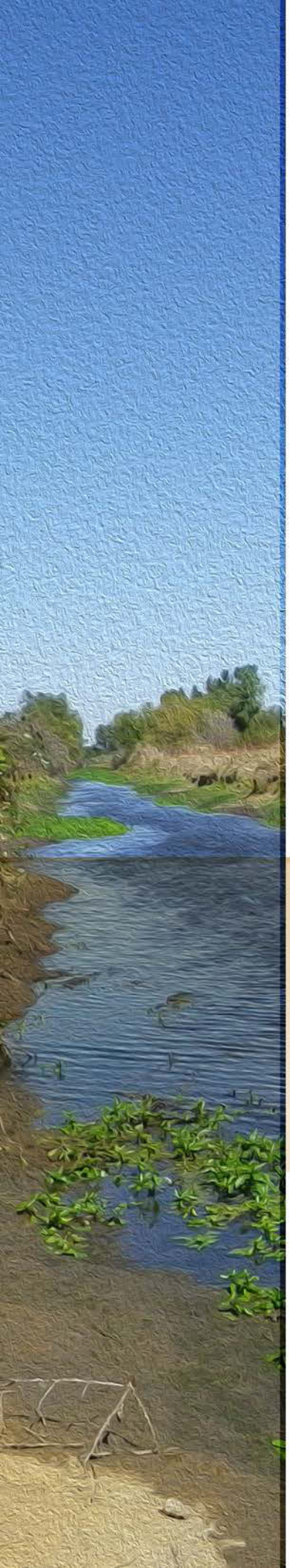

Draft Environmental Assessment/Finding of No Significant Impact
and
Initial Study/Proposed Mitigated Negative Declaration

Western Pacific Interceptor Canal 200-Year Standard Project

U.S. Army Corps of Engineers
Three Rivers Levee Improvement Authority

June 2015

Draft Environmental Assessment/Finding of No Significant Impact
and
Initial Study/Proposed Mitigated Negative Declaration

Western Pacific Interceptor Canal
200-Year Standard Project

Prepared for:

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916/414-5800

June 2015

60321471
06.25.15

Operations and Readiness Branch

FINDING OF NO SIGNIFICANT IMPACT

408 Permission # 19020-1
Central Valley Flood Protection Board
Three Rivers Levee Improvement Authority
for the
Western Pacific Interceptor Canal 200-Year Standard Project
Marysville, Yuba County, California

I have reviewed and evaluated the information presented in the Environmental Assessment prepared for the Three Rivers Levee Improvement Authority (TRLIA) Western Pacific Interceptor Canal 200-Year Project, located south of Marysville, California. TRLIA has requested an encroachment permit from the Central Valley Flood Protection Board (CVFPB) to construct flood improvements along the Western Pacific Interceptor Canal (WPIC). In compliance with U.S.C. Title 33, Chapter 9, Subchapter 1, Section 408, the CVFPB has requested permission from the U.S. Army Corps of Engineers to modify the Sacramento River Flood Control Project, an existing Federally authorized flood risk reduction project.

TRLIA proposes to construct levee remediation along the WPIC west levee, including two drained berms, a stability berm, landside fill, and a landside access road. The overall purpose of the proposed action is to bring the entire WPIC west levee into compliance with the California Department of Water Resources (DWR) Urban Levee Design Criteria (ULDC). The objectives are to improve the WPIC west levee to meet the ULDC for 200-year flood protection by correcting deficiencies related to seepage and slope stability.

The environmental effects of the proposed action have been coordinated with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, California State Historic Preservation Officer, DWR, and CVFPB.

Having reviewed the information provided by the applicant and all interested parties and an assessment of the environmental impacts, I find that this permission will not have a significant long-term effect on environmental, social, or cultural resources. Additionally, the proposed action will not impair the usefulness of the Federal Project and is not injurious to the public interest. Based on these considerations, I am convinced that there is no need to prepare an environmental impact statement. Therefore, an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) provide adequate environmental documentation to grant 408 permission for the proposed action.

_____
Randy P. Olsen
Chief, Operations and Readiness Branch

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Date: June 25, 2015

To: Interested Parties

From: Paul Brunner, P.E., Executive Director, Three Rivers Levee Improvement Authority

Subject: Notice of Availability and Intent to Consider Adoption of a Proposed Mitigated Negative Declaration for the Western Pacific Interceptor Canal 200-Year Standard Project

Enclosed for your review is a draft Environmental Assessment/Finding of No Significant Impact (EA/FONSI) and Initial Study and proposed Mitigated Negative Declaration (IS/MND) evaluating the potential environmental effects of the proposed Western Pacific Interceptor Canal 200-Year Standard Project (proposed project). The proposed project would be located in southern Yuba County, south of the town of Olivehurst and immediately east of State Route 70, along the West Levee of the Western Pacific Interceptor Canal (WPIC), within the Olivehurst and Nicolas U.S. Geological Survey 7.5-minute quadrangles. The Three Rivers Levee Improvement Authority (TRLIA) and U.S. Army Corps of Engineers have prepared this joint EA/IS in accordance with the requirements of the National Environmental Policy Act, California Environmental Quality Act (CEQA), and State CEQA Guidelines.

The WPIC West Levee is 6.1 miles long. The proposed project consists of improvements at various reaches along the approximately 5.9 miles of the levee that is east of State Route 70, to meet the California Department of Water Resources' Urban Levee Design Criteria for 200-year flood protection by correcting deficiencies related to seepage and slope stability. Remedial construction activities would be focused on approximately 2 miles of the West Levee. A new landside access road would be constructed along the approximately 3.3-mile northern portion of the West Levee for future operations and maintenance activities. The access road is independent of the remediation activities, overlapping in some places and not in others.

The joint EA/IS identifies potentially significant or significant impacts related to air quality; biological resources; cultural resources; geology, soils, and geomorphology; greenhouse gas emissions; hazards and hazardous materials; hydrology and water quality; and transportation and circulation. All impacts are reduced to less-than-significant levels with implementation of mitigation measures identified in the EA/IS.

The IS/MND is hereby circulated for public review and comment for a 30-day period beginning on June 25, 2015 and ending on July 25, 2015. The EA/FONSI/IS/MND, and all referenced documents may be reviewed at TRLIA's Web site, http://www.trlia.org/, and at the Yuba County Library, 303 Second Street, Marysville. For questions regarding these documents, contact Phil Dunn, (916) 414-5800, phil.dunn@aecom.com. Please send written comments on the EA/FONSI/IS/MND to Paul Brunner, P.E., Executive Director, Three Rivers Levee Improvement Authority, 1114 Yuba Street, Suite 218, Marysville, CA 95901, fax (530) 749-6990. Comments may also be sent via e-mail to pbrunner@co.yuba.ca.us. For e-mailed comments, please include the project title in the subject line, attach comments in MS Word format, and include the commenter's name and U.S. Postal Service mailing address. All written comments must be received by July 25, 2015.

