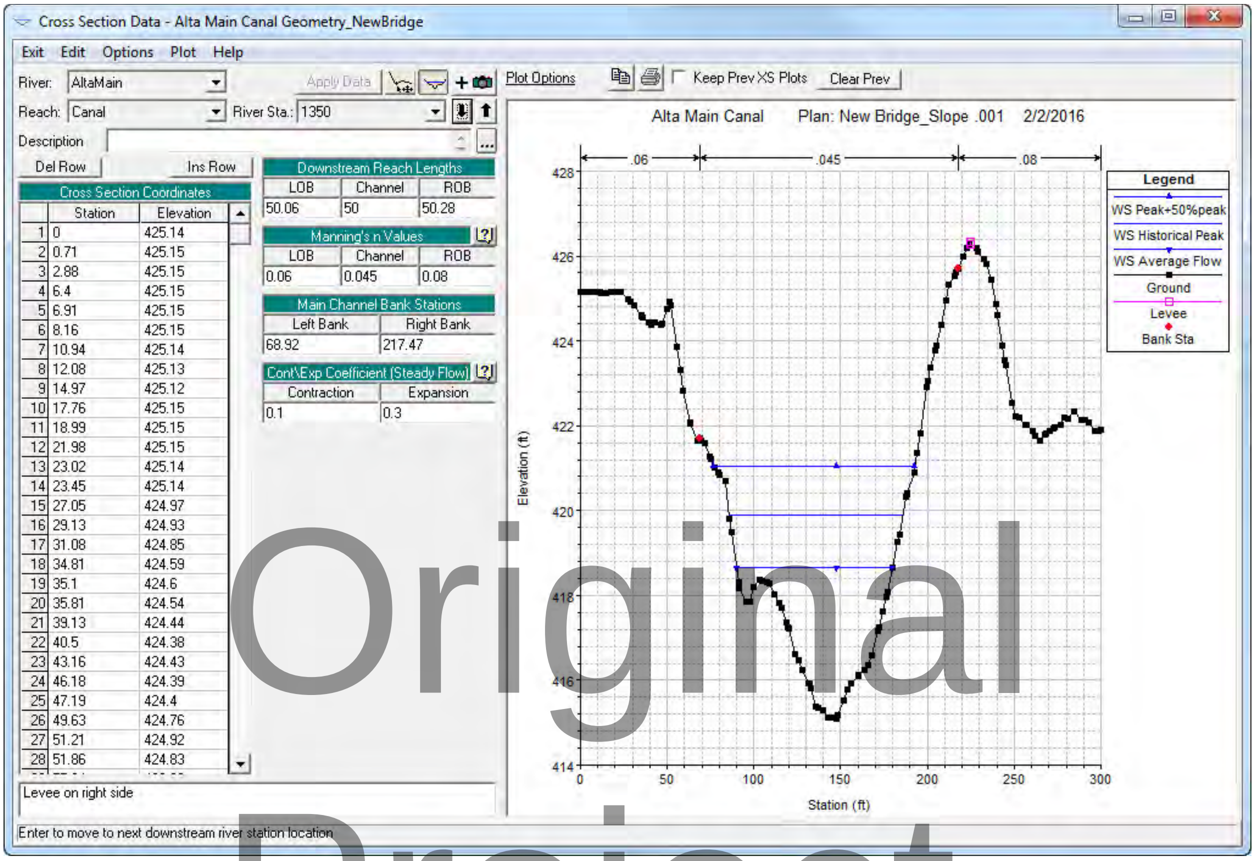


Figure 17 - Cross Section 1350

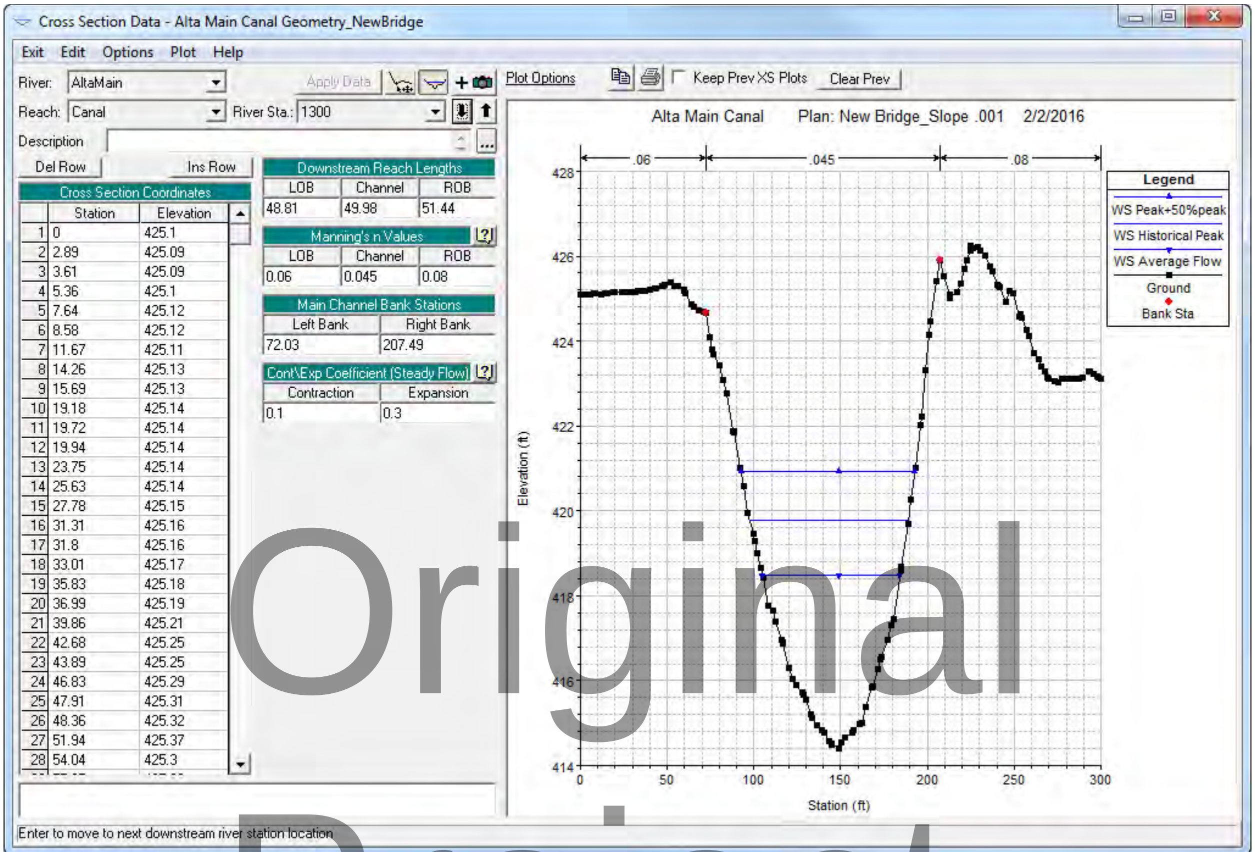


FIGURE 18 - CROSS SECTION 1300

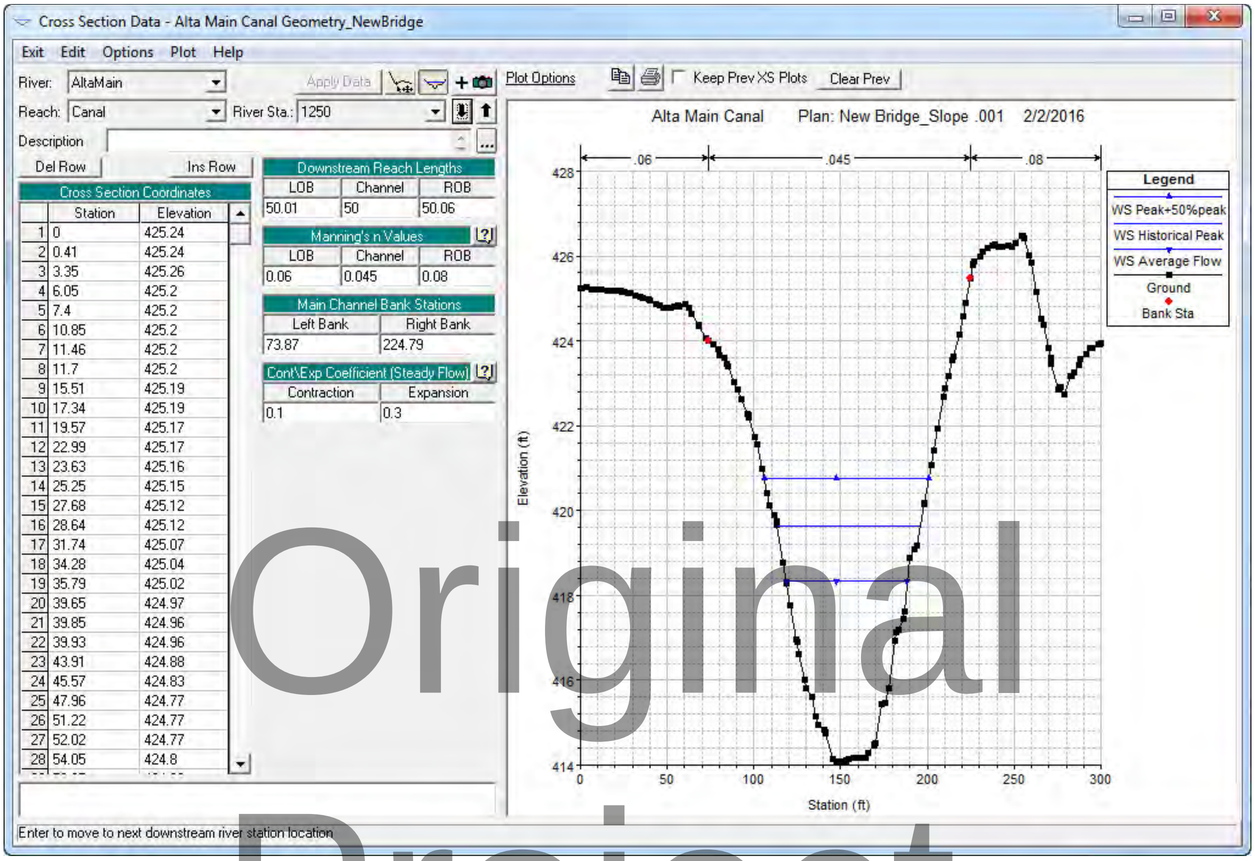


FIGURE 19 - CROSS SECTION 1250

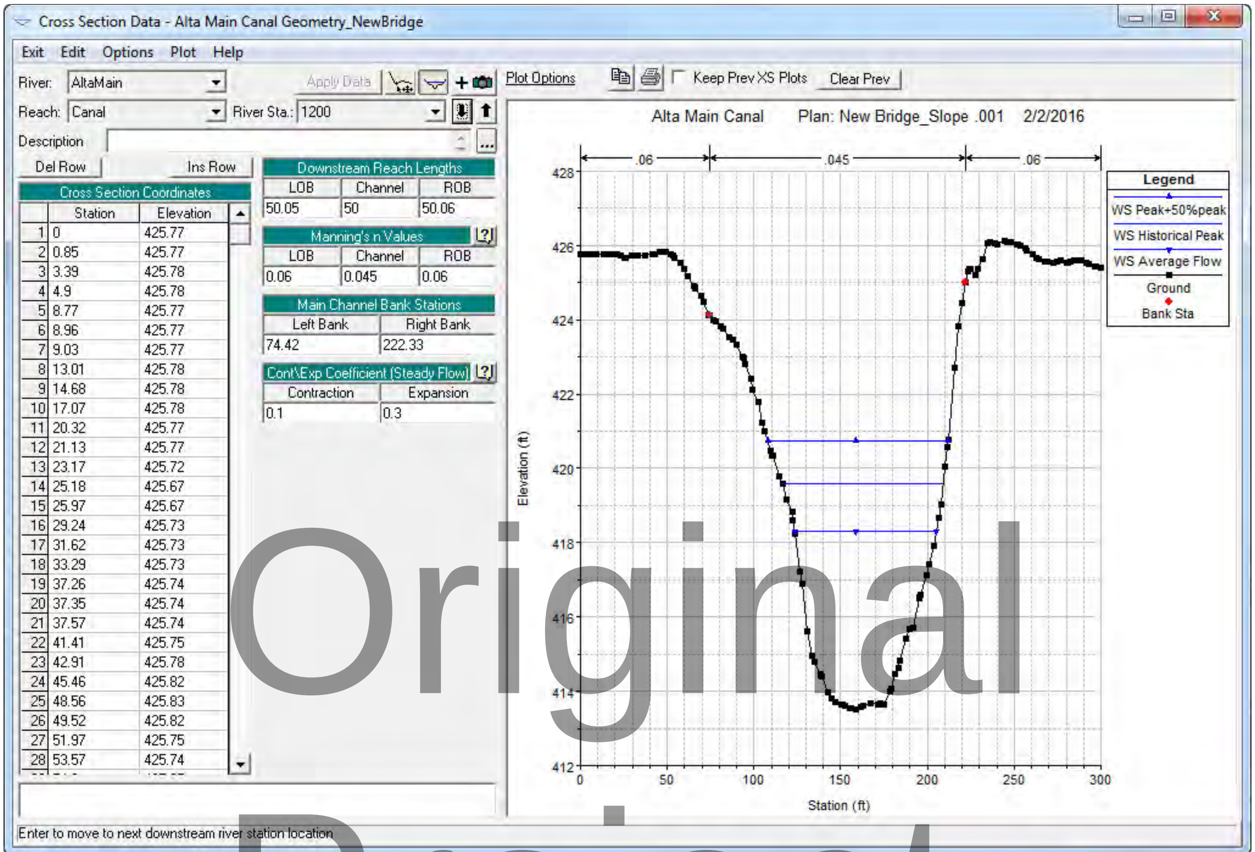


FIGURE 20 - CROSS SECTION 1200

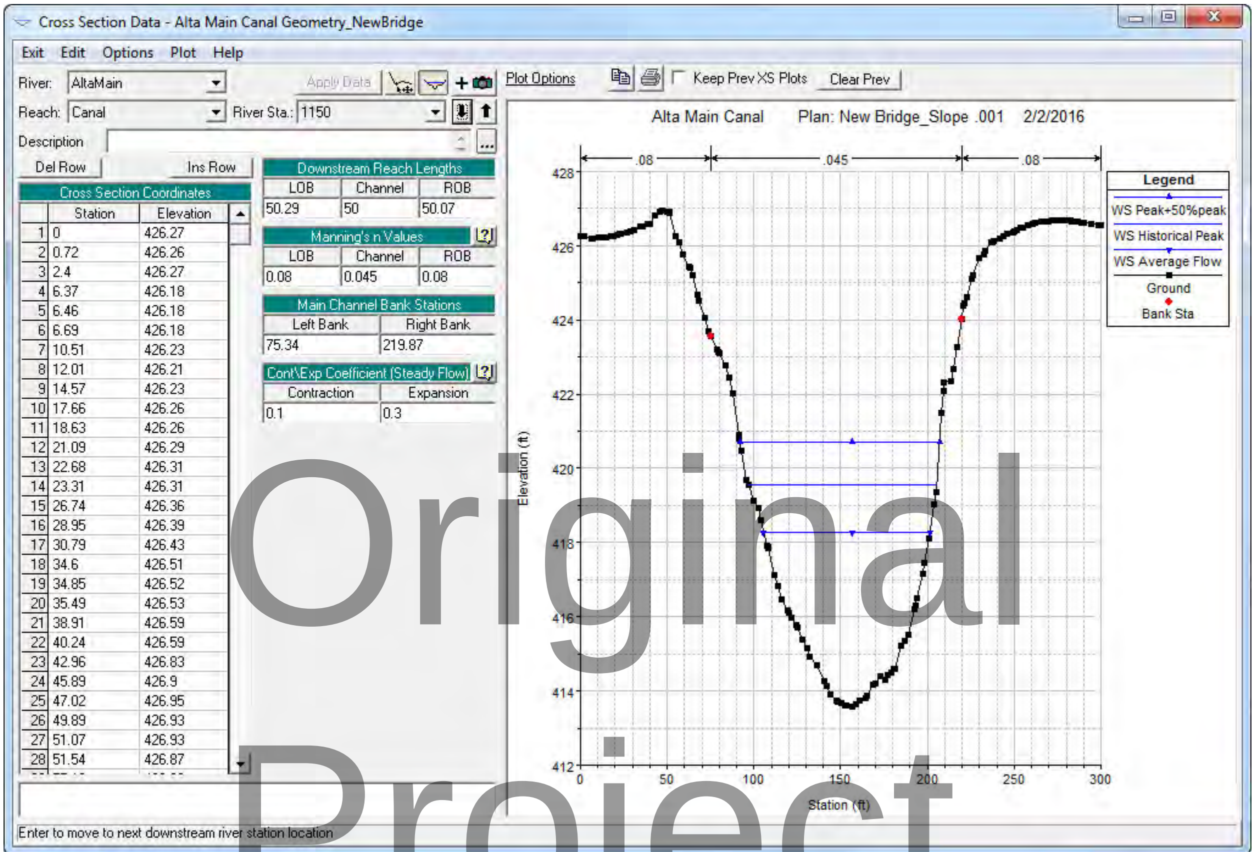


FIGURE 21 - CROSS SECTION 1150

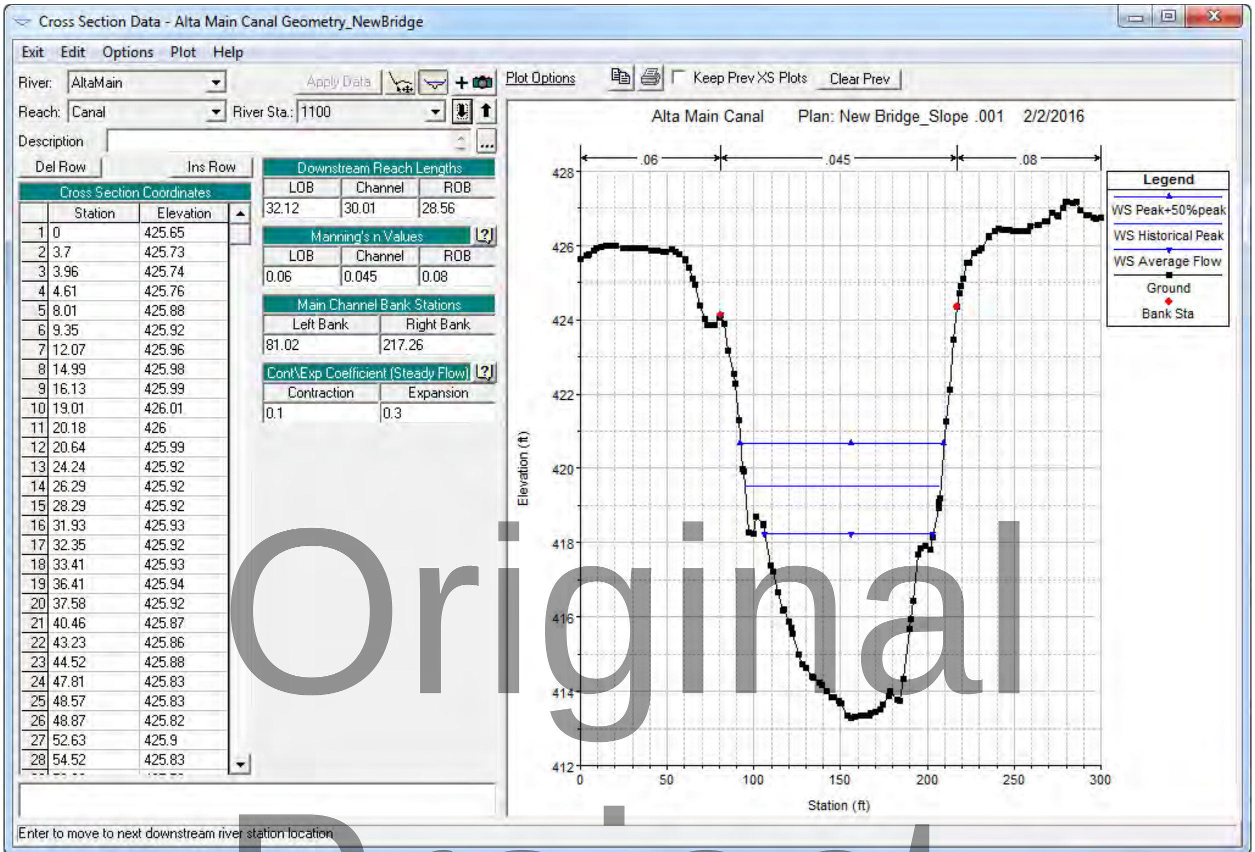
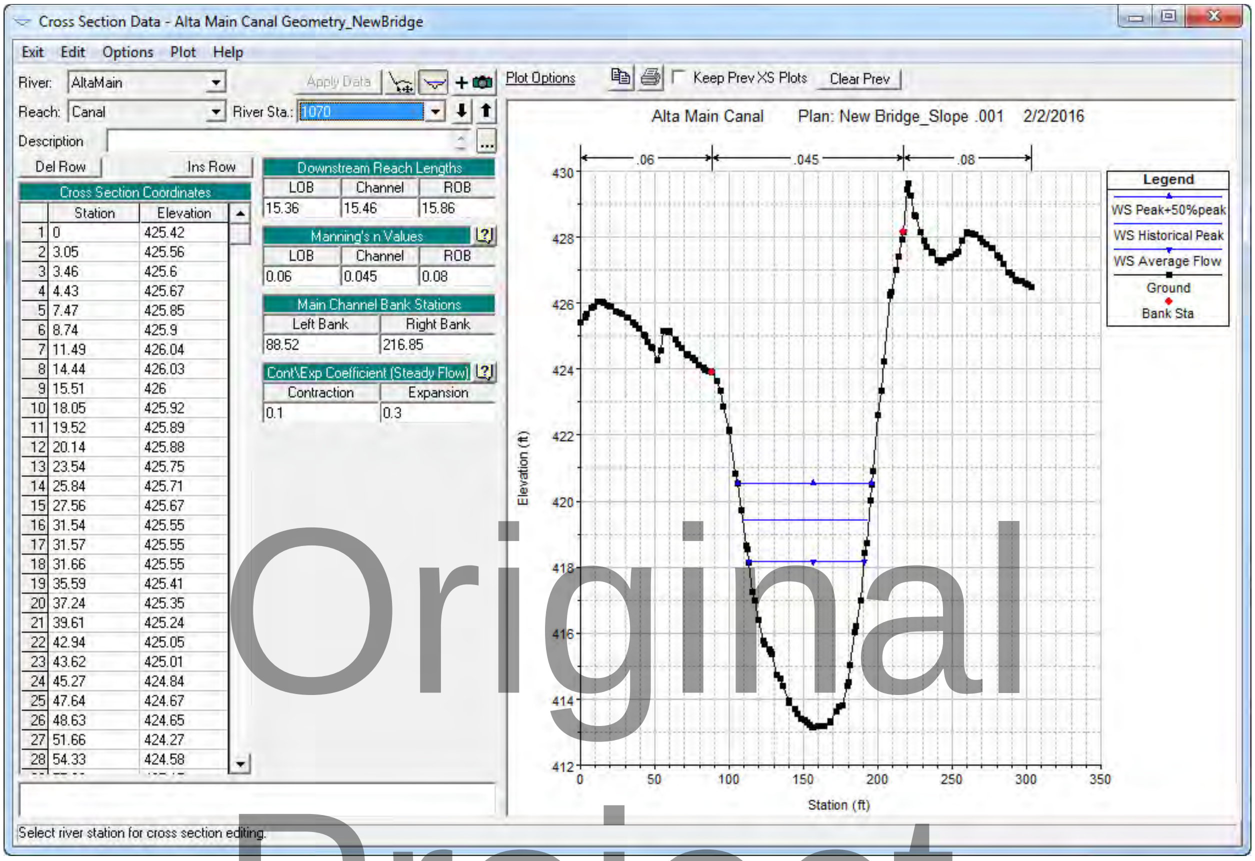


FIGURE 22CROSS SECTION 1100



	Station	Elevation
1	0	425.42
2	3.05	425.56
3	3.46	425.6
4	4.43	425.67
5	7.47	425.85
6	8.74	425.9
7	11.49	426.04
8	14.44	426.03
9	15.51	426
10	18.05	425.92
11	19.52	425.89
12	20.14	425.88
13	23.54	425.75
14	25.84	425.71
15	27.56	425.67
16	31.54	425.55
17	31.57	425.55