TRLIA intends to consider adoption of the proposed MND and a Mitigation Monitoring and Reporting Program at its regularly scheduled board meeting on August 18, 2015, at 2:00 p.m. at the Yuba County Government Center Board Chambers at 915 Eighth Street, Marysville. This meeting is open to the public.

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PROPOSED MITIGATED NEGATIVE DECLARATION

Project: Western Pacific Interceptor Canal 200-Year Standard Project

Lead Agency: Three Rivers Levee Improvement Authority (TRLIA)

PROJECT DESCRIPTION

TRLIA is proposing to approve the Western Pacific Interceptor Canal 200-Year Standard Project (proposed project) to improve the Western Pacific Interceptor Canal (WPIC) West Levee to meet the California Department of Water Resources' Urban Levee Design Criteria for 200-year flood protection. The proposed project would correct geotechnical deficiencies related to seepage and slope stability along approximately 2 miles of the West Levee and would construct a landside access road along approximately 3.3 miles of the levee for future operations and maintenance activities. Levee remediation measures proposed for the West Levee include cutoff walls, drained berms, a stability berm, and landside fill. The project area is located in southern Yuba County, south of the town of Olivehurst and immediately east of State Route 70 (see Exhibit 1-1 in draft environmental assessment/initial study [EA/IS]).

FINDINGS

An EA/IS has been prepared to assess the proposed project's potential effects on the environment and the significance of those effects. Based on the EA/IS, it has been determined that the proposed project would not have any significant adverse effects on the environment after implementation of mitigation measures. This conclusion is supported by the following findings:

1. The proposed project would have no impacts on agriculture and forestry resources, land use and planning, mineral resources, population and housing, public services, recreational resources, and socioeconomics.

2. The proposed project would have less-than-significant impacts on aesthetics and utilities and service systems.

3. The proposed project would have potentially significant or significant impacts on air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions (GHG), hazards and hazardous materials, hydrology and water quality, noise, and transportation and circulation, but mitigation measures are proposed to reduce these effects to less-than-significant levels.

4. The proposed project would not 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, reduce the number or restrict the range of a special-status species, or eliminate important examples of California history or prehistory.

5. The proposed project would not achieve short-term environmental goals to the disadvantage of long-term environmental goals.

6. The proposed project would not have environmental effects that are individually limited but cumulatively considerable.

7. The proposed project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

8. No substantial evidence exists that the proposed project would have a significant negative or adverse effect on the environment.

9. The proposed project incorporates all applicable mitigation measures, as listed below and described in the EA/IS.

Following are the mitigation measures that would be implemented by TRLIA to avoid or minimize environmental impacts. Implementation of these mitigation measures would reduce the environmental impacts of the proposed project to a less-than-significant level.

Mitigation Measure AQ-1: Implement Feather River Air Quality Management District Standard Mitigation Measures.

As required for all projects located in Feather River Air Quality Management District (FRAQMD) jurisdiction, TRLIA and its construction contractor(s) will implement the following Standard Mitigation Measures:

- Implement the Fugitive Dust Control Plan.
- Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40% opacity or Ringelmann 2.0).
- The contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of on-site operation.
- Limit idling time to 5 minutes—saves fuel and reduced emissions. (State idling rule: Commercial diesel vehicles—13 CCR Chapter 10, Section 2485, effective 02/01/2005; off-road diesel vehicles—13 CCR Chapter 9, Article 4.8, Section 2449, effective 05/01/2008.)
- Use existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.

Portable engines and portable engine-drive equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, may require Air Resources Board (ARB) portable equipment registration with the state or local district permit. The owner/operator shall be responsible for arranging appropriate consultations with ARB or FRAQMD to determine registration and permitting requirements before equipment operation at the site.

Mitigation Measure AQ-2: Implement Feather River Air Quality Management District Best Available Mitigation Measures for Construction Phase.

In accordance with FRAQMD's recommendation to implement the Best Available Mitigation Measures for Construction Phases if construction-related emissions continue to exceed FRAQMD thresholds of significance, TRLIA and its construction contractor(s) will implement the following measures:

- All grading operations on a project should be suspended when winds exceed 20 miles per hour (mph) or when winds carry dust beyond the property line despite implementation of all feasible dust control measures.

- Construction sites shall be watered as directed by the Department of Public Works or Air Quality Management District and as necessary to prevent fugitive dust violations.

- An operational water truck should be available at all times. Apply water to control dust as needed to prevent visible emissions violations and off-site dust impacts.

- On-site dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce windblown dust emissions. Incorporate the use of approved nontoxic soil stabilizer according to manufacturer's specifications to all inactive construction areas.

- All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions.

- Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all inactive construction areas (previously graded areas that remain inactive for 96 hours), including unpaved roads and employee/equipment parking areas.

- To prevent track-out, wheel washers should be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out.

- Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the project site.

- Provide temporary traffic control as needed during all phases of construction to improve traffic flow, as deemed appropriate by the Department of Public Works and/or the California Department of Transportation and to reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 mph.

- Reduce traffic speeds on all unpaved surfaces to 15 mph or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, on-site enforcement, and signage.

- Reestablish ground cover on the construction site as soon as possible and prior to final occupancy, through seeding and watering.

- Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et al.) may be conducted at the project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials offsite for disposal by open burning.

Mitigation Measure AQ-3: Use Tier 4 Equipment for All Construction Activities.

All heavy-duty construction equipment used for the proposed action shall be Tier 4 engines or achieve comparable emissions standards as those of Tier 4 engines.

Mitigation Measure AQ-4: Contribute to Feather River Air Quality Management District Off-Site Mitigation Program.

TRLIA shall pay a deposit down payment to FRAQMD, to be determined at the time the project is approved, for the off-site mitigation fee. This deposit shall be held by FRAQMD during construction activities and shall be used against the final off-site mitigation fee following completion of the proposed action.

TRLIA and its construction contractor(s) will monitor construction activities throughout all construction phases. Data regarding construction activities shall be collected and reported to FRAQMD on a monthly basis, and total construction emissions shall be calculated at the end of construction activities. The construction-activities data shall include but shall not be limited to the following items:

- Construction equipment
  - Equipment type and number of pieces
  - Horsepower
  - Hours of actual operation

- Haul trucks (heavy-duty trucks)
  - Number of heavy-duty haul truck trips
  - Trip distance for haul truck trips

- Construction workers
  - Number of construction workers per day

FRAQMD shall collect the monthly construction activity reports for recordkeeping and shall monitor the progression of the proposed action. After completion of the proposed action (or completion of the construction season if the project extends over one year) the actual construction emissions and corresponding off-site mitigation fees shall be calculated based on actual construction activities. The

original deposit down payment shall be subtracted from this total and TRLIA shall be responsible for paying the remaining fee to FRAQMD within an agreed-upon period.

Mitigation Measure BIO-1: Minimize Potential Indirect Effects on Special-Status Plant Habitat in the Western Pacific Interceptor Canal.

TRLIA and its construction contractor(s) will implement the following measure to reduce potential effects on special-status plants:

Before on-site construction activities begin, the construction area boundaries shall be fenced to clearly delineate the extent of project activities. Silt fencing shall be used along waterside construction area boundaries and access routes to minimize the potential for indirect effects on aquatic habitat in the WPIC, in which special-status plants could occur.

Mitigation Measure BIO-2: Avoid and Minimize Impacts on Elderberry Shrubs.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential effects on habitat for valley elderberry longhorn beetle:

- A worker awareness training program shall be conducted for all construction personnel before they start work on the project. The program shall summarize relevant laws and regulations that protect biological resources and discuss sensitive habitats and species, the role of biological monitors, applicable avoidance and minimization measures to protect species and habitats, and the penalties for not complying with such measures. Proof of training shall be provided to USFWS.

- Before on-site construction activities begin, fencing shall be placed to clearly delineate the extent of project activities and provide a buffer around elderberry shrubs to prevent accidental damage during construction activities. USFWS shall be consulted regarding the appropriate size of the buffers, but to the maximum extent feasible, fencing shall be placed a minimum of 20 feet from the dripline of elderberry shrubs that could be damaged by project activities.

- A biological monitor shall conduct inspections of the construction area to ensure that impact avoidance and minimization measures are properly implemented. A report of monitoring activities and observations shall be prepared and provided to USFWS upon completion of project activities.

- Signs shall be placed on fencing in the vicinity of elderberry shrubs, stating: “This area is habitat of the valley elderberry longhorn beetle, a threatened species, and it must not be disturbed. This species is protected by the Endangered Species Act. Violators are subject to prosecution, fines, and imprisonment.” The signs shall be clearly readable from a distance of 20 feet and shall be maintained throughout the construction period.

- Dust control measures shall be implemented for all ground-disturbing activities associated with Reach 1B construction activities and along the haul route to Reach 2B. These measures may include applying water to haul routes and other unvegetated areas in which equipment is operating. To avoid attracting Argentine ants, no water shall be sprayed within the dripline of an elderberry shrub.

- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant shall be used or stored within 100 feet of elderberry shrubs adjacent to the construction area.

- Areas of ground disturbance within 100 feet of elderberry shrubs shall be restored to pre-project conditions when construction activities are complete.

Mitigation Measure BIO-3: Minimize Potential for Indirect Impacts on and Compensate for Fill of Suitable Habitat for Vernal Pool Crustaceans.

TRLIA and its construction contractor(s) will implement the following measures to reduce and compensate for potential effects on vernal pool fairy shrimp and vernal pool tadpole shrimp:

- Before on-site construction activities begin, the construction area boundaries shall be fenced to clearly delineate the extent of project activities. Silt fencing shall be used to delineate the boundaries of landside construction areas and the haul route to Reach 2B where suitable habitat for vernal pool crustaceans is present adjacent to the project site.

- TRLIA shall coordinate with USFWS to develop and implement an appropriate mitigation strategy to compensate for habitat loss. Mitigation would likely include purchasing preserved and restored or created vernal pool habitat at a USFWS-approved mitigation bank. Appropriate mitigation ratios shall be developed during consultation with USFWS but are anticipated to be based on 3 acres of habitat preservation and 1 acre of habitat creation for each acre of habitat loss. TRLIA shall obtain incidental take authorization if deemed necessary by USFWS. The performance standard is anticipated to be no net loss of vernal pool crustacean habitat.

Mitigation Measure BIO-4: Minimize Potential for Take of Giant Garter Snake and Compensate for Loss of Upland Habitat.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential effects on giant garter snake:

- Unless specifically authorized by USFWS and California Department of Fish and Wildlife (CDFW), construction activities within 200 feet of aquatic habitat within the WPIC shall not begin before May 1. Initial ground disturbance in all construction areas shall be completed by October 1, and construction activities shall be completed as soon thereafter as possible.

- Before on-site construction activities begin, silt fencing shall be installed along the construction area boundaries and access routes on the waterside of the levee to prevent accidental vehicle incursion, minimize the potential for water quality degradation, and deter snakes from entering construction areas.

- A worker awareness training program shall be conducted for all construction personnel before they start work on the project. The program shall summarize relevant laws and regulations that protect biological resources and discuss sensitive habitats and species, the role of biological monitors, applicable avoidance and minimization measures to protect species and habitats, and the penalties for not complying with such measures. Proof of training shall be provided to USFWS and CDFW.

- Construction areas shall be surveyed for giant garter snakes by a qualified biologist within 24 hours before on-site project activities begin. Additional surveys shall be conducted within 24 hours before initial ground disturbance begins. Surveys shall be repeated after any lapse in construction activity of 2 weeks or longer.

- A biological monitor shall conduct inspections of the construction area to ensure that impact avoidance and minimization measures are being implemented properly. A report of monitoring activities and observations shall be prepared and provided to USFWS and CDFW upon completion of project activities.

- If deemed appropriate by the biological monitor, an escape ramp shall be placed at each end of any trench left open when construction activities are finished for the day, to allow animals that may have become trapped in the trench to climb out overnight. The ramp may be constructed of dirt fill, wood planking or other suitable material placed at an angle no greater than 30 degrees.

- No snakes shall be harassed, harmed, or killed, and they shall be allowed to leave the construction area on their own volition. If a possible giant garter snake is observed retreating into an underground burrow or is otherwise stationary within the construction area, construction activities shall not begin or shall cease immediately in the reach where the snake is present, the biological monitor shall be notified immediately, and appropriate actions shall be taken to minimize potential for harm of the snake.

- After completion of construction activities, all temporary flagging, fencing, and/or barriers shall be removed from the project site. All disturbed soil surfaces shall be revegetated during the same construction season that disturbance occurs. Levee slopes, stability berms, fill areas, and other uplands disturbed during project activities shall be hydroseeded with a quick-growing and sterile mix of at least 30% locally native grass and forb seeds.