18	31.66	425.55
19	35.59	425.41
20	37.24	425.35
21	39.61	425.24
22	42.94	425.05
23	43.62	425.01
24	45.27	424.84
25	47.64	424.67
26	48.63	424.65
27	51.66	424.27
28	54.33	424.58

Figure 23 - Cross Section 1070

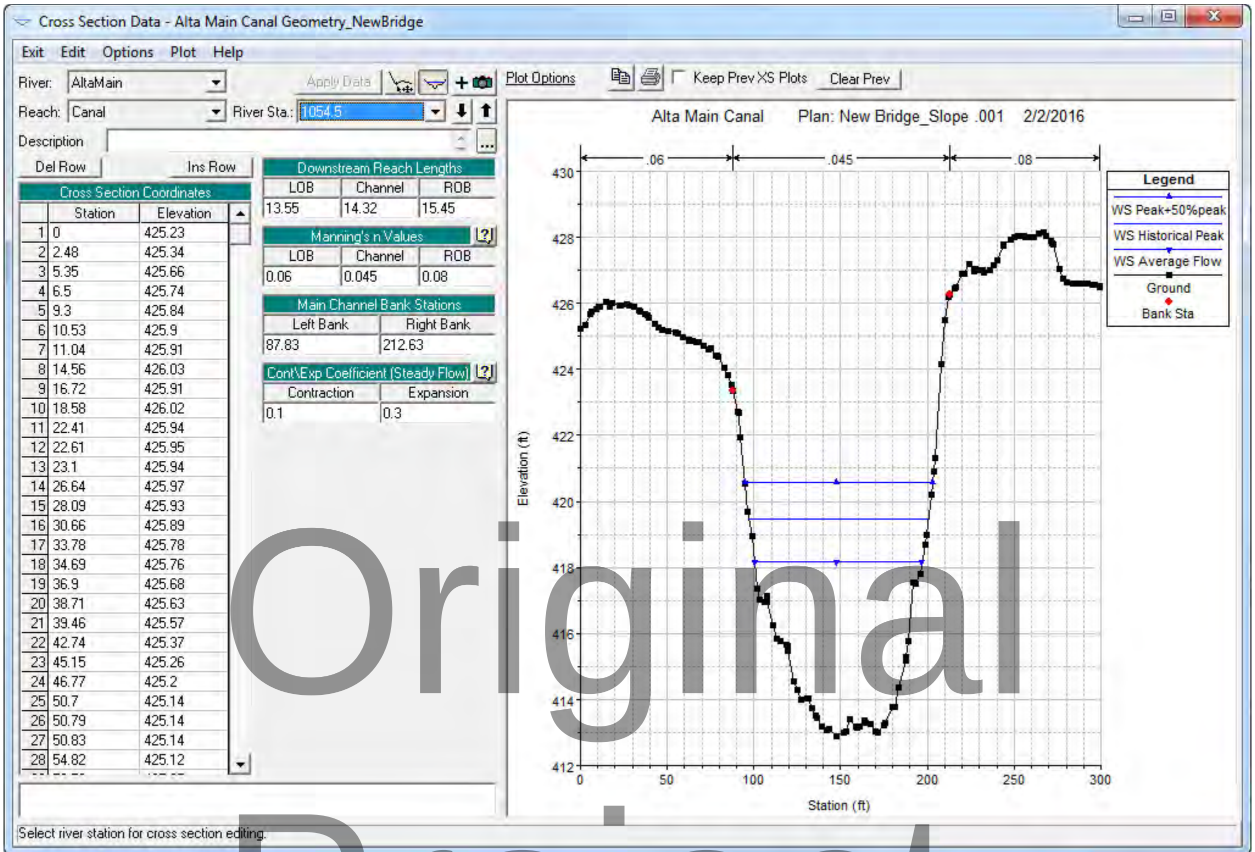
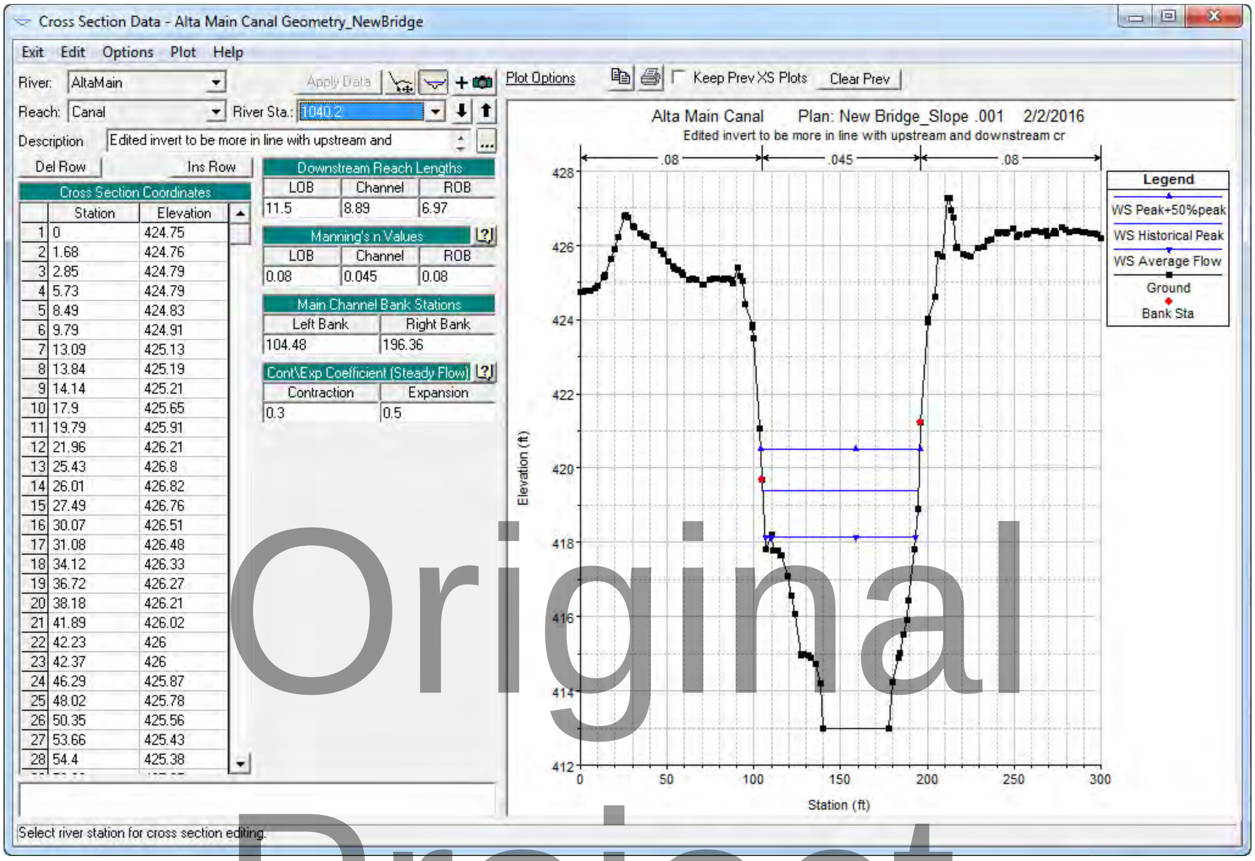


FIGURE 24 - CROSS SECTION 1054.5



	Station	Elevation
1	0	424.75
2	1.68	424.76
3	2.85	424.79
4	5.73	424.79
5	8.49	424.83
6	9.79	424.91
7	13.09	425.13
8	13.84	425.19
9	14.14	425.21
10	17.9	425.65
11	19.79	425.91
12	21.96	426.21
13	25.43	426.8
14	26.01	426.82
15	27.49	426.76
16	30.07	426.51
17	31.08	426.48
18	34.12	426.33
19	36.72	426.27
20	38.18	426.21
21	41.89	426.02
22	42.23	426
23	42.37	426
24	46.29	425.87
25	48.02	425.78
26	50.35	425.56
27	53.66	425.43
28	54.4	425.38