- TRLIA shall coordinate with USFWS and CDFW to develop and implement an appropriate mitigation strategy to compensate for habitat loss and potential take of giant garter snake. Mitigation would likely include purchasing created giant garter snake habitat at a USFWS- and CDFW-approved mitigation bank (e.g., Sutter Basin Conservation Bank). Appropriate mitigation ratios shall be developed during consultation with USFWS and CDFW but are anticipated to be based on 3 acres of mitigation habitat for every 1 acre of habitat permanently lost and/or 1 acre of mitigation habitat for every 1 acre of waterside habitat that is disturbed. Mitigation habitat shall include aquatic and upland components at a ratio of 2 acres of upland for each acre of aquatic. TRLIA shall obtain incidental take authorization if deemed necessary by USFWS and/or CDFW. The performance standard is anticipated to be no net loss of giant garter snake habitat.

Mitigation Measure BIO-5: Minimize Disturbance and Potential Loss of Active Nests of Special-Status Birds.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential effects on nesting special-status birds:

- Focused surveys for Swainson's hawk and other nesting raptors shall be conducted by a qualified biologist before on-site project activities begin. To the extent feasible, surveys shall follow guidelines provided in *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). A minimum of one survey shall be conducted no more than 14 days before project activities begin. Surveys for Swainson's hawk nests shall include all accessible areas of suitable nesting habitat located within 0.25 mile of areas subject to project disturbance, and surveys for other raptors shall include accessible suitable nesting habitat within 500 feet of project disturbance.

- If active raptor nests are found, appropriate buffers shall be established and maintained around the nest sites to avoid nest failure resulting from project activities. The appropriate size and shape of the buffers shall be determined by a qualified biologist and may vary depending on the species, nest location, nest stage, and construction activity. The buffers may be adjusted if a qualified biologist determines that such an adjustment would not be likely to adversely affect the nest. Monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting birds or their young. No project activity shall begin within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use.

- Surveys for the colonially nesting tricolored blackbird shall include suitable habitat within up to 1,000 feet of areas subject to project disturbance, depending on the potential extent of indirect impact. Surveys for loggerhead shrike and song sparrow shall include suitable habitat within up to 200 feet of the disturbance areas, depending on the species and potential for impact. Surveys shall be conducted within 10 days before on-site project activities begin in a given area during the migratory bird nesting season (March 1–August 31).

- If any active nests of tricolored blackbird, loggerhead shrike, or song sparrow are observed, or behaviors indicating the presence of active nests are observed, appropriate buffers around the nest sites shall be determined by a qualified biologist and maintained to avoid nest failure resulting from project activities. The size of the buffer shall depend on the species, nest location, nest stage, and specific construction activities to be performed while the nest is active. The buffers may be adjusted if a qualified biologist determines that such an adjustment would not be likely to adversely affect the nest. If buffers are adjusted, monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting birds or their young. No project activity shall begin within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use.

Mitigation Measure BIO-6: Minimize Potential for Indirect Impacts on and Compensate for Fill of Waters of the United States.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential effects on federally protected wetlands to "no net loss":

- Before on-site construction activities begin, the construction area boundaries shall be fenced to clearly delineate the extent of project activities. Silt fencing shall be installed along the construction area boundaries and access routes on the waterside of the levee and shall be used to delineate the

boundaries of the landside construction area and the haul route to Reach 2B where seasonal wetlands are present adjacent to the project site.

- A Section 404 permit for fill of seasonal wetlands along the landside of the levee and Section 401 certification shall be obtained before any groundbreaking activity begins within 50 feet of, or fill or dredged material is discharged into, any wetland or other water of the United States. All requirements for any permits obtained shall be fulfilled in the time frames required by the permits.

- Permanent fill shall be compensated on a "no-net-loss" basis. The specific acreages, locations, and methods used for such replacement or restoration shall be agreeable to U.S. Army Corps of Engineers (USACE) and the Central Valley Regional Water Quality Control Board (RWQCB) (depending on agency jurisdiction), as determined during the Section 404 and Section 401 permitting processes, respectively. Compensation for loss of seasonal wetlands is anticipated to be partially fulfilled through the purchase of vernal pool credits at a mitigation bank to compensate for loss of vernal pool crustacean habitat, upon USACE approval. Any additional mitigation requirement would likely be fulfilled through purchase of seasonal wetland credits at a USACE-approved mitigation bank (e.g., Colusa Basin Mitigation Bank). The performance standard is anticipated to be no net loss of jurisdictional habitat.

Mitigation Measure CUL-1: Avoid Potential Effects on Previously Undiscovered Archaeological Resources.

To minimize the potential for destruction of or damage to previously undiscovered archaeological resources during project-related earthmoving activities, TRLIA and its construction contractor(s) will implement the following measure:

- Before the start of any project-related earthmoving activities, TRLIA shall retain a qualified archaeologist to train all construction personnel involved with earthmoving activities, including the site superintendent, regarding the possibility of encountering archaeological resources, the appearance and types of resources likely to be seen during construction, and proper notification procedures should archaeological resources be encountered.

- If buried or previously unidentified archaeological resources are discovered during project activities, all work within a 100-foot radius of the find shall cease. TRLIA shall hire a professional archaeologist meeting the *Secretary of the Interior's Professional Standards for Archaeologists* to assess the discovery and recommend what, if any, further treatment or investigation is necessary for the find. Any necessary treatment/investigation shall be coordinated with TRLIA, USACE, and the SHPO and shall be completed before project activities continue in the vicinity of the find.

Mitigation Measure CUL-2: Avoid Potential Effects on Previously Undiscovered Paleontological Resources.

To minimize the potential for destruction of or damage to potentially unique, scientifically important paleontological resources during project-related earthmoving activities, TRLIA and its construction contractor(s) will implement the following measures:

- Before the start of any project-related earthmoving activities, TRLIA shall retain a qualified paleontologist to train all construction personnel involved with earthmoving activities, including the site superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered.

- If paleontological resources are discovered during earthmoving activities, the construction crew shall notify TRLIA and shall immediately cease work in the vicinity of the find. TRLIA shall retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines (1996). The recovery plan may include but is not limited to a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by TRLIA to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Mitigation Measure CUL-3: Avoid Potential Effects on Undiscovered Burials.