FIGURE 25 - CROSS SECTION 1040.2

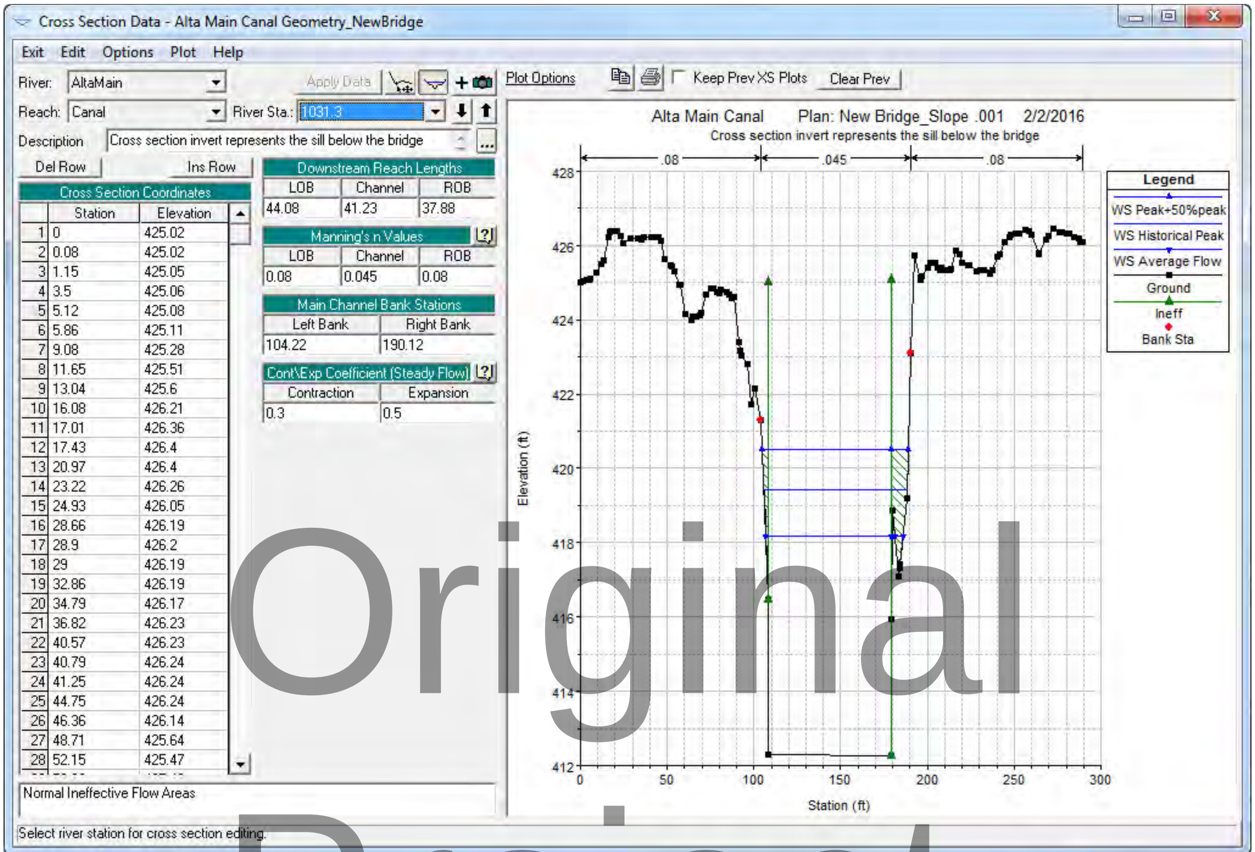


FIGURE 26 - CROSS SECTION 1031.3

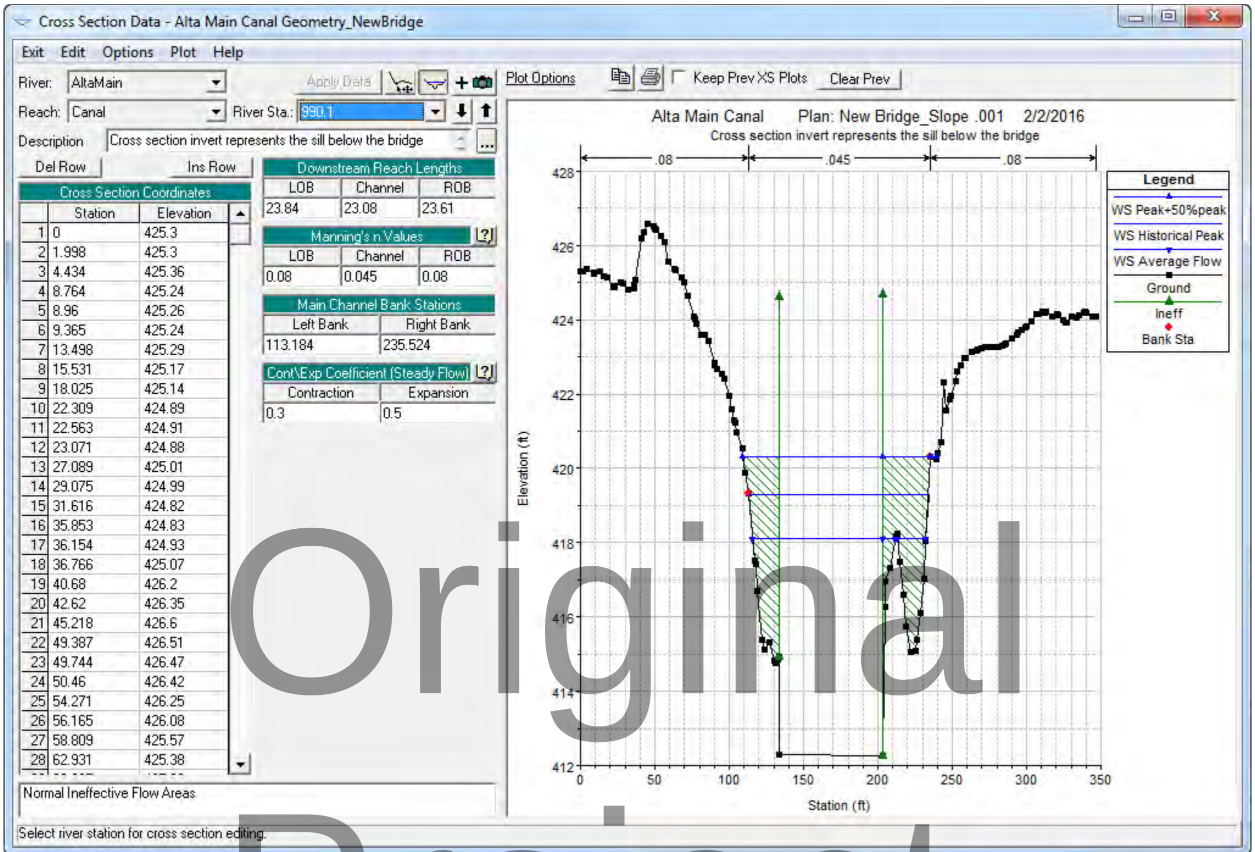


FIGURE 27 - CROSS SECTION 990.1

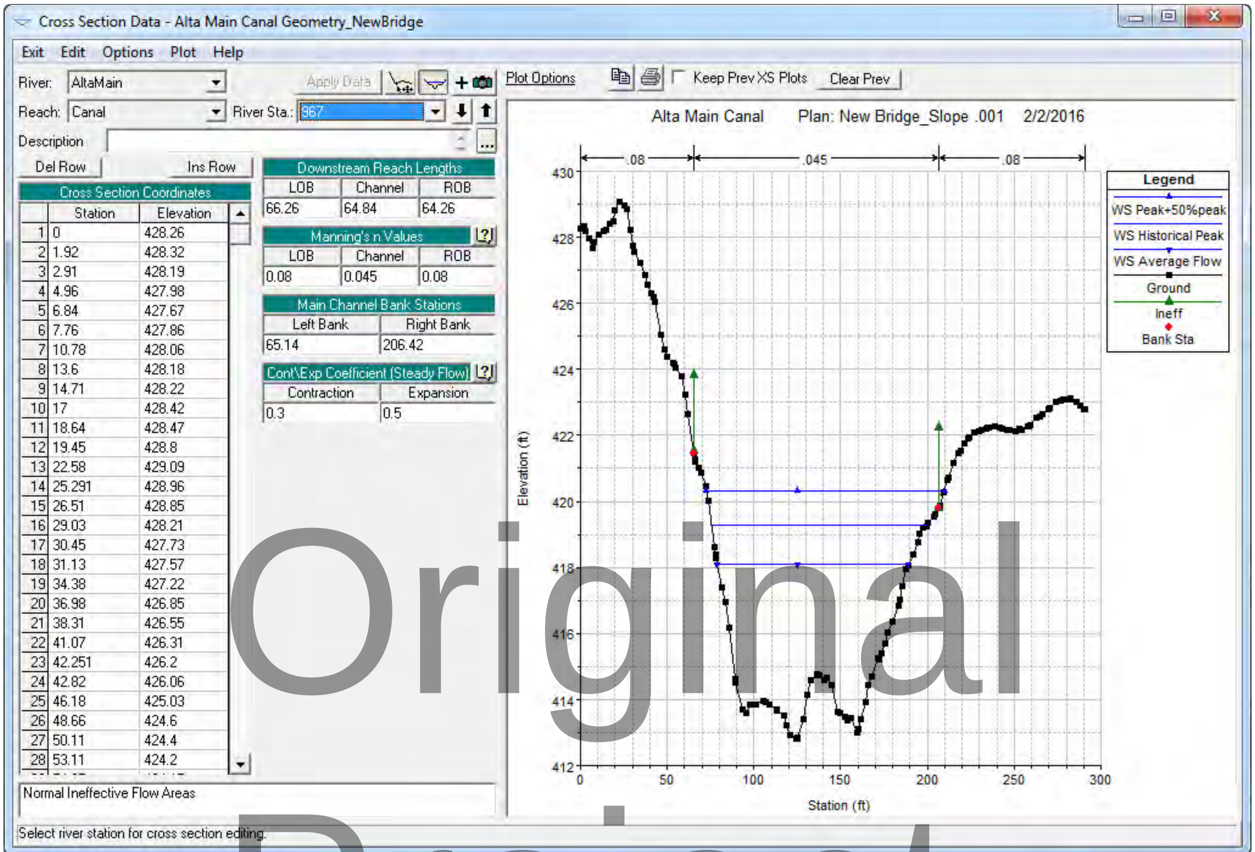


FIGURE 28 - CROSS SECTION 967

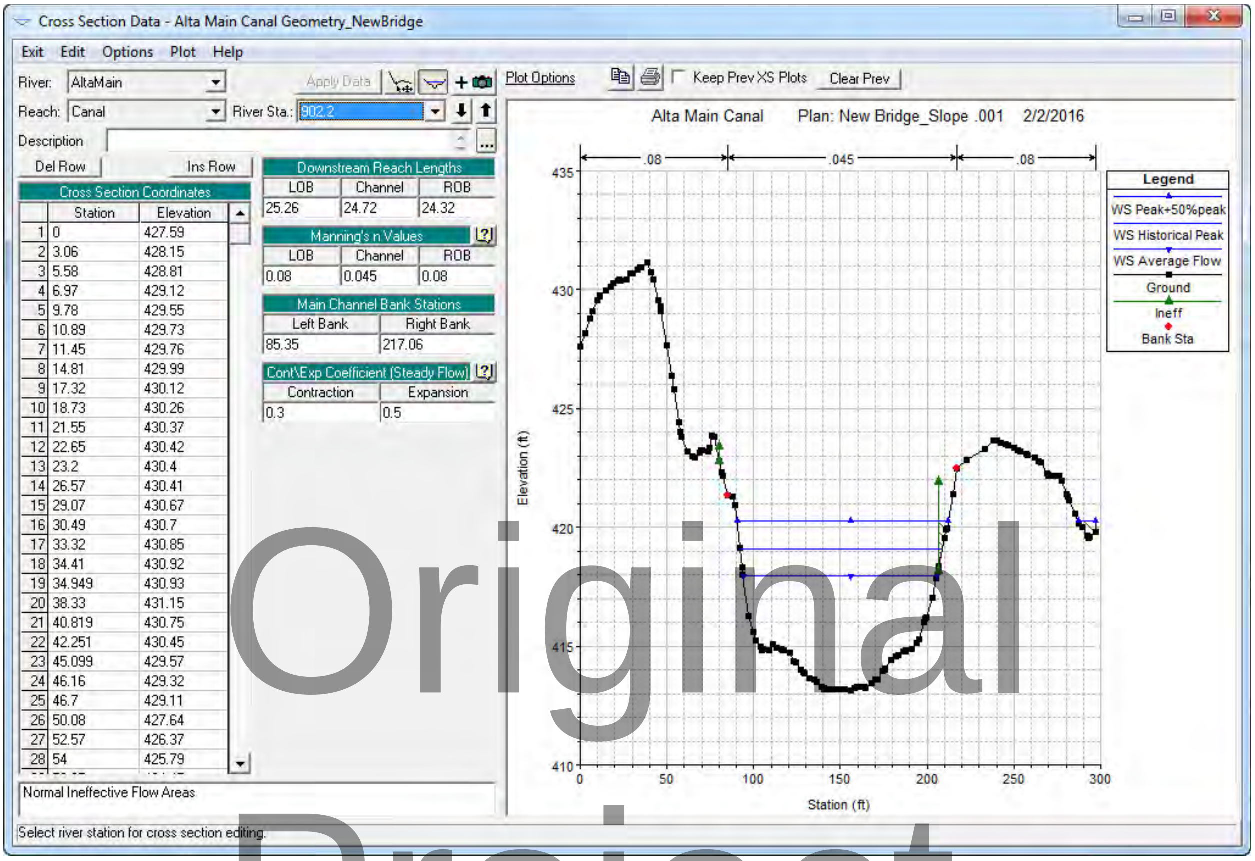


FIGURE 29 - CROSS SECTION 902.2

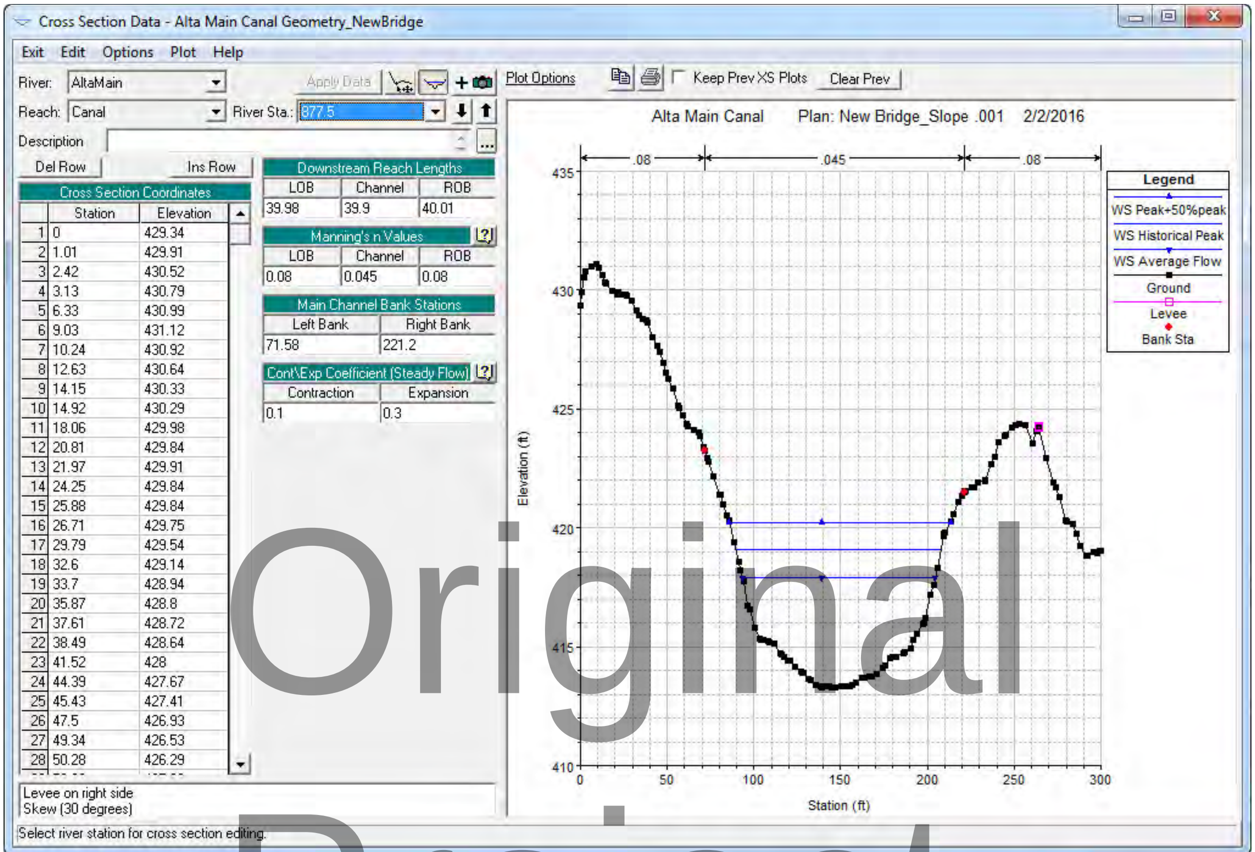


FIGURE 30 - CROSS SECTION 877.5

FIGURE 31 - CROSS SECTION 937.6

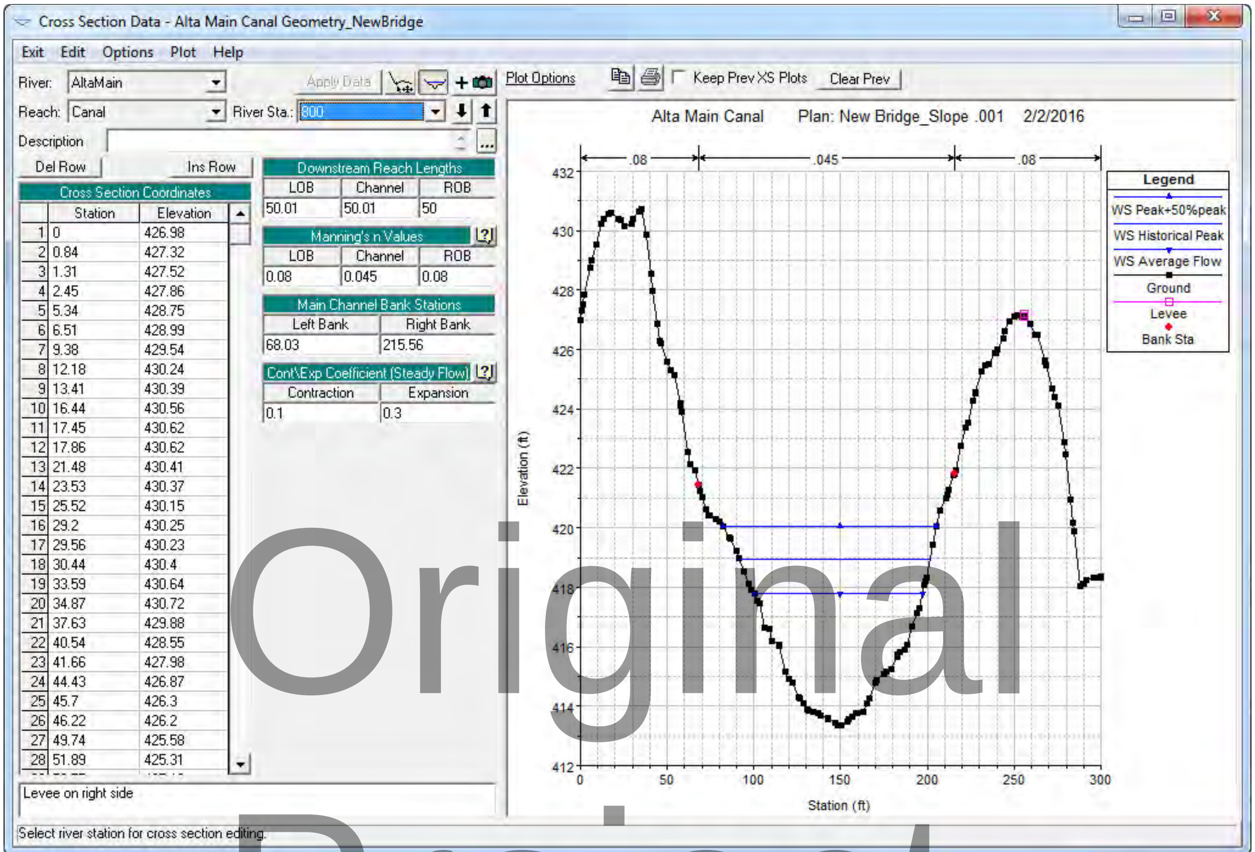


FIGURE 32 - CROSS SECTION 800

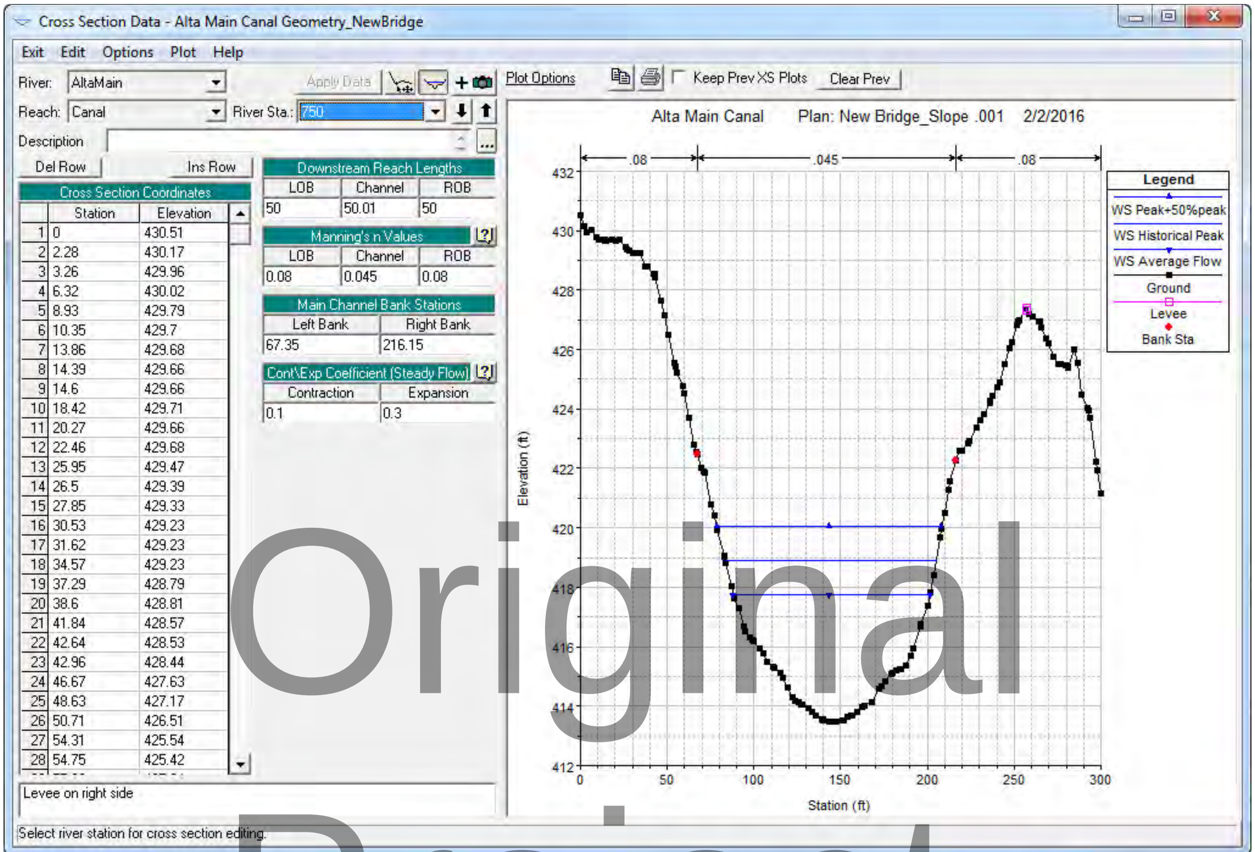


Figure 33 - Cross Section 750

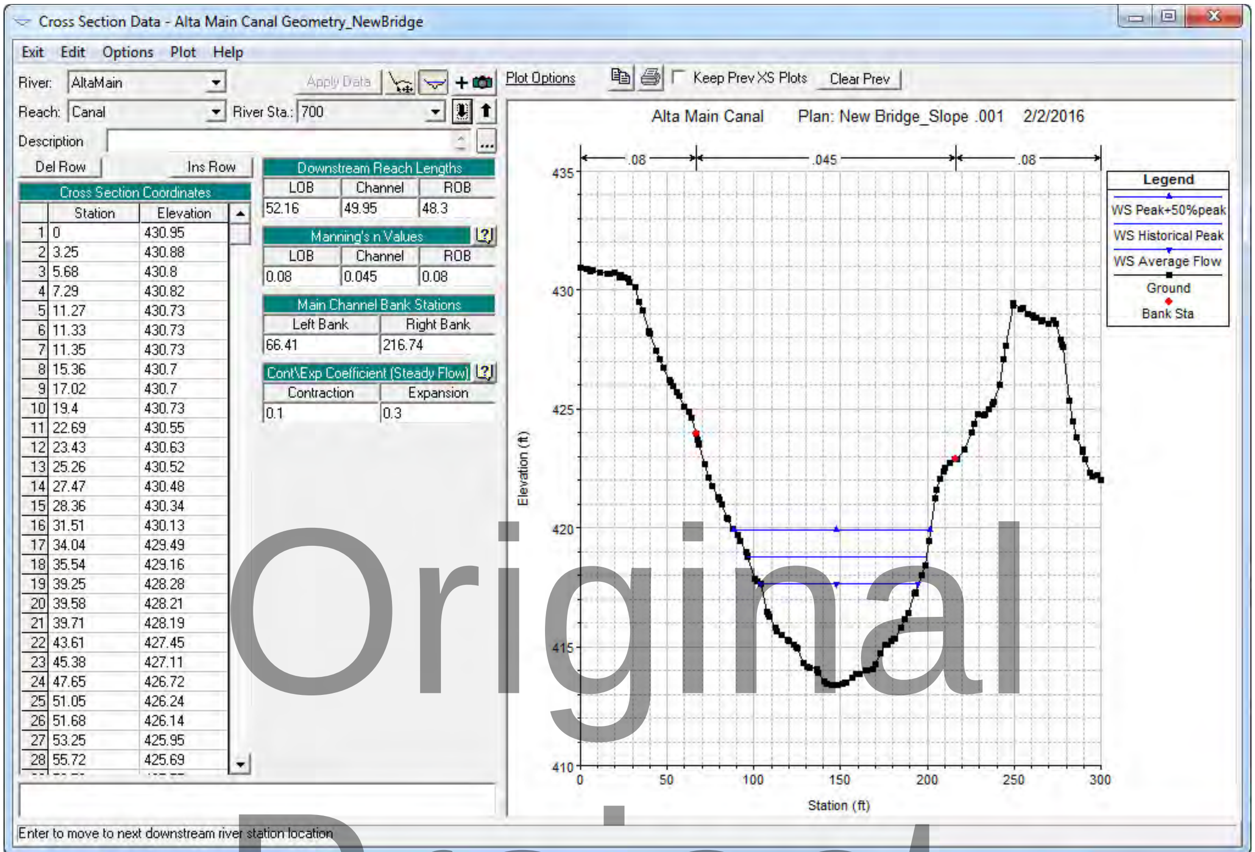


FIGURE 34 - CROSS SECTION 700

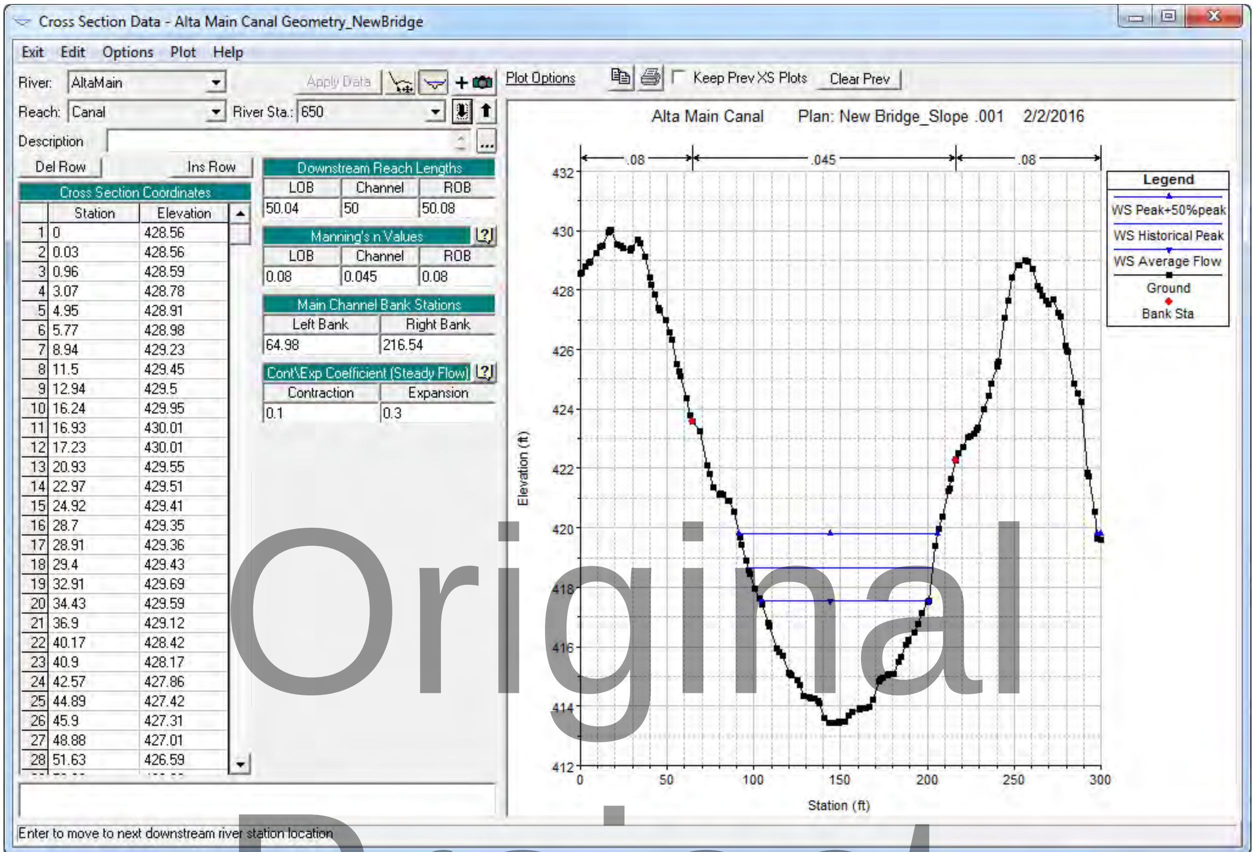


FIGURE 35 - CROSS SECTION 650

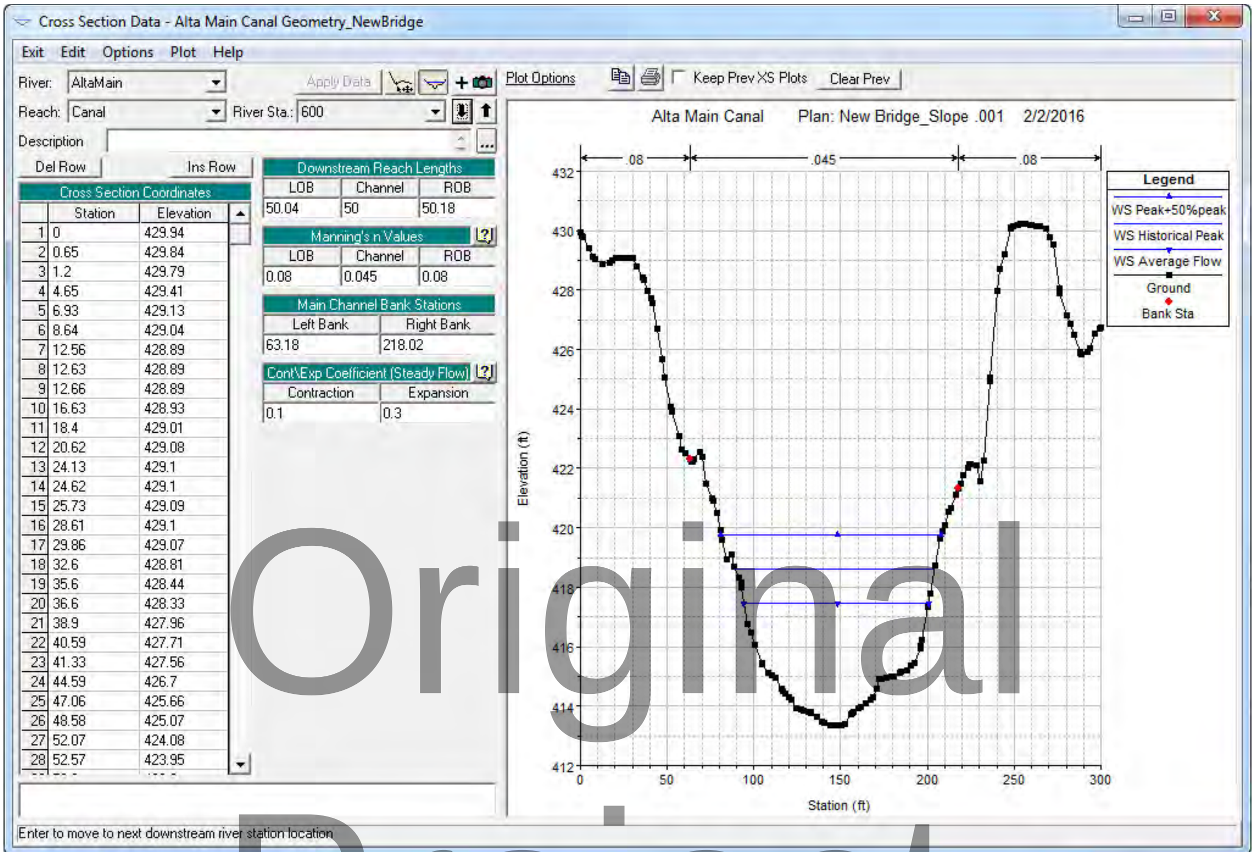


FIGURE 36 - CROSS SECTION 600

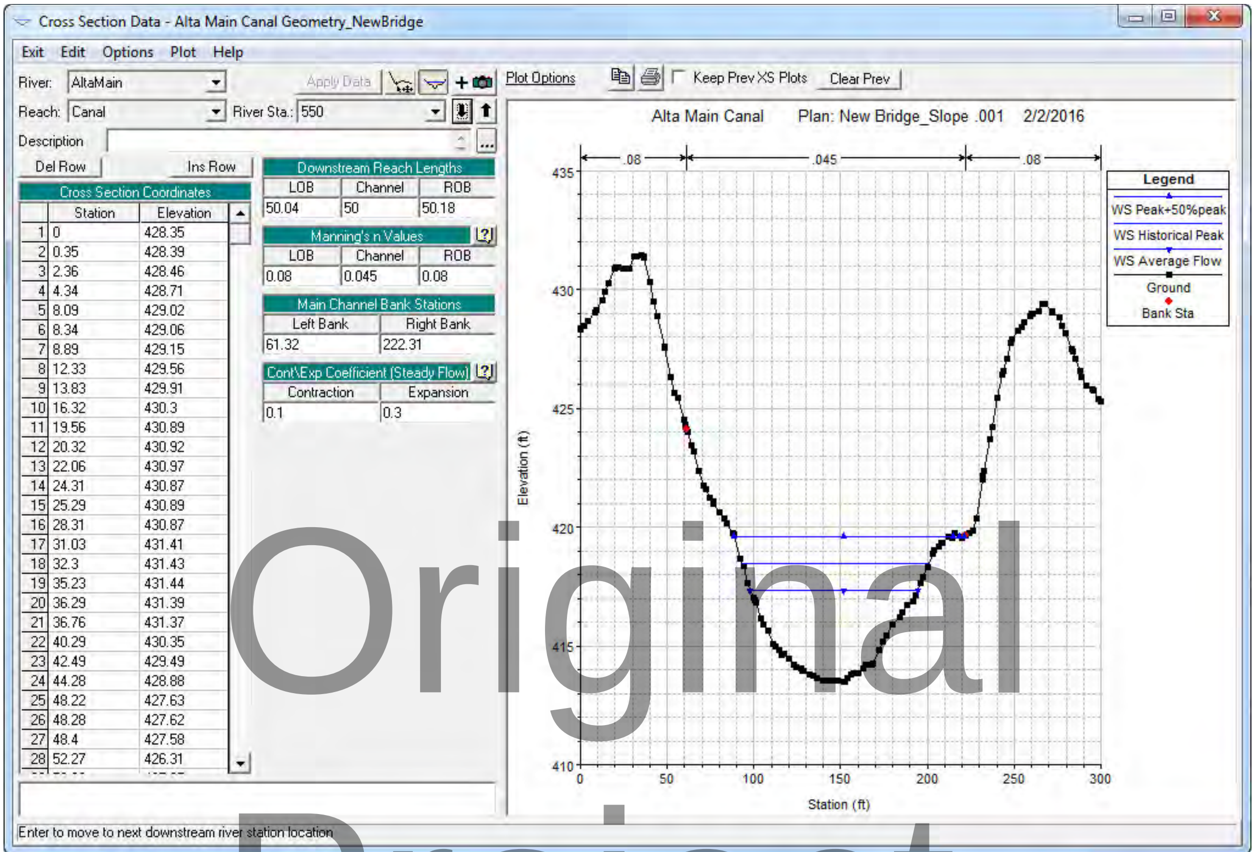


FIGURE 37 - CROSS SECTION 550

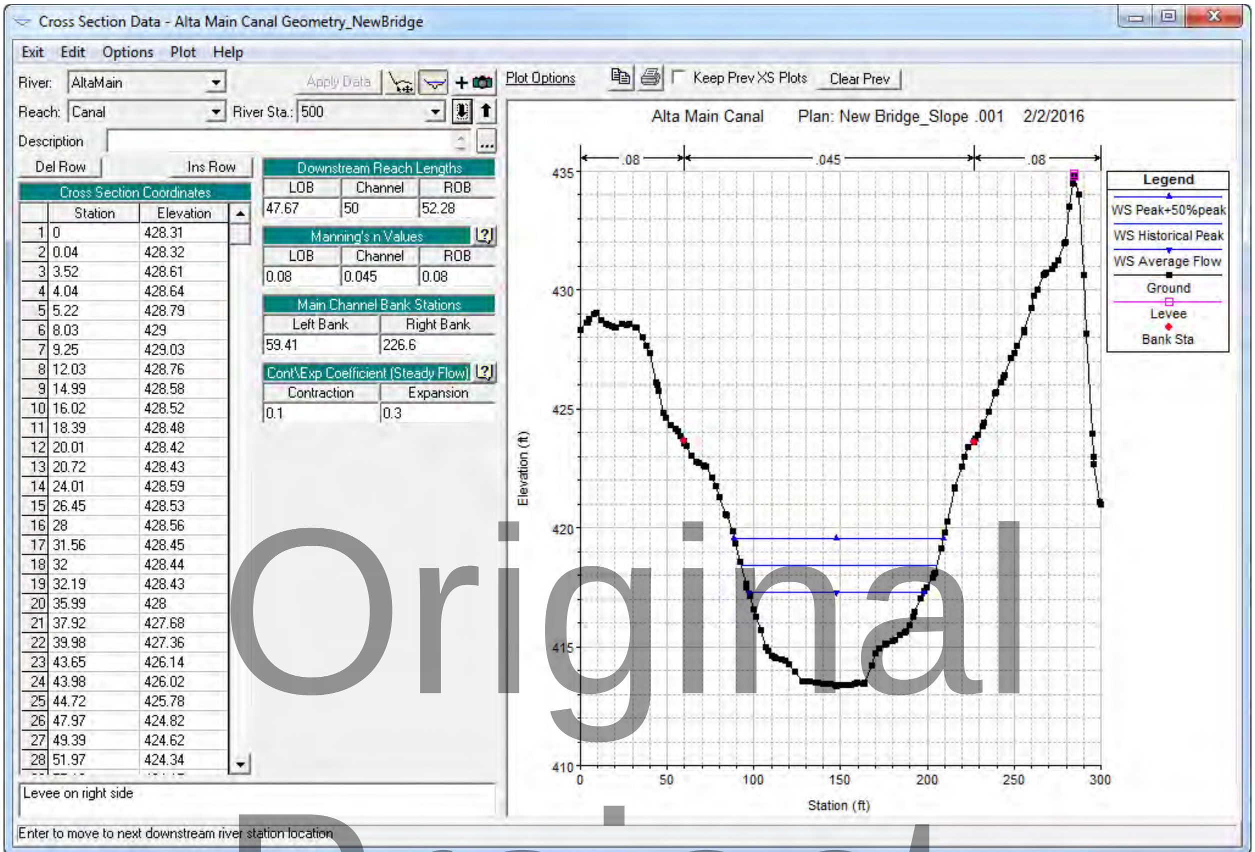


FIGURE 38 - CROSS SECTION 500

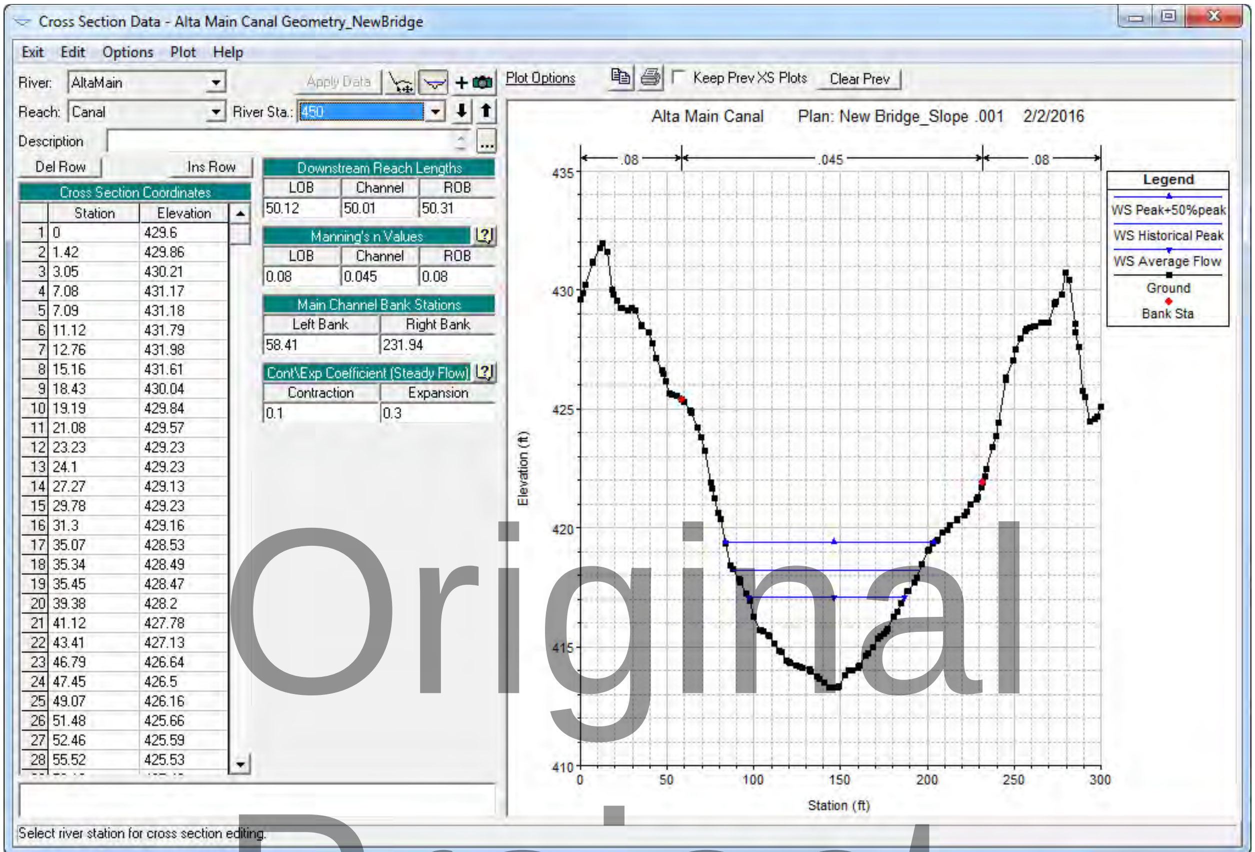


Figure 39 - Cross Section 450

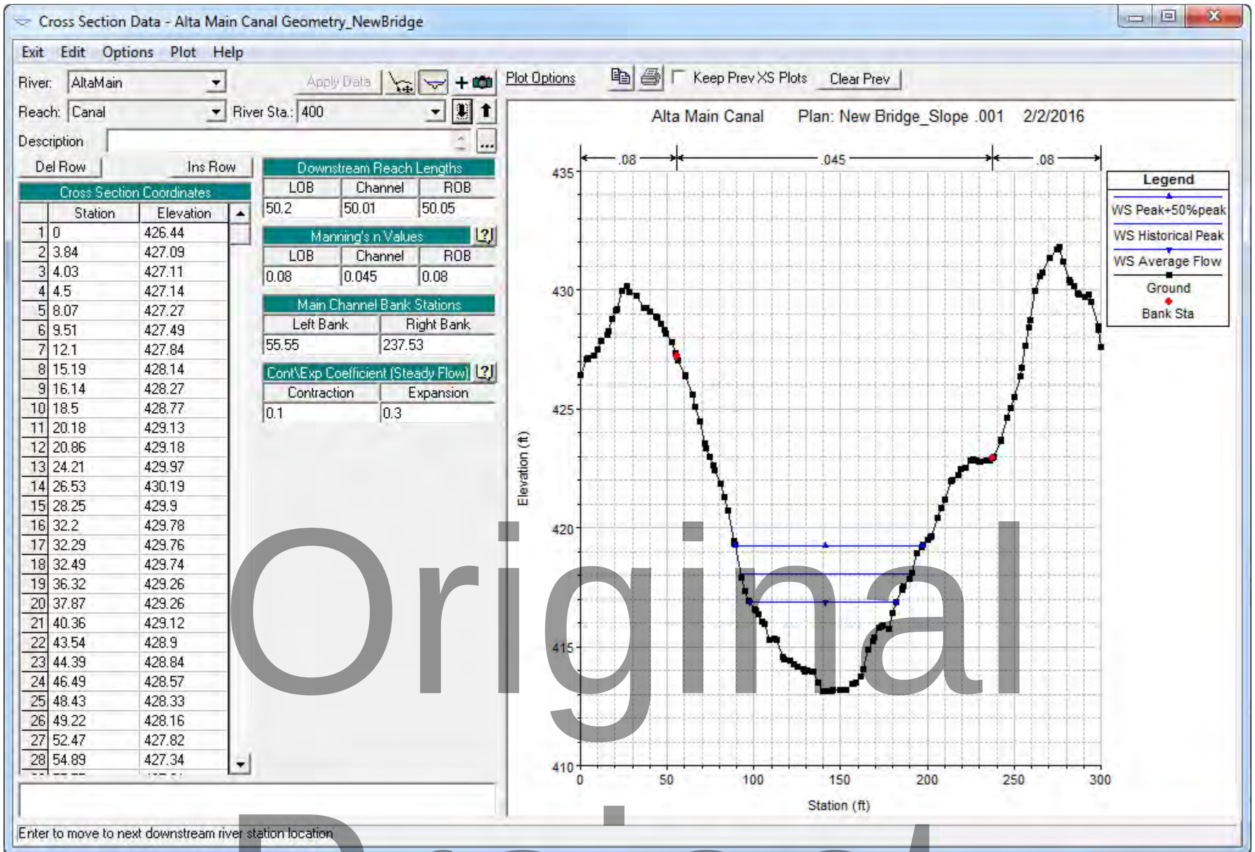


FIGURE 40 - CROSS SECTION 400

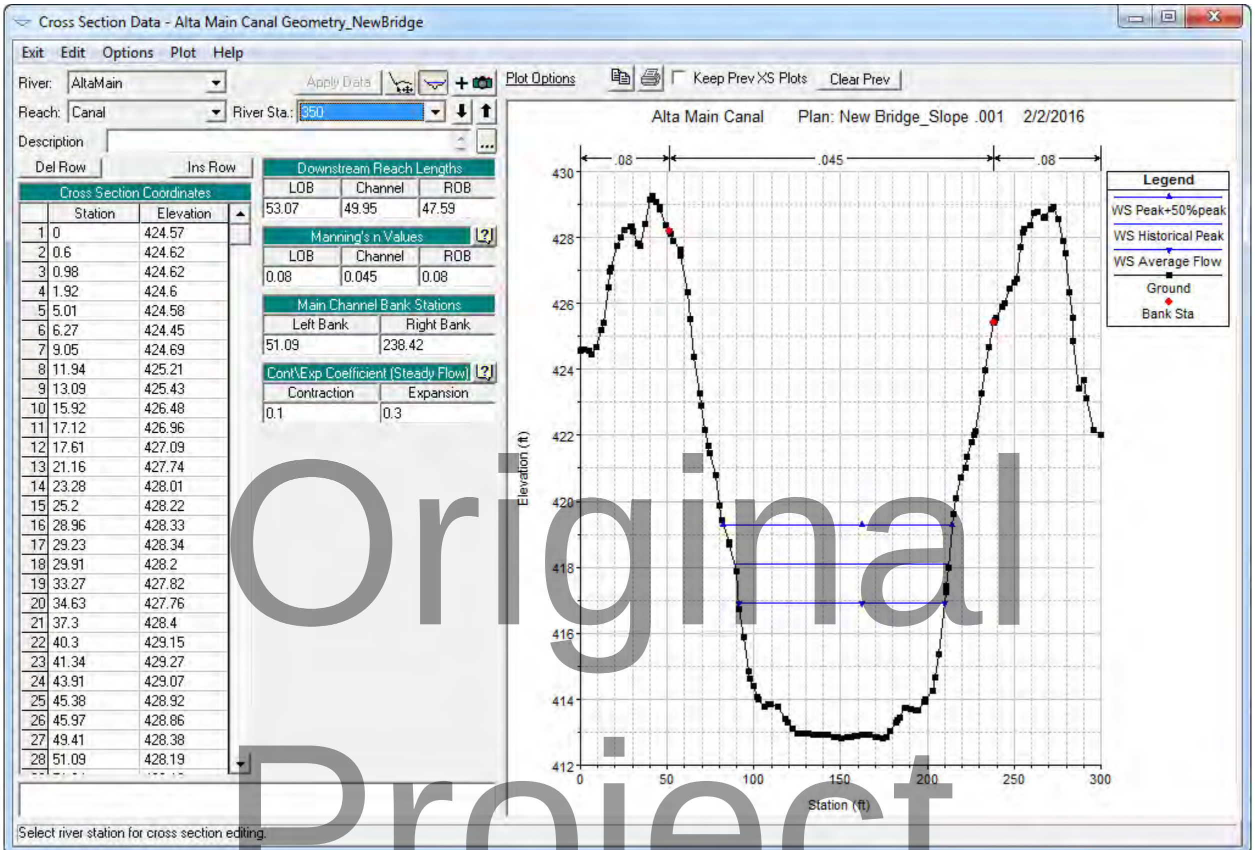


FIGURE 41 - CROSS SECTION 350

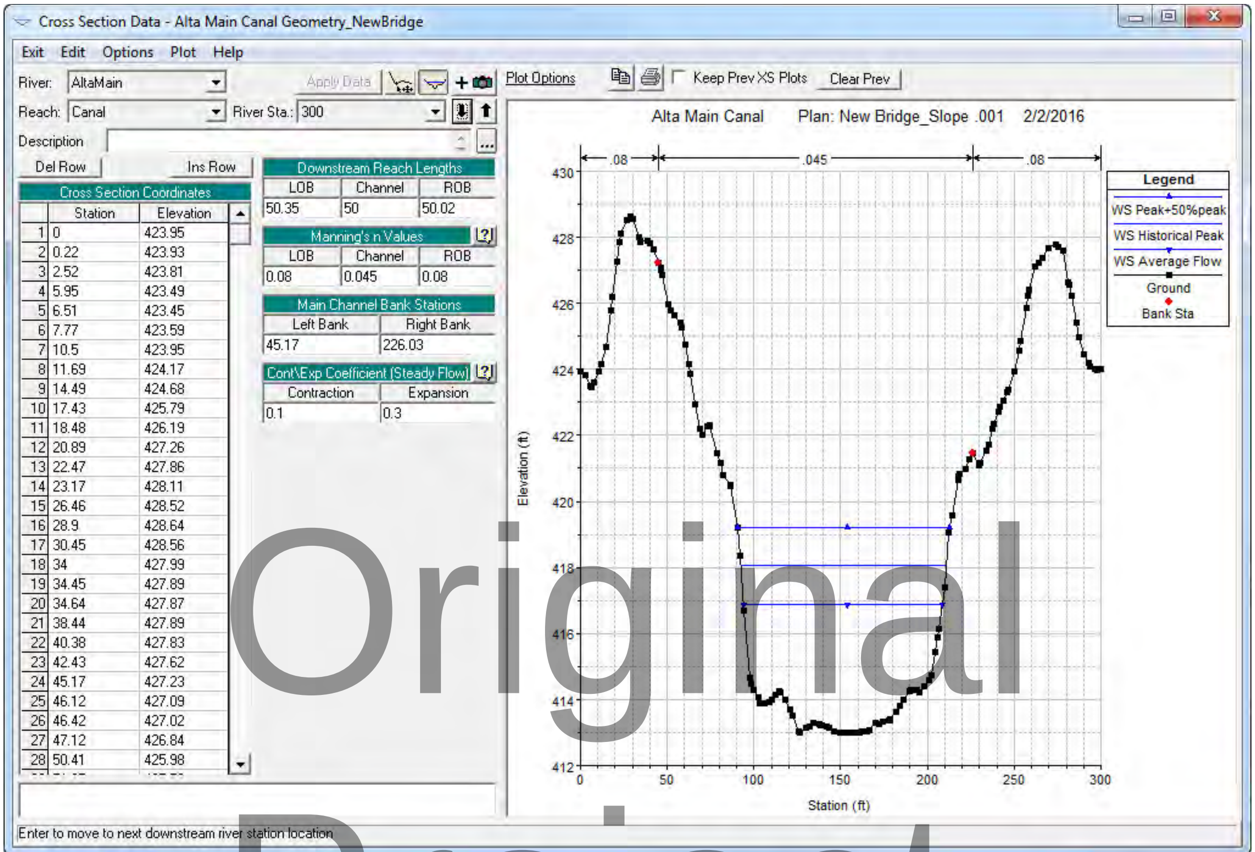


FIGURE 42 - CROSS SECTION 300

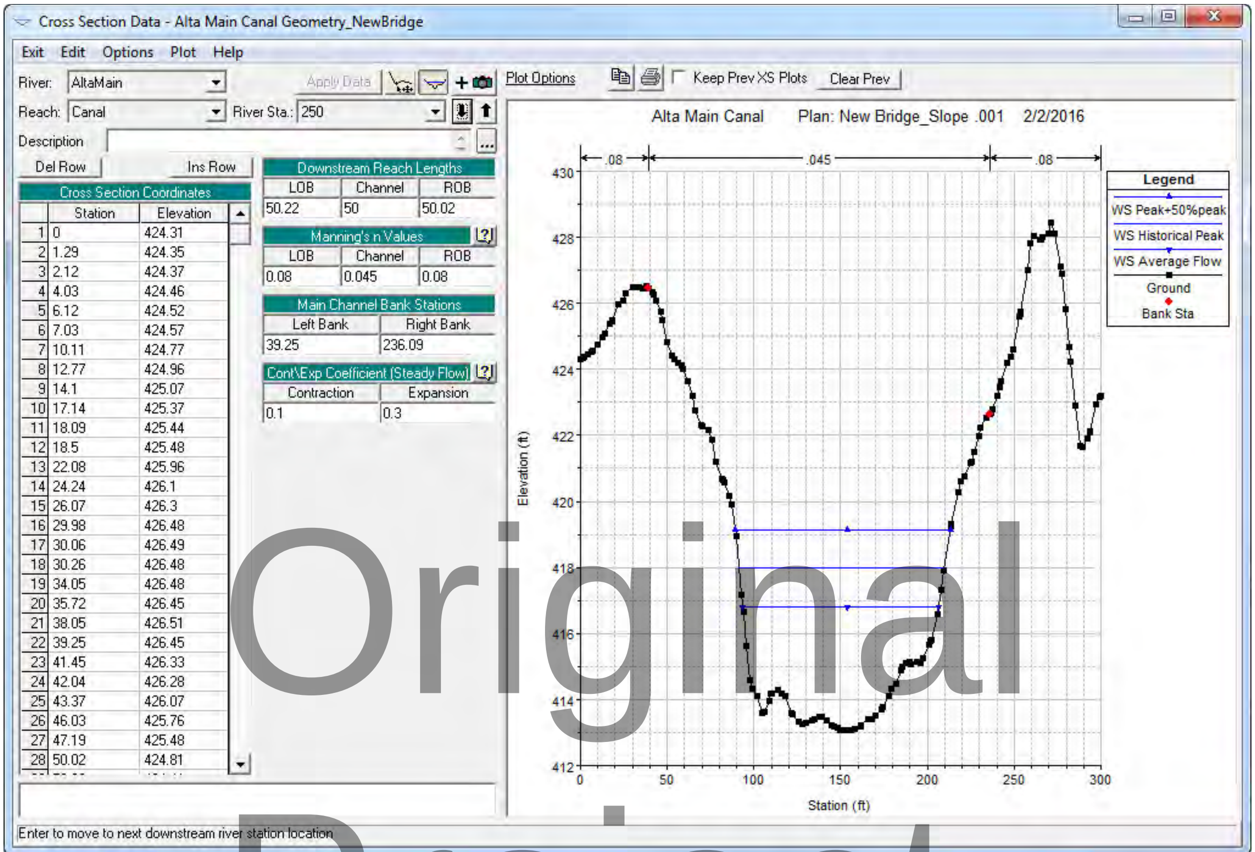


FIGURE 43 - CROSS SECTION 250

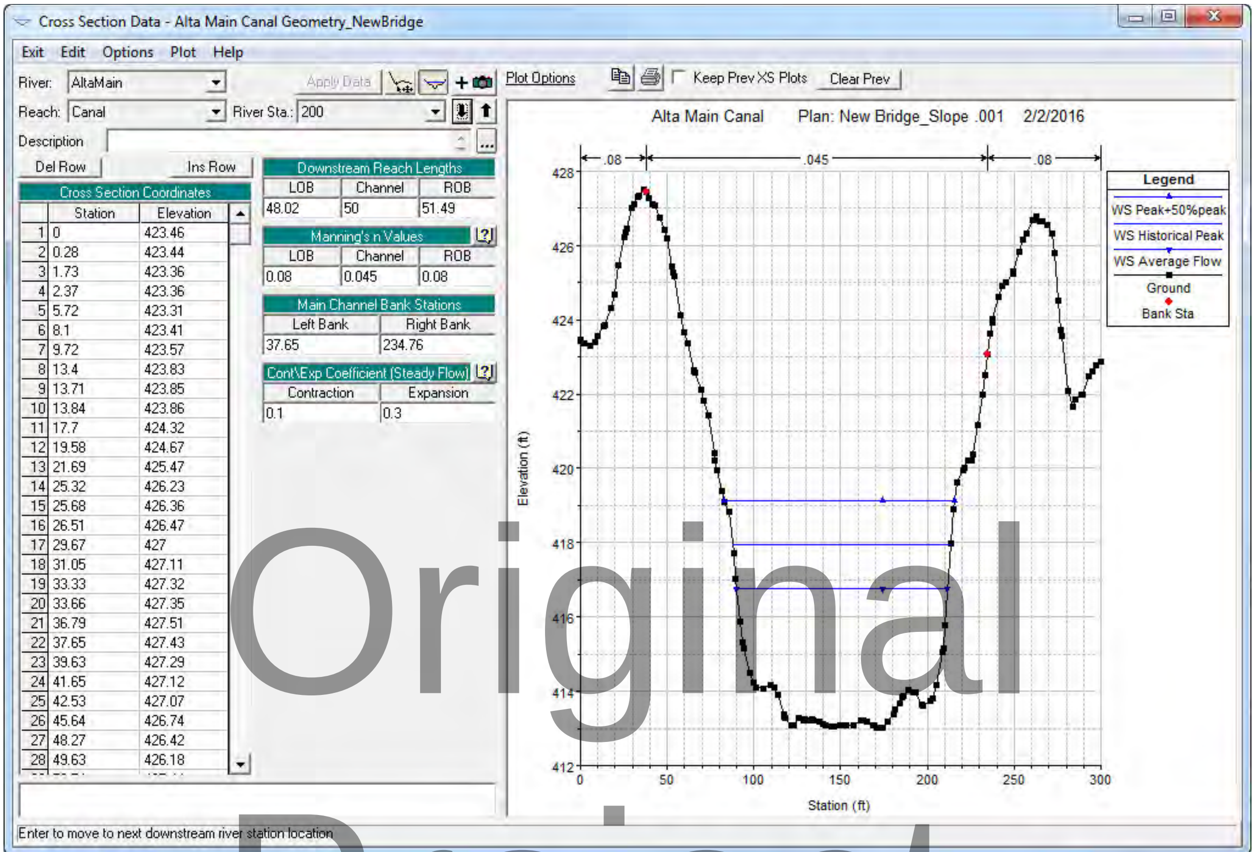


FIGURE 44 - CROSS SECTION 200

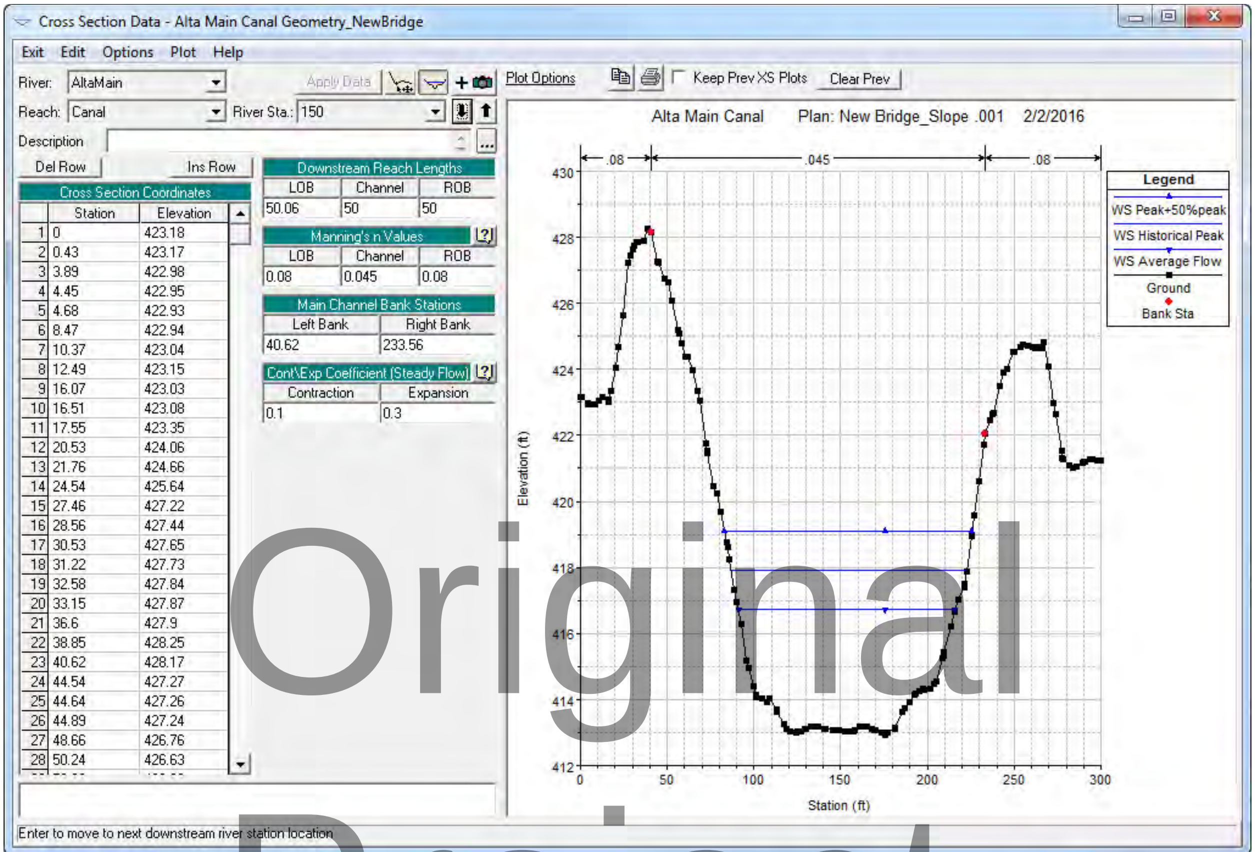


FIGURE 45 - CROSS SECTION 150

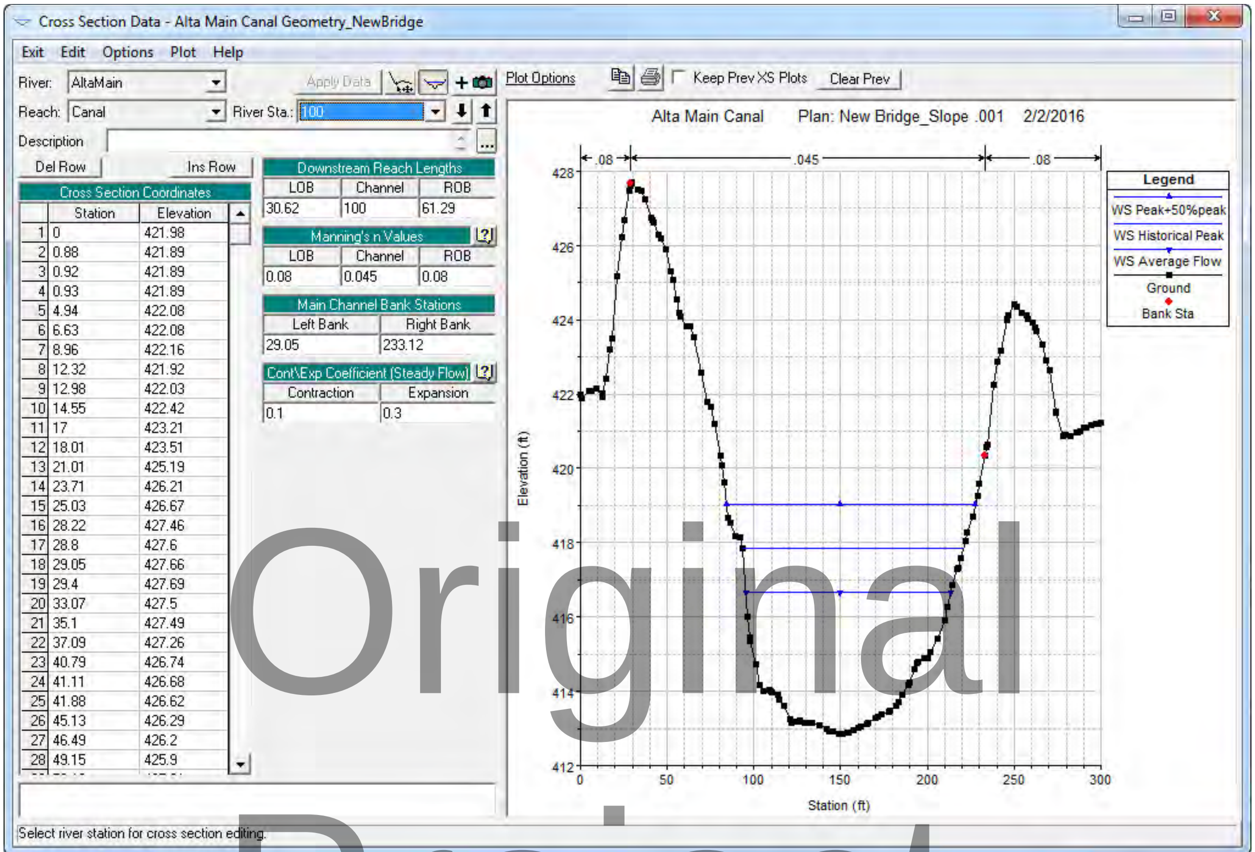


FIGURE 46 - CROSS SECTION 100

Bridge Data

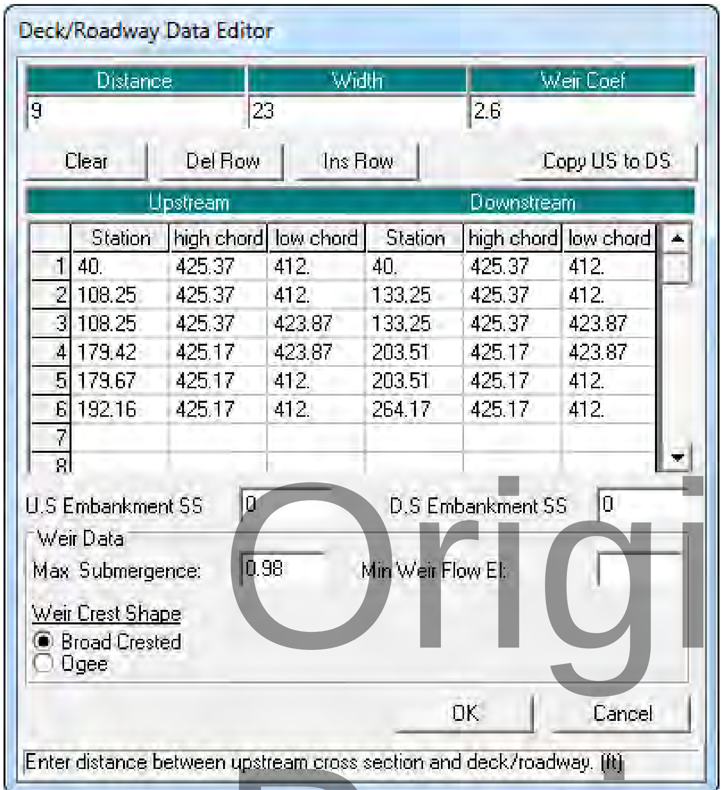


Figure 47 – Existing Bridge Deck/Roadway Editor

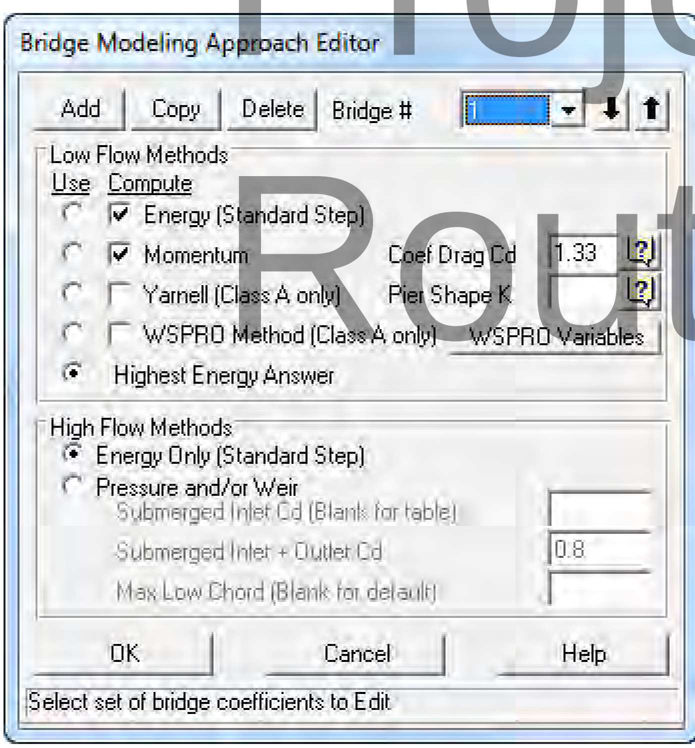


Figure 48 - Bridge Modeling Approach for Existing Bridge

Table 4 - Existing Bridge Pier Data

Pier	Centerline Station		Upstream		Downstream	
	Upstream	Downstream	Pier Width	Elevation	Pier Width	Elevation
1	114.16	139.25	1	412	1	412
			1	424	1	424
2	120.15	145.24	1	412	1	412
			1	425	1	425
3	125.92	151.01	1	412	1	412
			1	425	1	425
4	131.92	157.01	1	412	1	412
			1	425	1	425
5	137.42	162.51	1	412	1	412
			1	425	1	425
6	143.42	168.51	1	412	1	412
			1	425	1	425
7	149.41	174.50	1	412	1	412
			1	425	1	425
8	155.32	180.41	1	412	1	412
			1	425	1	425
9	161.34	186.52	1	412	1	412
			1	425	1	425
10	167.34	192.34	1	412	1	412
			1	425	1	425
11	173.23	198.41	1	412	1	412
			1	425	1	425

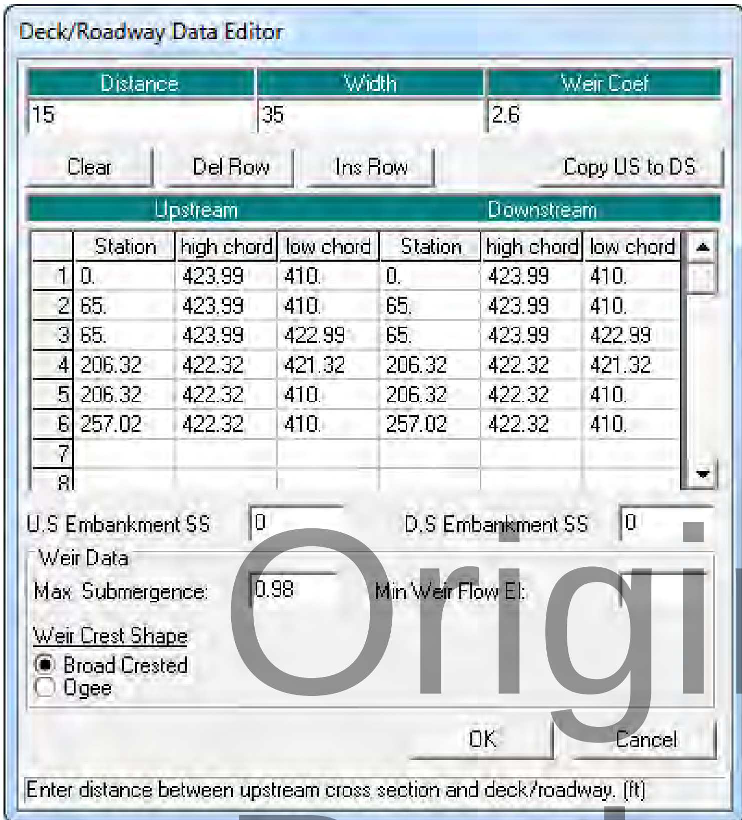


FIGURE 49 – NEW BRIDGE DECK/ROADWAY EDITOR

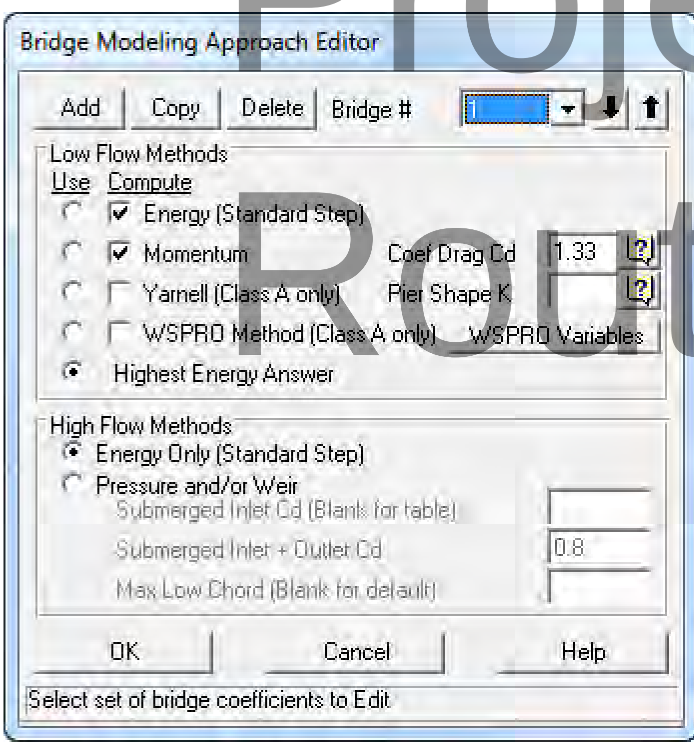


FIGURE 50 - BRIDGE MODELING APPROACH FOR NEW BRIDGE

TABLE 5 - NEW BRIDGE PIER DATA

Pier	Centerline Station		Upstream		Downstream	
	Upstream	Downstream	Pier Width	Elevation	Pier Width	Elevation
1	112.32	112.32	2	410	2	410