To minimize the potential for destruction of or damage to undiscovered burials during project-related earthmoving activities, TRLIA and its construction contractor(s) will implement the following measure:

In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, all ground-disturbing work potentially damaging excavation in the area of the burial and a 100-foot radius shall halt and the Yuba County Coroner shall be notified immediately. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The NAHC shall designate a Most Likely Descendant for the human remains. After the coroner's findings have been made, an archaeologist meeting the *Secretary of the Interior's Professional Standards for Archaeologists* and the NAHC-designated Most Likely Descendant shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities of Yuba County for acting upon notification of a discovery of Native American human remains are identified in Public Resources Code (PRC) Section 5097.9.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. TRLIA shall ensure that the procedures for the treatment of Native American human remains contained in California Health and Safety Code Sections 7050.5 and 7052 and PRC Section 5097 are followed.

Mitigation Measure GEO-1: Implement Mitigation Measure HYDRO-1, "Prepare and Implement a Storm Water Pollution Prevention Plan and Associated Best Management Practices."(See Mitigation Measure HYDRO-1 below.)

Mitigation Measure GHG-1: Implement Mitigation Measure AQ-1, "Implement Feather River Air Quality Management District Standard Mitigation Measures." (See Mitigation Measure AQ-1 above.)

Mitigation Measure GHG-2: Implement Mitigation Measure AQ-2, "Implement Feather River Air Quality Management District Best Available Mitigation Measures for Construction Phase." (See Mitigation Measure AQ-2 above.)

Mitigation Measure GHG-3: Implement Mitigation Measure AQ-3, "Use Tier 4 Equipment for All Construction Activities." (See Mitigation Measure AQ-3 above.)

Mitigation Measure GHG-4: Purchase Carbon Offsets to Reduce Construction Emissions.

If the proposed action's annual construction-related GHG emissions would exceed the applicable, surrogate Sacramento Metropolitan Air Quality Management District threshold of significance (1,100 metric tons of carbon dioxide equivalent per year), TRLIA shall purchase carbon offset credits from an ARB-approved carbon registry to offset the construction-related greenhouse gas emissions to a less-than-significant level. If the proposed action is implemented over two construction seasons, construction-related GHG emissions would be less than the applicable threshold and no mitigation is required.

Mitigation Measure HAZ-1: Implement Mitigation Measure HYDRO-1, "Prepare and Implement a Storm Water Pollution Prevention Plan and Associated Best Management Practices." (See Mitigation Measure HYDRO-1 below.)

Mitigation Measure HYDRO-1. Prepare and Implement a Storm Water Pollution Prevention Plan and Associated Best Management Practices.

TRLIA and its construction contractor(s) will implement the following measures to protect water quality:

- During the development of grading permits and improvement plans, TRLIA will consult with Yuba County and the Central Valley RWQCB. The purpose of the consultation will be to acquire the regulatory approvals necessary to obtain a statewide National Pollutant Discharge Elimination System stormwater permit for general construction activity from the State Water Resources Control Board.

- TRLIA or its construction contractor shall prepare and implement the appropriate storm water pollution prevention plan (SWPPP) to prevent and control pollution and to minimize and control runoff and erosion. The SWPPP will identify the activities that may cause pollutant discharge (including sediment) during storms and best management practices (BMPs) that will be employed to control pollutant discharge. Construction techniques that will be identified and implemented to reduce the potential for runoff may include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. In addition, the SWPPP will include an erosion and sediment control plan and BMPs that specify the erosion and sedimentation control measures to be implemented, which may include silt fences, trench plugs, terraces, water bars,

and seeding and mulching. The SWPPP also will include a spill prevention, control, and countermeasure plan and applicable hazardous materials business plans, and will identify the types of materials used for equipment operation (including fuel and hydraulic fluids), and measures to prevent and materials available to clean up hazardous material and waste spills. The SWPPP will also identify emergency procedures for responding to spills.

- BMPs presented in either document shall be clearly identified and maintained in good working condition, with sufficient backup stock on-site during all site work and construction activities.

- The construction contractor will retain a copy of the approved SWPPP on the construction site and modify it as necessary to suit specific site conditions through amendments approved by the Central Valley RWQCB.

Mitigation Measure Noise-1: Employ Noise-Reducing Construction Measures for Construction-Related Traffic.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential impacts related to construction-related traffic noise:

- Establish and enforce construction site and haul road speed limits.

- Route construction-related truck traffic along roadways that will cause the least disturbance to residents.

- Use high-grade engine exhaust silencers and engine-casing sound insulation.

Alternatively, potential impacts would be adequately reduced by using only the borrow sites located in Yuba City, not the Marysville borrow site.

Mitigation Measure Noise-2: Employ Noise-Reducing Construction Measures for Stationary Construction Equipment.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential impacts related to construction-related increases in exterior ambient noise levels:

- Provide written notification to the potentially affected residents before construction, identifying the type, duration, and frequency of construction activities within 1,000 feet of residences. Notification materials shall also identify a mechanism for residents to register complaints with the appropriate jurisdiction if construction noise levels are overly intrusive or construction occurs outside the permitted hours.

- Provide written notification of heavy construction activities to all noise-sensitive receptors located adjacent to the project site and heavy construction operations. Notification shall include anticipated dates and hours during which construction activities are anticipated to occur and contact information, including a daytime telephone number, for the project representative to be contacted in the event that

noise levels are deemed excessive. Recommendations to assist noise-sensitive land uses in reducing interior noise levels (e.g., closing windows and doors) shall be included in the notification.

- Prohibit the start-up of machines or equipment before 7 a.m. and after 7 p.m. Monday through Saturday and before 9 a.m. and past 6 p.m. on Sunday (except during cutoff wall construction).
- Prohibit use of materials and equipment deliveries before 7 a.m. and after 7 p.m., Monday through Saturday and before 9 a.m. and past 6 p.m. on Sunday (except during cutoff wall construction).
- To the extent practicable, construction activities shall be limited to the hours of 7 a.m. to 10 p.m. when operations occur within 500 feet of a residential or other noise-sensitive land use.
- Construction equipment travel on the levee crown, the land side of the levee, landside staging areas, and public roadways shall be minimized and arranged to minimize disturbance to occupied residences (i.e., between 7 a.m. and 10 p.m.) to the extent possible. During cutoff wall construction, TRLIA shall work with the construction contractor and nearby residents to minimize disturbance to occupied residences.
- Minimize idling times of equipment either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes.
- Use electrically powered equipment instead of internal combustion equipment where practicable and feasible.
- Restrict the use of bells, whistles, alarms, and horns to safety-warning purposes.
- Equip all construction equipment with noise-reduction devices such as mufflers to minimize construction noise and operate all internal combustion engines with exhaust and intake silencers.
- To the extent feasible, the simultaneous operation of multiple construction equipment within 50 feet of residences shall be limited.
- Locate fixed construction equipment (e.g., compressors and generators), construction staging and stockpiling areas, and construction vehicle routes as far as feasible from noise-sensitive receptors.
- Use noise-attenuating buffers such as structures, truck trailers, or soil piles between noise generation sources and sensitive receptors, where feasible and particularly in locations subject to prolonged construction.
- Designate a disturbance coordinator and conspicuously post this person's number around the project sites, in adjacent public spaces, and in construction notifications. The disturbance coordinator shall be responsible for responding to any complaints about construction activities. The disturbance coordinator shall receive all public complaints about construction disturbances and be responsible for determining the cause of the complaint and implementation of feasible measures to be taken to alleviate the problem.