			2	423	2	423
2	159.32	159.32	1	410	1	410
			1	423	1	423

Original Project Routing

Hydraulic Profile Table

Table 6 - HEC-RAS Standard Table 1

River Station	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1384.4	Historical Peak	1200	414.25	420.14	417.24	420.27	0.001312	2.9	413.19	107.78	0.26
	Peak+50%peak	1800	414.25	421.26	417.95	421.44	0.001329	3.34	539.48	114.97	0.27
	Average Flow	700	414.25	418.94	416.54	419.03	0.001287	2.41	290.02	98.73	0.25
1350	Historical Peak	1200	415.1	419.9	418.58	420.18	0.004145	4.23	283.85	100.37	0.44
	Peak+50%peak	1800	415.1	421.05	419.15	421.35	0.003441	4.44	405.56	115.82	0.42
	Average Flow	700	415.1	418.64	417.77	418.93	0.007488	4.26	164.44	89.9	0.55
1300	Historical Peak	1200	414.4	419.77		420	0.002631	3.82	313.9	91.7	0.36
	Peak+50%peak	1800	414.4	420.92		421.2	0.002444	4.24	424.33	100.1	0.36
	Average Flow	700	414.4	418.48		418.67	0.003111	3.44	203.7	79.33	0.38
1250	Historical Peak	1200	414.08	419.62		419.87	0.002621	3.98	301.59	82.29	0.37
	Peak+50%peak	1800	414.08	420.76		421.07	0.002714	4.47	403.01	94.86	0.38
	Average Flow	700	414.08	418.34		418.52	0.002604	3.42	204.67	69.86	0.35
1200	Historical Peak	1200	413.52	419.6		419.75	0.001264	3.04	394.18	92.96	0.26
	Peak+50%peak	1800	413.52	420.74		420.94	0.001434	3.55	506.99	104.25	0.28
	Average Flow	700	413.52	418.32		418.42	0.001096	2.48	282.34	81.59	0.23
1150	Historical Peak	1200	413.57	419.56		419.68	0.001158	2.79	430.06	108.87	0.25
	Peak+50%peak	1800	413.57	420.7		420.87	0.001182	3.22	558.31	115.12	0.26
	Average Flow	700	413.57	418.27		418.36	0.001122	2.34	298.57	96.04	0.23
1100	Historical Peak	1200	413.29	419.52		419.62	0.000956	2.59	463.18	112.75	0.23
	Peak+50%peak	1800	413.29	420.66		420.81	0.000993	3.02	595.15	117.66	0.24
	Average Flow	700	413.29	418.23		418.3	0.000868	2.16	324.16	96.77	0.21
1070	Historical Peak	1200	413.13	419.43		419.59	0.001283	3.17	379.07	84.91	0.26
	Peak+50%peak	1800	413.13	420.54		420.76	0.001476	3.78	476.55	90.69	0.29
	Average Flow	700	413.13	418.17		418.27	0.001094	2.53	276.95	77.46	0.24
1054.5	Historical Peak	1200	412.87	419.46		419.55	0.000745	2.48	483.26	103.66	0.2
	Peak+50%peak	1800	412.87	420.58		420.72	0.000856	2.99	602.6	108.17	0.22
	Average Flow	700	412.87	418.19		418.25	0.000633	1.96	356.56	96.53	0.18
1040.2	Historical Peak	1200	413	419.41		419.54	0.001057	2.9	413.8	90.28	0.24
	Peak+50%peak	1800	413	420.51		420.7	0.001182	3.5	514.61	92.23	0.26
	Average Flow	700	413	418.15		418.24	0.000945	2.31	302.75	85.96	0.22
1031.3	Historical Peak	1200	412.25	419.42	414.34	419.51	0.0004	2.36	508.94	82.53	0.16
	Peak+50%peak	1800	412.25	420.53	414.99	420.67	0.000557	3.06	587.52	83.99	0.19
	Average Flow	700	412.25	418.17	413.72	418.21	0.000259	1.67	419.57	77.72	0.12