Mitigation Measure TR-1: Prepare and Implement a Traffic Control and Road Maintenance Plan.

Before the start of project-related construction activities, TRLIA shall prepare and implement a plan to manage expected construction-related traffic to the extent feasible, and to avoid and minimize potential traffic congestion on local roadways during construction. The traffic control plan shall outline the phasing of activities and the use of specific routes to and from the work site, staging area, and borrow site locations to minimize the daily amount of traffic on individual roadways. The items listed below shall be included as terms of the construction contracts and shall be implemented by the construction contractor(s).

- Provide a site-specific access plan specifying the roadways on which construction workers are allowed to travel to access the staging areas, work sites, and borrow areas. To the maximum extent feasible, levee roadways shall be used instead of surface streets for access to the staging areas, work sites, and borrow areas.
- Prohibit construction workers from accessing work sites, staging areas, or borrow sites from any locations other than those specified in the plan.
- Maintain two-way traffic flow on arterial roadways accessing active work areas to accommodate construction of project facilities, unless otherwise allowed by the appropriate jurisdiction.
- Schedule haul truck trips outside of peak commute periods to minimize effects of project construction on traffic congestion, to the extent feasible.
- Provide 72-hour advance notification if access to driveways or private roads shall be affected. Limit effects on driveway and private roadway access to working hours and provide uninterrupted access to driveways and private roads during non-work hours. If necessary, use steel plates, temporary backfill, or another accepted measure to provide access.
- Provide clearly marked pedestrian detours to address any sidewalk or pedestrian walkway closures.
- Provide clearly marked bicycle detours to address closures of bicycle routes or avoid otherwise compromising bicyclist safety.
- Provide crossing guards and/or flag persons as needed to avoid traffic conflicts and ensure pedestrian and bicyclist safety, particularly near schools.
- Queue trucks only in areas and at times allowed by the appropriate jurisdiction.
- Post warnings about the potential presence of slow-moving vehicles.
- Use traffic control personnel when appropriate.
- Place and maintain barriers and install traffic control devices necessary for safety, as specified in Caltrans's Manual of Traffic Controls for Construction and Maintenance Works Zones and in accordance with County requirements.

- Comply with Caltrans requirements by submitting the traffic control and road maintenance plan to Caltrans for review to cover points of access from the state highway system (State Route [SR] 70 and SR 20) for haul trucks and other construction equipment. The traffic control and road maintenance plan to Caltrans shall include the point of access from SR 70 to the levee, at the north end of the project site.

- Assess and repair any damage to roadways and paved bicycle/pedestrian paths that are used during construction, and repair all project-related potholes, fractures, or other damages. In some cases, bike paths may need to be restored to pre-project conditions.

- Limit all operations or expeditiously remove the accumulation of project-generated mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. The construction contractor shall sweep the paved roadways (water sweeper with reclaimed water recommended) at the end of each day if substantial volumes of soil material have been carried onto adjacent paved, public roads from the project sites.

Mitigation Measure TR-2: Provide Pre-notification of Road Closures and Detours to Emergency Service Providers and Maintain Emergency Access.

TRLIA shall provide public notice by appropriate means, such as physical signage, Internet postings, letters, or telephone calls, to emergency service providers in the project study area at least 72 hours before road closures and detours.

- Provide clear emergency access to all existing buildings and facilities at all times.

- Maintain routes for passage of emergency response vehicles through roadways affected by construction activities.

Mitigation Measure TR-3: Provide Advance Notice of Bicycle and Pedestrian Facility Closures and Detour Routes.

TRLIA and its construction contractor(s) will implement the following measures to improve access to and provide for the safety of pedestrian and bicycle facilities during construction.

- Coordinate with and provide notice to the appropriate county departments at least 10 days before the start of construction activities that would require closure and/or detours of pedestrian and bicycle routes.

- Provide clearly marked pedestrian detours to address any sidewalk or pedestrian walkway closures or if pedestrian safety would be otherwise compromised.

- Provide clearly marked bicycle detours to address bicycle route closure or avoid otherwise compromising bicyclist safety.

- Provide crossing guards and/or flag persons as needed to avoid traffic conflicts and ensure pedestrian and bicyclist safety.

- Locate all stationary equipment as far away as possible from areas used by vehicles, bicyclists, and pedestrians where feasible.
- Post alternative bicycle or pedestrian routes and facilities that can be used during construction activities showing when detours or route closures are required at least 10 days before the start of construction activities.
- Reconstruct pedestrian/bicycle trails and paths to pre-project conditions at the completion of project-related construction activities.

ADOPTION OF MITIGATED NEGATIVE DECLARATION AND APPROVAL OF PROPOSED PROJECT

Certification by Those Responsible for Preparation of This Document. Three Rivers Levee Improvement Authority has been responsible for the preparation of this proposed mitigated negative declaration and the incorporated initial study. I believe this document meets the requirements of the California Environmental Quality Act and provides an accurate description of the proposed project, and that the lead agency has the means and commitment to implement the project design measures that will assure the project does not have any significant, adverse effects on the environment. Furthermore, I have reviewed and considered all comments received during the public comment period for the document. I hereby recommend adoption of this mitigated negative declaration:

_____ _____

Paul Brunner, Executive Director
Three Rivers Levee Improvement Authority

Date

*(*To be signed upon completion of the public review process and preparation of a final project approval package including responses to comment, if any, on the environmental document and any necessary modifications to project design measures.)*

Approval of the Project by the Lead Agency. To meet Section 21082.1 of the California Environmental Quality Act, Three Rivers Levee Improvement Authority has independently reviewed and analyzed the initial study and proposed mitigated negative declaration for the proposed project and finds that the initial study and proposed mitigated negative declaration reflect the independent judgment of Three Rivers Levee Improvement Authority. The lead agency finds that the project design features will be implemented as stated in the mitigated negative declaration.

I hereby approve this project:

_____ _____

Paul Brunner, Executive Director
Three Rivers Levee Improvement Authority

Date

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DRAFT ENVIRONMENTAL ASSESSMENT AND INITIAL STUDY

WESTERN PACIFIC INTERCEPTOR CANAL 200-YEAR STANDARD PROJECT

Project Title	Western Pacific Interceptor Canal 200-Year Standard Project
Lead Agency Names and Addresses	U.S. Army Corps of Engineers Sacramento District 1325 J Street Sacramento, CA 95814 Three Rivers Levee Improvement Authority 1114 Yuba Street, Suite 218 Marysville, CA 95901
Contact Persons and Phone Numbers	Elizabeth Holland Senior Environmental Manager U.S. Army Corps of Engineers (916) 557-6763 E-mail: Elizabeth.G.Holland@usace.army.mil Paul Brunner, P.E. Executive Director Three Rivers Levee Improvement Authority (530) 749-7841 E-mail: PBrunner@co.yuba.ca.us
Project Location	The project area is located in southern Yuba County, south of the town of Olivehurst and east of State Route 70, along the West Levee of the Western Pacific Interceptor Canal (WPIC), within the Olivehurst and Nicolas U.S. Geological Survey 7.5-minute quadrangles.
Project Sponsor's Name	Three Rivers Levee Improvement Authority
General Plan Designation	Various, See Section 3.11, "Land Use and Planning"
Zoning	Various, See Section 3.11, "Land Use and Planning"
Description of Project	The proposed project consists of improvements at various reaches along the approximately 5.9 miles of the West Levee that is east of State Route 70, to meet the California Department of Water Resources' Urban Levee Design Criteria for 200-year flood protection by correcting deficiencies related to seepage and slope stability. Remedial construction activities would be focused on approximately 2 miles of the West Levee. A new landside access road would be constructed along the approximately 3.3-mile northern portion of the West Levee for future operations and maintenance activities. The access road is independent of the remediation activities, overlapping in some places and not in others.
Surrounding Land Uses and Setting	Surrounding land uses include agriculture, rural residential, natural open space areas, and public facilities and infrastructure (e.g., levees). See Environmental Setting discussion under each issue area in Chapter 3, "Affected Environment and Environmental Effects."
Other Public Agencies Whose Approval Is Required	See Section 5, "Compliance with Federal, State, and Local Laws and Regulations."

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ACRONYMS AND OTHER ABBREVIATIONS

AB	Assembly Bill
af	acre-feet
ARB	Air Resources Board
B.P.	Before Present
Basin Plan	Water Quality Control Plan
Bay-Delta	San Francisco Bay/Sacramento–San Joaquin River Delta
BMPs	best management practices
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CalRecycle	California Department of Resources Recycling and Recovery
Calveno	California Vehicle Noise
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDMG	California Department of Conservation, Division of Mines and Geology
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
C.F.R.	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
dbh	diameter at breast height
Delta	Sacramento–San Joaquin River Delta
DO	dissolved oxygen
DOF	Department of Finance
DPS	distinct population segment
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EA/IS	environmental assessment/initial study
EAPs	Emergency Action Plans
EFH	essential fish habitat
EIR	environmental impact report

EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FRAQMD	Feather River Air Quality Management District
FS_L	factor of safety against liquefaction
FTA	Federal Transit Administration
2030 General Plan	Yuba County 2030 General Plan
GHG	greenhouse gas
GMP	Groundwater Management Plan
HCP	habitat conservation plan
in/sec	inches per second
ITE	Institute of Transportation Engineers
ITP	Incidental Take Permit
LDL	Larson Davis Laboratories
L_{dn}	Day-night average level
L_{eq}	Equivalent sound level
IL	Light Industrial
L_{max}	Maximum sound level
LID	Low Impact Development
LOS	level of service
mg/l	milligrams per liter
MMRP	mitigation monitoring and reporting program
MND	Mitigated Negative Declaration
mph	miles per hour
MRZs	Mineral Resource Zones
MT	metric tons
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NCCP	natural community conservation plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_X	oxides of nitrogen
NRHP	National Register of Historic Places
O&M	operations and maintenance
PCBs	polychlorinated biphenyls
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PM_{10}	particulate matter with aerodynamic diameter less than 10 microns
$PM_{2.5}$	particulate matter with aerodynamic diameter less than 2.5 micrometers
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PPV	peak particle velocity

PRC	Public Resources Code
proposed project	Western Pacific Interceptor Canal 200-Year Standard Project
PF	Public Facilities
RD	Reclamation District
RMS	root-mean-square
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
Scoping Plan	Scoping Plan Update
SHPO	State Historic Preservation Officer
RS	Single-Family Residential
SMAQMD	Sacramento Metropolitan Air Quality Management District
SP	Specific Plan
SR	State Route
SRAs	State Responsibility Areas
SVAB	Sacramento Valley Air Basin
SWPPP	storm water pollution prevention plan
TMDLs	total maximum daily loads
TRLIA	Three Rivers Levee Improvement Authority
UCMP	University of California, Berkeley Museum of Paleontology
ULDC	Urban Levee Design Criteria
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibels
WPIC	Western Pacific Interceptor Canal
YCWA	Yuba County Water Agency

1 INTRODUCTION

1.1 BACKGROUND

The Three Rivers Levee Improvement Authority (TRLIA), a joint powers agency, was established in 2004 by the County of Yuba and Reclamation District (RD) 784 to finance and construct levee improvements in south Yuba County, California. TRLIA's mission is to provide 200-year flood protection. In the early to mid-2000s, the Bear River North Levee and the Western Pacific Interceptor Canal (WPIC) were evaluated against Federal Emergency Management Agency (FEMA) levee criteria for a 100-year flood event. These levees were found to be deficient in some reaches. The construction of flood control improvements on the Bear River and WPIC was analyzed in an environmental impact report (EIR) certified by TRLIA in 2004, and in four subsequent addenda to the EIR (TRLIA 2005, 2006a, 2006b, and 2013) that analyzed environmental effects from minor project refinements.

Remedial construction activities on the WPIC West Levee were completed in 2005 and 2006 to address deficiencies in levee seepage and stability, freeboard, and susceptibility to erosion. Specific improvements consisted of constructing slurry cutoff walls to control through-seepage and underseepage, raising the levee crown with some resultant widening of the levee footprint, and implementing erosion control measures. The erosion control measures consisted of placing riprap, burying rock revetment on waterside slopes, conducting biotechnical bank stabilization, and adding instream rock groin. The 2005 and 2006 remedial construction activities were meant to provide 200-year protection along the Bear River North Levee and WPIC West Levee.