Table 6 Continued

River Station	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1021.4		Bridge									
990.1	Historical Peak	1200	412.25	419.3	414.36	419.39	0.000424	2.43	493.08	120.78	0.16
	Peak+50%peak	1800	412.25	420.32	415.01	420.48	0.000607	3.19	564.81	130.18	0.2
	Average Flow	700	412.25	418.1	413.74	418.15	0.000269	1.71	409.11	114.77	0.12
967	Historical Peak	1200	412.8	419.29	415.75	419.37	0.000687	2.25	532.22	124.61	0.19
	Peak+50%peak	1800	412.8	420.33	416.34	420.44	0.0008	2.7	667.23	137.22	0.21
	Average Flow	700	412.8	418.09	415.17	418.14	0.000553	1.79	391.54	110.31	0.17
946.6		Bridge									
902.2	Historical Peak	1200	413.15	419.11	415.77	419.19	0.000635	2.28	525.45	116.6	0.19
	Peak+50%peak	1800	413.15	420.25	416.32	420.37	0.000697	2.74	656.67	131.87	0.2
	Average Flow	700	413.15	417.94	415.23	417.99	0.00055	1.78	393.35	111.75	0.17
877.5	Historical Peak	1200	413.3	419.09	415.9	419.17	0.00074	2.36	508.54	118.19	0.2
	Peak+50%peak	1800	413.3	420.23	416.44	420.35	0.000822	2.78	648.05	127.34	0.22
	Average Flow	700	413.3	417.92	415.34	417.98	0.000638	1.87	375.12	111.27	0.18
837.6	Historical Peak	1200	413.34	419.02	416.27	419.13	0.001169	2.74	438.68	115.45	0.25
	Peak+50%peak	1800	413.34	420.15	416.87	420.3	0.001178	3.13	574.65	123.82	0.26
	Average Flow	700	413.34	417.86	415.65	417.94	0.001099	2.25	311.35	105.17	0.23
800	Historical Peak	1200	413.36	418.93	416.42	419.08	0.001562	3.05	393.84	109.46	0.28
	Peak+50%peak	1800	413.36	420.07	417.06	420.25	0.001579	3.43	525.16	123.25	0.29
	Average Flow	700	413.36	417.79	415.71	417.89	0.001491	2.55	274.91	96.74	0.27
750	Historical Peak	1200	413.48	418.9	416.23	419	0.001107	2.63	455.6	121.86	0.24
	Peak+50%peak	1800	413.48	420.03	416.81	420.17	0.001092	3.01	598.87	129.81	0.25
	Average Flow	700	413.48	417.75	415.63	417.82	0.001105	2.19	320.19	113.4	0.23
700	Historical Peak	1200	413.39	418.76		418.93	0.001815	3.27	367.18	102.76	0.3
	Peak+50%peak	1800	413.39	419.89		420.1	0.001795	3.69	488.39	112.97	0.31
	Average Flow	700	413.39	417.63		417.75	0.001735	2.73	256.05	90.71	0.29
650	Historical Peak	1200	413.42	418.66		418.83	0.001999	3.32	361.94	106.68	0.32
	Peak+50%peak	1800	413.42	419.79		420.01	0.00184	3.69	487.62	116.59	0.32
	Average Flow	700	413.42	417.52		417.65	0.002147	2.84	246.1	96.54	0.31
600	Historical Peak	1200	413.35	418.62		418.74	0.00127	2.81	427.24	114.83	0.26
	Peak+50%peak	1800	413.35	419.76		419.91	0.001284	3.18	565.74	126.94	0.27
	Average Flow	700	413.35	417.47		417.56	0.001242	2.32	301.53	106.33	0.24
550	Historical Peak	1200	413.47	418.48		418.65	0.002004	3.31	362.65	107.53	0.32
	Peak+50%peak	1800	413.47	419.62		419.83	0.002077	3.65	493.02	129.49	0.33
	Average Flow	700	413.47	417.35		417.47	0.002132	2.84	246.51	96.49	0.31

TABLE 6 CONTINUED

River Station	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
500	Historical Peak	1200	413.36	418.42	416.04	418.56	0.001565	3.01	398.18	112.73	0.28
	Peak+50%peak	1800	413.36	419.55	416.62	419.73	0.001477	3.39	530.74	120.27	0.28
	Average Flow	700	413.36	417.27	415.41	417.37	0.001575	2.54	275.33	101.27	0.27
450	Historical Peak	1200	413.28	418.24		418.45	0.002898	3.69	324.93	107.84	0.37
	Peak+50%peak	1800	413.28	419.39		419.63	0.002436	3.94	456.4	120.31	0.36
	Average Flow	700	413.28	417.09		417.26	0.00327	3.32	210.77	89.87	0.38
400	Historical Peak	1200	413.12	418.04		418.29	0.003318	3.99	300.92	98.23	0.4
	Peak+50%peak	1800	413.12	419.22		419.5	0.002776	4.28	420.96	108.01	0.38
	Average Flow	700	413.12	416.87		417.07	0.003983	3.61	193.7	84.16	0.42
350	Historical Peak	1200	412.83	418.1		418.18	0.000631	2.21	543.32	123.4	0.19
	Peak+50%peak	1800	412.83	419.28		419.38	0.000689	2.6	693.59	131.76	0.2
	Average Flow	700	412.83	416.92		416.97	0.000559	1.75	400.91	118.73	0.17
300	Historical Peak	1200	412.98	418.05		418.14	0.000828	2.43	493.37	118.58	0.21
	Peak+50%peak	1800	412.98	419.22		419.34	0.000847	2.84	634.6	122.66	0.22
	Average Flow	700	412.98	416.87		416.93	0.000789	1.96	356.5	114.6	0.2
250	Historical Peak	1200	413.07	417.97		418.09	0.001155	2.69	445.31	118.17	0.24
	Peak+50%peak	1800	413.07	419.15		419.29	0.001106	3.07	587.16	123.87	0.25
	Average Flow	700	413.07	416.8		416.88	0.001222	2.26	310.33	112.62	0.24
200	Historical Peak	1200	413.01	417.95		418.03	0.000736	2.3	522.52	125.42	0.2
	Peak+50%peak	1800	413.01	419.13		419.24	0.000772	2.67	673.19	132.91	0.21
	Average Flow	700	413.01	416.78		416.83	0.000703	1.85	377.68	121.44	0.19
150	Historical Peak	1200	412.94	417.91		417.99	0.000791	2.28	526.13	135.66	0.2
	Peak+50%peak	1800	412.94	419.09		419.2	0.000773	2.61	689.97	142.64	0.21
	Average Flow	700	412.94	416.74		416.79	0.00076	1.88	372.45	124.76	0.19
100	Historical Peak	1200	412.85	417.85	415.19	417.95	0.001	2.51	478.94	127.69	0.23
	Peak+50%peak	1800	412.85	419.03	415.71	419.15	0.001002	2.82	639.41	143.22	0.23
	Average Flow	700	412.85	416.68	414.62	416.75	0.001001	2.09	335.3	117.91	0.22

Appendix B

Scour Calculations

Critical velocity calculation for determination of live bed or clear water condition for contraction scour:

$v_c = k_u * y^{(1/6)} * D^{(1/3)}$

v_c	critical velocity above which bed material of size D and smaller will be transported, ft/s
y	average depth of flow upstream of bridge (approach section), ft
D	particle size for v_c,, ft
D_{50}	particle size in a mixture of which 50 percent are smaller, mm
k_u	11.17 (English units)
v	mean velocity of the flow in the main channel or overbank area upstream of the bridge opening (approach section), ft/s

Historical Peak + 50% Peak (1,800 cfs)

v_c	1.29	
y	5.57	Flow Area/Top Width
D	0.000656	
D_{50}	0.2	**Very fine sand**
k_u	11.17	
v	2.99	
Live-Bed		

Live bed contraction scour:

$y_2/y_1=((Q_2/Q_1)^\wedge(6/7))^*(W_1/W_2)^\wedge k_1$

$y_s = y_2 - y_0$

Historical Peak + 50% Peak (1,800 cfs)

y_s computed contraction scour, ft
y_1 average depth in the upstream main channel, ft
y_2 average depth in the contracted section, ft
y_0 existing depth in the contracted section before scour, ft
Q_1 flow in the upstream channel transporting sediment, ft^3/s
Q_2 flow in the contracted channel, ft^3/s
W_1 bottom width of the upstream main channel that is transporting bed material, ft
W_2 bottom width of the main channel in the contracted section less pier widths, ft
A flow area through contracted section (i.e., culvert opening), ft^2
k_1 exponent determined below

V*/w	k_1	
< 0.5	0.59	mostly bed material discharge
0.5 – 2.0	0.64	some suspended material discharge
< 2.0	0.69	mostly suspended material discharge

V* $(t_o/p)^\wedge 0.5 = (g\ y_1\ S_1)^\wedge 0.5$, shear velocity in upstream section
w fall velocity of bed material based on D_{50}
g acceleration of gravity (32.2 ft/s^2)
S_1 slope of energy grade line of main channel

y_s	**0.0**	
y_1	5.95	
y_2	8.46	
y_0	6.12	
Q_1	1,792	Based on flow in main channel.
Q_2	1,800	Total flow through bridge.
W_1	99.84	Top width of main channel
W_2	60.26	Effective width through bridge.
A	635.73	Total area of bridge opening.
k_1	0.69	
V*	0.40	
w	0.07	
S_1	0.000856	

CSU Pier Scour Equation (HEC-18, 5th Edition):

ys/y1=2.0*k1*k2*k3*k4*(a/y1)^0.65*Fr1^0.43

Historical Peak + 50% Peak (1,800 cfs)

In terms of ys/a:

$ys/a=2.0*K_1*K_2*K_3*K_4*(y_1/a)^0.35*Fr_1^0.43$

where:

y_s	scour depth, ft
y_1	flow depth directly upstream of the pier, ft
K_1	correction factor for pier nose shape (from HEC-18 Fig 7.3 and Table 7.1)
K_2	correction factor for angle of attack of flow (from HEC-18 Table 7.2 or Eqn 7.4)
K_3	correction factor for bed condition (from HEC-18 Table 7.3)
K_4	correction factor for armoring by bed material size (from HEC-18 Eqn 7.5)
a	pier width, ft
L	length of pier, ft
Fr_1	Froude number directly upstream of the pier = $V_1/(g*y1)^0.5$
V_1	Mean velocity of flow directly upstream of the pier, ft/s
g	acceleration of gravity (32.2 ft/s^2)
θ	angle of attack of flow, rad
D_{50}	ft
D_{90}	ft

y_s	**4.1**	
y_1	7.39	STA 946.6
K_1	1.1	
K_2	1.0	
K_3	1.1	
K_4	1.00	
a	2.00	
L	15.0 (assumed)	
Fr_1	0.23	
V_1	3.57	
g	32.2	
θ (deg)	0	
θ (rad)	0	
D_{50}	0.000656	
D_{90}	0.002789	
V_R	1.85	
$VicD_{50}$	0.57	
VcD_{50}	1.35	
$VicD_{90}$	1.00	
VcD_{90}	2.19	

Tables

Table for K_1

Shape #	K_1	Type
1	1.1	square nose
2	1.0	round nose
3	1.0	circular cylinder
4	1.0	group of cylinders
5	0.9	sharp nose (triangular)

Table for K_3

Bed Cond.	K_3	
1	1.1	clear-water scour
2	1.1	plane bed and antidune flow
3	1.1	small dunes
4	1.15	medium dunes
5	1.3	large dunes

Critical velocity calculation for determination of live bed or clear water condition for contraction scour:

$v_c = k_u * y^{(1/6)} * D^{(1/3)}$

Historical Peak (1,200 cfs)

v_c	critical velocity above which bed material of size D and smaller will be transported, ft/s
y	average depth of flow upstream of bridge (approach section), ft
D	particle size for v_c,, ft
D_{50}	particle size in a mixture of which 50 percent are smaller, mm
k_u	11.17 (English units)
v	mean velocity of the flow in the main channel or overbank area upstream of the bridge opening (approach section), ft/s

v_c	1.25	
y	4.66	Flow Area/Top Width
D	0.000656	
D_{50}	0.2	**Very fine sand**
k_u	11.17	
v	2.48	
Live-Bed		

Live bed contraction scour:

$y_2/y_1=((Q_2/Q_1)$^(6/7))*(W_1/W_2)^k_1
$y_s = y_2 - y_0$

Historical Peak (1,200 cfs)

y_s	computed contraction scour, ft
y_1	average depth in the upstream main channel, ft
y_2	average depth in the contracted section, ft
y_0	existing depth in the contracted section before scour, ft
Q_1	flow in the upstream channel transporting sediment, ft^3/s
Q_2	flow in the contracted channel, ft^3/s
W_1	bottom width of the upstream main channel that is transporting bed material, ft
W_2	bottom width of the main channel in the contracted section less pier widths, ft
A	flow area through contracted section (i.e., culvert opening), ft^2
k_1	exponent determined below

V*/w	k_1	
< 0.5	0.59	mostly bed material discharge
0.5 – 2.0	0.64	some suspended material discharge
< 2.0	0.69	mostly suspended material discharge

V*	(t_o/p)^0.5 = $(g\ y_1\ S_1)$^0.5, shear velocity in upstream section
w	fall velocity of bed material based on D_{50}
g	acceleration of gravity (32.2 ft/s^2)
S_1	slope of energy grade line of main channel

y_s	**0.0**	
y_1	5.20	
y_2	6.91	
y_0	8.36	
Q_1	1,185	Based on flow in main channel.
Q_2	1,200	Total flow through bridge.
W_1	89.85	Top width of main channel
W_2	60.51	Effective width through bridge.
A	505.57	Total area of bridge opening.
k_1	0.69	
V*	0.35	
w	0.07	
S_1	0.001057	

CSU Pier Scour Equation (HEC-18, 5th Edition):

ys/y1=2.0*k1*k2*k3*k4*(a/y1)^0.65*Fr1^0.43

Historical Peak (1,200 cfs)

In terms of ys/a:

ys/a=2.0*K_1*K_2*K_3*K_4*(y_1/a)^0.35*Fr_1^0.43

where:

y_s	scour depth, ft
y_1	flow depth directly upstream of the pier, ft
K_1	correction factor for pier nose shape (from HEC-18 Fig 7.3 and Table 7.1)
K_2	correction factor for angle of attack of flow (from HEC-18 Table 7.2 or Eqn 7.4)
K_3	correction factor for bed condition (from HEC-18 Table 7.3)
K_4	correction factor for armoring by bed material size (from HEC-18 Eqn 7.5)
a	pier width, ft
L	length of pier, ft
Fr_1	Froude number directly upstream of the pier = V_1/(g*y1)^0.5
V_1	Mean velocity of flow directly upstream of the pier, ft/s
g	acceleration of gravity (32.2 ft/s^2)
θ	angle of attack of flow, rad
D_{50}	ft
D_{90}	ft

y_s	**3.7**	
y_1	6.36	STA 946.6
K_1	1.1	
K_2	1.0	
K_3	1.1	
K_4	1.00	
a	2.00	
L	15.0 (assumed)	
Fr_1	0.21	
V_1	3.00	
g	32.2	
θ (deg)	0	
θ (rad)	0	
D_{50}	0.000656	
D_{90}	0.002789	
V_R	1.54	
$VicD_{50}$	0.56	
VcD_{50}	1.32	
$VicD_{90}$	0.97	
VcD_{90}	2.14	

Tables

Table for K_1

Shape #	K_1	Type
1	1.1	square nose
2	1.0	round nose
3	1.0	circular cylinder
4	1.0	group of cylinders
5	0.9	sharp nose (triangular)

Table for K_3

Bed Cond.	K_3	
1	1.1	clear-water scour
2	1.1	plane bed and antidune flow
3	1.1	small dunes
4	1.15	medium dunes
5	1.3	large dunes

Critical velocity calculation for determination of live bed or clear water condition for contraction scour:

$v_c = k_u * y\text{^}(1/6) * D\text{^}(1/3)$

Average Flow (700 cfs)

v_c	critical velocity above which bed material of size D and smaller will be transported, ft/s
y	average depth of flow upstream of bridge (approach section), ft
D	particle size for v_c,, ft
D_{50}	particle size in a mixture of which 50 percent are smaller, mm
k_u	11.17 (English units)
v	mean velocity of the flow in the main channel or overbank area upstream of the bridge opening (approach section), ft/s

v_c	1.27	
y	4.90	Flow Area/Top Width
D	0.000656	
D_{50}	0.2	**Very fine sand**
k_u	11.17	
v	2.31	
Live-Bed		

Live bed contraction scour:

Average Flow (700 cfs)

$y_2/y_1=((Q_2/Q_1)^{\wedge}(6/7))^*(W_1/W_2)^{\wedge}k_1$

$y_s = y_2 - y_0$

y_s computed contraction scour, ft

y_1 average depth in the upstream main channel, ft

y_2 average depth in the contracted section, ft

y_0 existing depth in the contracted section before scour, ft

Q_1 flow in the upstream channel transporting sediment, ft^3/s

Q_2 flow in the contracted channel, ft^3/s

W_1 bottom width of the upstream main channel that is transporting bed material, ft

W_2 bottom width of the main channel in the contracted section less pier widths, ft

A flow area through contracted section (i.e., culvert opening), ft^2

k_1 exponent determined below

V*/w	k_1	
< 0.5	0.59	mostly bed material discharge
0.5 – 2.0	0.64	some suspended material discharge
< 2.0	0.69	mostly suspended material discharge

V* $(t_o/p)^{\wedge}0.5 = (g\ y_1\ S_1)^{\wedge}0.5$, shear velocity in upstream section

w fall velocity of bed material based on D_{50}

g acceleration of gravity (32.2 ft/s^2)

S_1 slope of energy grade line of main channel

y_s	**0.0**	
y_1	4.42	
y_2	5.30	
y_0	6.19	
Q_1	677	Based on flow in main channel.
Q_2	700	Total flow through bridge.
W_1	74.88	Top width of main channel
W_2	59.92	Effective width through bridge.
A	370.89	Total area of bridge opening.
k_1	0.69	
V*	0.30	
w	0.07	
S_1	0.000633	

CSU Pier Scour Equation (HEC-18, 5th Edition):

ys/y1=2.0*k1*k2*k3*k4*(a/y1)^0.65*Fr1^0.43

Average Flow (700 cfs)

In terms of ys/a:

$ys/a=2.0*K_1*K_2*K_3*K_4*(y_1/a)$^0.35*$Fr_1$^0.43

where:

y_s	scour depth, ft
y_1	flow depth directly upstream of the pier, ft
K_1	correction factor for pier nose shape (from HEC-18 Fig 7.3 and Table 7.1)
K_2	correction factor for angle of attack of flow (from HEC-18 Table 7.2 or Eqn 7.4)
K_3	correction factor for bed condition (from HEC-18 Table 7.3)
K_4	correction factor for armoring by bed material size (from HEC-18 Eqn 7.5)
a	pier width, ft
L	length of pier, ft
Fr_1	Froude number directly upstream of the pier = $V_1/(g*y1)$^0.5
V_1	Mean velocity of flow directly upstream of the pier, ft/s
g	acceleration of gravity (32.2 ft/s^2)
θ	angle of attack of flow, rad
D_{50}	ft
D_{90}	ft

y_s	**3.3**	
y_1	5.16	STA 946.6
K_1	1.1	
K_2	1.0	
K_3	1.1	
K_4	1.00	
a	2.00	
L	15.0 (assumed)	
Fr_1	0.19	
V_1	2.4	
g	32.2	
θ (deg)	0	
θ (rad)	0	
D_{50}	0.000656	
D_{90}	0.002789	
V_R	1.22	
$VicD_{50}$	0.54	
VcD_{50}	1.28	
$VicD_{90}$	0.94	
VcD_{90}	2.07	

Tables

Table for K_1

Shape #	K_1	Type
1	1.1	square nose
2	1.0	round nose
3	1.0	circular cylinder
4	1.0	group of cylinders
5	0.9	sharp nose (triangular)

Table for K_3

Bed Cond.	K_3	
1	1.1	clear-water scour
2	1.1	plane bed and antidune flow
3	1.1	small dunes
4	1.15	medium dunes
5	1.3	large dunes

Critical velocity calculation for determination of live bed or clear water condition for contraction scour:

$v_c=k_u*y^{(1/6)}*D^{(1/3)}$

Historical Peak + 50% Peak (1,800 cfs)

v_c	critical velocity above which bed material of size D and smaller will be transported, ft/s
y	average depth of flow upstream of bridge (approach section), ft
D	particle size for v_c,, ft
D_{50}	particle size in a mixture of which 50 percent are smaller, mm
k_u	11.17 (English units)
v	mean velocity of the flow in the main channel or overbank area upstream of the bridge opening (approach section), ft/s

v_c	3.78	
y	5.57	Flow Area/Top Width
D	0.016404	
D_{50}	5.0	**Very coarse sand**
k_u	11.17	
v	2.99	
Clear-Water		

Clear water contraction scour:

$y_2=((k_2*Q^2)/(D_m^{(2/3)}*W^2))^{(3/7)}$

$y_s = y_2 - y_0$

Historical Peak + 50% Peak (1,800 cfs)

y_s	computed contraction scour, ft
y_2	average equilibrium depth in the contracted section after contraction scour, ft
Q	discharge, ft^3/s, through the bridge or on the se-back overbank area at the bridge associated with the width W
D_m	diameter of the smallest nontransportable particle in the bed material (1.25 D_{50}) in the contracted section, ft
Q_{50}	median diameter of bed material, ft
W	bottom width of the contracted (bridge) section less pier widths, ft
W_2	bottom width of the main channel in the contracted section less pier widths, ft
y_0	average existing depth in the contracted section, ft
k_u	0.025 (SI units) 0.0077 (English units)

y_s	**0.0**
y_2	6.93
Q	1,800
D_m	0.020505
D_{50}	0.016404
W	60.26
y_0	10.55
k_u	0.0077

CSU Pier Scour Equation (HEC-18, 5th Edition):
ys/y1=2.0*k1*k2*k3*k4*(a/y1)^0.65*Fr1^0.43

Historical Peak + 50% Peak (1,800 cfs)

In terms of ys/a:
$ys/a=2.0*K_1*K_2*K_3*K_4*(y_1/a)\verb|^|0.35*Fr_1\verb|^|0.43$

where:

y_s	scour depth, ft
y_1	flow depth directly upstream of the pier, ft
K_1	correction factor for pier nose shape (from HEC-18 Fig 7.3 and Table 7.1)
K_2	correction factor for angle of attack of flow (from HEC-18 Table 7.2 or Eqn 7.4)
K_3	correction factor for bed condition (from HEC-18 Table 7.3)
K_4	correction factor for armoring by bed material size (from HEC-18 Eqn 7.5)
a	pier width, ft
L	length of pier, ft
Fr_1	Froude number directly upstream of the pier = $V_1/(g*y1)\verb|^|0.5$
V_1	Mean velocity of flow directly upstream of the pier, ft/s
g	acceleration of gravity (32.2 ft/s^2)
θ	angle of attack of flow, rad
D_{50}	ft
D_{90}	ft

y_s	**4.1**	
y_1	7.39	STA 946.6
K_1	1.1	
K_2	1.0	
K_3	1.1	
K_4	1.00	
a	2.00	
L	15.0 (assumed)	
Fr_1	0.23	
V_1	3.57	
g	32.2	
θ (deg)	0	
θ (rad)	0	
D_{50}	0.016404	
D_{90}	0.032808	
V_R	0.53	
$VicD_{50}$	1.98	
VcD_{50}	3.96	
$VicD_{90}$	2.59	
VcD_{90}	4.99	

Tables

Table for K_1

Shape #	K_1	Type
1	1.1	square nose
2	1.0	round nose
3	1.0	circular cylinder
4	1.0	group of cylinders
5	0.9	sharp nose (triangular)

Table for K_3

Bed Cond.	K_3	
1	1.1	clear-water scour
2	1.1	plane bed and antidune flow
3	1.1	small dunes
4	1.15	medium dunes
5	1.3	large dunes

Critical velocity calculation for determination of live bed or clear water condition for contraction scour:

$v_c = k_u * y^{(1/6)} * D^{(1/3)}$

Historical Peak (1,200 cfs)

v_c	critical velocity above which bed material of size D and smaller will be transported, ft/s
y	average depth of flow upstream of bridge (approach section), ft
D	particle size for v_c,, ft
D_{50}	particle size in a mixture of which 50 percent are smaller, mm
k_u	11.17 (English units)
v	mean velocity of the flow in the main channel or overbank area upstream of the bridge opening (approach section), ft/s

v_c	3.67	
y	4.66	Flow Area/Top Width
D	0.016404	
D_{50}	5.0	**Very coarse sand**
k_u	11.17	
v	2.48	
Clear-Water		

Clear water contraction scour:

$y_2=((k_2*Q^2)/(D_m^{(2/3)}*W^2))^{(3/7)}$

$y_s = y_2-y_0$

Historical Peak (1,200 cfs)

y_s	computed contraction scour, ft
y_2	average equilibrium depth in the contracted section after contraction scour, ft
Q	discharge, ft^3/s, through the bridge or on the se-back overbank area at the bridge associated with the width W
D_m	diameter of the smallest nontransportable particle in the bed material (1.25 D_{50}) in the contracted section, ft
Q_{50}	median diameter of bed material, ft
W	bottom width of the contracted (bridge) section less pier widths, ft
W_2	bottom width of the main channel in the contracted section less pier widths, ft
y_0	average existing depth in the contracted section, ft
k_u	0.025 (SI units) 0.0077 (English units)

y_s	**0.0**
y_2	4.88
Q	1,200
D_m	0.020505
D_{50}	0.016404
W	60.51
y_0	8.36
k_u	0.0077

CSU Pier Scour Equation (HEC-18, 5th Edition):

ys/y1=2.0*k1*k2*k3*k4*(a/y1)^0.65*Fr1^0.43

Historical Peak (1,200 cfs)

In terms of ys/a:

$ys/a=2.0*K_1*K_2*K_3*K_4*(y_1/a)$^0.35*$Fr_1$^0.43

where:

y_s	scour depth, ft
y_1	flow depth directly upstream of the pier, ft
K_1	correction factor for pier nose shape (from HEC-18 Fig 7.3 and Table 7.1)
K_2	correction factor for angle of attack of flow (from HEC-18 Table 7.2 or Eqn 7.4)
K_3	correction factor for bed condition (from HEC-18 Table 7.3)
K_4	correction factor for armoring by bed material size (from HEC-18 Eqn 7.5)
a	pier width, ft
L	length of pier, ft
Fr_1	Froude number directly upstream of the pier = $V_1/(g*y1)$^0.5
V_1	Mean velocity of flow directly upstream of the pier, ft/s
g	acceleration of gravity (32.2 ft/s^2)
θ	angle of attack of flow, rad
D_{50}	ft
D_{90}	ft

y_s	**3.7**	
y_1	6.36	STA 946.6
K_1	1.1	
K_2	1.0	
K_3	1.1	
K_4	1.00	
a	2.00	
L	15.0 (assumed)	
Fr_1	0.21	
V_1	3.00	
g	32.2	
θ (deg)	0	
θ (rad)	0	
D_{50}	0.016404	
D_{90}	0.002789	
V_R	0.36	
$VicD_{50}$	1.93	
VcD_{50}	3.86	
$VicD_{90}$	2.52	
VcD_{90}	4.87	

Tables

Table for K_1

Shape #	K_1	Type
1	1.1	square nose
2	1.0	round nose
3	1.0	circular cylinder
4	1.0	group of cylinders
5	0.9	sharp nose (triangular)

Table for K_3

Bed Cond.	K_3	
1	1.1	clear-water scour
2	1.1	plane bed and antidune flow
3	1.1	small dunes
4	1.15	medium dunes
5	1.3	large dunes

Critical velocity calculation for determination of live bed or clear water condition for contraction scour:

$v_c=k_u*y^\wedge(1/6)*D^\wedge(1/3)$

Average Flow (700 cfs)

v_c	critical velocity above which bed material of size D and smaller will be transported, ft/s
y	average depth of flow upstream of bridge (approach section), ft
D	particle size for v_c,, ft
D_{50}	particle size in a mixture of which 50 percent are smaller, mm
k_u	11.17 (English units)
v	mean velocity of the flow in the main channel or overbank area upstream of the bridge opening (approach section), ft/s

v_c	3.53	
y	3.69	Flow Area/Top Width
D	0.000656	
D_{50}	5	**Very coarse sand**
k_u	11.17	
v	1.96	
Clear Water		

Clear water contraction scour:

$y_2=((k_2*Q^2)/(D_m^{(2/3)}*W^2))^{(3/7)}$

$y_s = y_2-y_0$

Average Flow (700 cfs)

y_s	computed contraction scour, ft
y_2	average equilibrium depth in the contracted section after contraction scour, ft
Q	discharge, ft^3/s, through the bridge or on the se-back overbank area at the bridge associated with the width W
D_m	diameter of the smallest nontransportable particle in the bed material (1.25 D_{50}) in the contracted section, ft
Q_{50}	median diameter of bed material, ft
W	bottom width of the contracted (bridge) section less pier widths, ft
W_2	bottom width of the main channel in the contracted section less pier widths, ft
y_0	average existing depth in the contracted section, ft
k_u	0.025 (SI units) 0.0077 (English units)

y_s	**0.0**
y_2	3.10
Q	700
D_m	0.020505
D_{50}	0.016404
W	59.92
y_0	6.19
k_u	0.0077

CSU Pier Scour Equation (HEC-18, 5th Edition):

ys/y1=2.0*k1*k2*k3*k4*(a/y1)^0.65*Fr1^0.43

Average Flow (700 cfs)

In terms of ys/a:

$ys/a=2.0*K_1*K_2*K_3*K_4*(y_1/a)$^0.35*$Fr_1$^0.43

where:

y_s	scour depth, ft
y_1	flow depth directly upstream of the pier, ft
K_1	correction factor for pier nose shape (from HEC-18 Fig 7.3 and Table 7.1)
K_2	correction factor for angle of attack of flow (from HEC-18 Table 7.2 or Eqn 7.4)
K_3	correction factor for bed condition (from HEC-18 Table 7.3)
K_4	correction factor for armoring by bed material size (from HEC-18 Eqn 7.5)
a	pier width, ft
L	length of pier, ft
Fr_1	Froude number directly upstream of the pier = $V_1/(g*y1)$^0.5
V_1	Mean velocity of flow directly upstream of the pier, ft/s
g	acceleration of gravity (32.2 ft/s^2)
θ	angle of attack of flow, rad
D_{50}	ft
D_{90}	ft

y_s	**3.3**	
y_1	5.16	STA 946.6
K_1	1.1	
K_2	1.0	
K_3	1.1	
K_4	1.00	
a	2.00	
L	15.0 (assumed)	
Fr_1	0.19	
V_1	2.4	
g	32.2	
θ (deg)	0	
θ (rad)	0	
D_{50}	0.016404	
D_{90}	0.032808	
V_R	0.19	
$VicD_{50}$	1.87	
VcD_{50}	3.73	
$VicD_{90}$	2.44	
VcD_{90}	4.70	

Tables

Table for K_1

Shape #	K_1	Type
1	1.1	square nose
2	1.0	round nose
3	1.0	circular cylinder
4	1.0	group of cylinders
5	0.9	sharp nose (triangular)

Table for K_3

Bed Cond.	K_3	
1	1.1	clear-water scour
2	1.1	plane bed and antidune flow
3	1.1	small dunes
4	1.15	medium dunes
5	1.3	large dunes

Appendix C

Central Valley Flood Protection Board

WEST contacted the Central Valley Flood Protection Board (CVFPB) to determine if the Alta Main Canal was a regulated stream and if permitting is necessary. WEST was directed to CVFPB website (http://www.cvfpb.ca.gov/). The document "California Code of Regulations, Title 23, Waters, Division 1 Central Valley Flood Protection Board" contains a list of streams. Article 8, Section 112, page 4.6 states:

(a) The board requires applications to be filed for all proposed encroachments within the floodways under its jurisdiction (identified in Table 8.1) and on levees adjacent thereto, on any stream which may affect those floodways.

(b) Banks, levees, and channels of floodways along any stream, its tributaries, or distributaries may not be excavated, cut, filled, obstructed, or left to remain excavated during the flood season.
   (1) The flood seasons for the various floodways are shown in Table 8.1.
   (2) The board, at the prior written request of the applicant, may allow work to be done during flood season within the floodway, provided that, in the judgment of the board, forecasts for weather and river conditions are favorable.

(c) The following definitions apply to this section:
   (1) Bank. "Bank" means the ground bordering a river, stream, lake, or sea, or forming the edge of a cut or hollow.
   NOTE: Authority cited: Section 8571, Water Code. Reference: Sections 8608, 8609 and 8710, Water Code.

Figure 51 shows a partial section of Table 8.1 which includes reference to Alta Main Canal. It indicates that Alta Main Canal within Fresno Count is a regulated stream.. This encompasses the new N. Frankwood bridge location. Therefore, a permit application must be filed with the CVFPB. Figure 52 is a location map showing regulated streams in blue. Frankwood Bridge is noted by the arrow and is visibly within the regulated reach.

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Table 8.1—Regulated Streams and Nonpermissible Work Periods

[1] Flood season November 1 through July 15
[2] Flood season November 1 through April 15

Stream Title	*County–Limits*	*Flood Season*
Alta Main Canal	Fresno	1
American River	Sacramento — to Nimbus Dam	2
Antelope Creek	Placer — to settlement ponds	2
Antelope Creek	Tehama	2
Angel Slough	Butte	2
Arcade Creek	Sacramento — to Roseville Road	2
Ash Creek	Modoc	2
Ash Slough	Madera	2
Atherton Cove	San Joaquin — northeast bank only	2
Auburn Ravine	Sutter and Placer	2
Banta Carbona Intake Canal	San Joaquin	2

FIGURE 51 - LIST OF REGULATED STREAMS

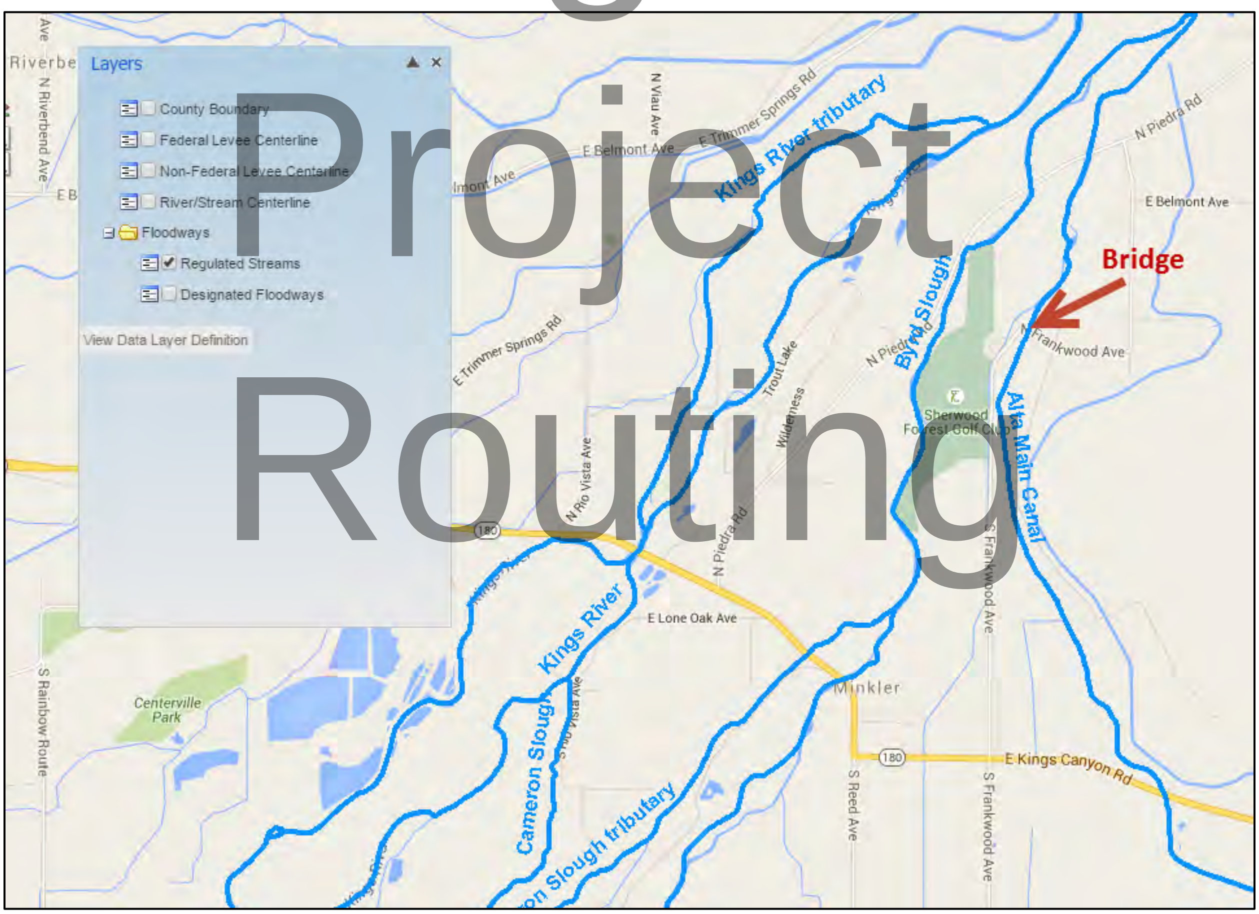

FIGURE 52 - REGULATED STREAMS MAP