Since TRLIA's completion of the remedial construction necessary to bring the Bear River North Levee and WPIC West Levee into compliance with FEMA criteria and also provide 200-year protection, the California Department of Water Resources (DWR) issued the Urban Levee Design Criteria (ULDC). The ULDC, dated May 2012, provides engineering criteria and guidance regarding protection of levees against a 200-year flood event. To determine whether the Bear River North Levee and WPIC West Levee comply with the new ULDC, TRLIA performed preliminary geotechnical analyses (seepage and slope stability) for existing conditions based on available data. The results of these geotechnical analyses indicate that the Bear River North Levee meets the criteria, but that portions of the WPIC West Levee do not. Specifically, these portions of the WPIC West Levee are deficient in both seepage and slope stability and require remediation to be in compliance with the ULDC.

The U.S. Army Corps of Engineers (USACE) and TRLIA, as lead agencies under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), respectively, have prepared this joint Environmental Assessment/Initial Study (EA/IS) and draft Finding of No Significant Impact (FONSI) and proposed Mitigated Negative Declaration (MND) in compliance with NEPA and CEQA. This EA/IS addresses the environmental consequences of the proposed WPIC 200-Year Standard Project (proposed action), which corrects deficiencies related to seepage and slope stability, and constructs a landside access road for future operations and maintenance activities, along portions of the approximately 5.9 miles of the WPIC West Levee located east of State Route (SR) 70. Eight levee reaches totaling approximately 2 miles require remediation measures, including cutoff walls and landside berms and fill. The draft FONSI addresses the landside remediation and access road construction; an additional FONSI will be prepared to address the cutoff walls after USACE review of the preliminary design is complete.

1.2 PURPOSE AND NEED

The purpose of the proposed action is to bring the entire WPIC West Levee into compliance with the ULDC. To meet this purpose, the project objectives are to improve the WPIC West Levee to meet the ULDC for 200-year flood protection by correcting deficiencies related to seepage and slope stability. TRLIA proposes to complete remedial construction activities to address the identified geotechnical deficiencies, and to construct a landside access road from Station 135+00 to 309+00 of the WPIC West Levee for future inspection needs and operations and maintenance activities.

The need for the proposed action is based on geotechnical findings that portions of the WPIC West Levee are deficient in both seepage and slope stability and do not meet DWR's ULDC, which protect urban areas from a 200-year flood event. The need is also based on lack of a suitable access road along the landside toe of the levee.

1.3 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

The proposed action would alter the WPIC West Levee, a part of the federally authorized Sacramento River Flood Control Project under USACE jurisdiction. NEPA compliance is necessary for USACE to grant permission to alter a Federal project levee under Section 14 of the Rivers and Harbors Act of 1899 (33 United States Code [USC] 408, herein referred to as Section 408). Consequently, TRLIA has submitted a written request under Section 408 to USACE. The proposed action is the "requester's preferred alternative," as specified in USACE Engineer Circular (EC) 1165-2-216.

NEPA compliance is also necessary for USACE to permit fill of wetlands protected under Section 404 of the Clean Water Act (CWA). Because the proposed action would require the discharge of fill into wetlands under USACE jurisdiction, TRLIA will apply for an individual permit from USACE. This EA will satisfy NEPA compliance requirements for issuance of the 404 permit, as well as for altering the WPIC West Levee.

Prior to making a decision for Section 408 or Section 404 authorization for the proposed action, USACE must comply with NEPA and the regulations published by the Council on Environmental Quality (Title 40 Code of Federal Regulations [C.F.R.] Parts 1500-1508). The primary purpose of this EA is to determine whether the proposed action would have a significant impact on the environment and therefore require preparation of an Environmental Impact Statement.

This EA (1) describes the existing environmental resources in the project area, (2) evaluates the environmental effects of the proposed alternatives on these resources, and (3) identifies measures to avoid or reduce any effects to less than significant. If potentially significant impacts are found to be less than significant after adoption of mitigation measures, USACE may prepare a FONSI. This EA has been prepared in accordance with NEPA and provides full public disclosure of the environmental effects of the proposed action. Guidance contained in USACE's EC 1165-2-216 was also considered while preparing this EA.

1.4 PURPOSE OF THE INITIAL STUDY

This document also serves as an IS prepared in accordance with CEQA (Public Resources Code [PRC], Section 21000 et seq.) and the State CEQA Guidelines (Title 14, Section 15000 et seq. of the California Code of Regulations [CCR]). The purposes of this IS are to: (1) determine whether implementation of the proposed action would result in potentially significant or significant effects on the environment; and (2) identify feasible

mitigation measures, as necessary, to eliminate the proposed action's potentially significant or significant environmental effects or reduce them to a less-than-significant level.

An IS presents an environmental analysis and substantial evidence to support its conclusions regarding the significance of environmental impacts. "Substantial evidence" may include expert opinion based on facts, technical studies, or reasonable assumptions based on facts. An IS is neither intended nor required to include the level of detail provided in an EIR. If the IS concludes that impacts would be less than significant, or that mitigation measures committed to by the CEQA lead agency would clearly reduce impacts to a less-than-significant level, a negative declaration or MND can be prepared.

CEQA requires that all state and local government agencies consider the environmental consequences of projects they propose to carry out, or over which they have discretionary authority, before they implement or approve those projects. The public agency that has the principal responsibility for carrying out or approving a project is the lead agency for CEQA compliance (State CEQA Guidelines, Section 15367), in this case, TRLIA. After the required public review of this EA/IS is complete, TRLIA will consider all comments received on the IS/MND, consider adopting the proposed MND and a mitigation monitoring and reporting program (MMRP), and decide whether to proceed with the proposed action.

1.5 PROJECT LOCATION AND SETTING

The project area is located in southern Yuba County, south of the town of Olivehurst and immediately east of SR 70 (Exhibit 1-1). The WPIC West Levee is approximately 6.1 miles long and extends north from the confluence of the Bear River North Levee (Station 0+00) to approximately Station 307+00, where it turns west, crosses SR 70, and then turns north to Station 332+00 on the west of side of the Olivehurst Detention Basin. The project area includes the approximately 5.9 miles of levee east of SR 70. Exhibit 1-1 shows the location of the project area and the Bear River North Levee and WPIC West Levee.

The lands surrounding the project area are primarily agricultural, with rural residences primarily located east of the project area across SR 70.

1.6 RELATED DOCUMENTS

The WPIC has been the subject of several previous environmental documents, or the project area has been evaluated in environmental documents. The documents listed below were reviewed and used as appropriate in developing this EA/IS.

Three Rivers Levee Improvement Authority. 2004. *Bear River and Western Pacific Interceptor Canal Levee Improvements Project Final Environmental Impact Report*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2005a (June). *Final Biological Assessment for the Feather-Bear-WPIC Levee Project*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2005b (June). *Final Biological Assessment/Essential Fish Habitat for the Feather-Bear-WPIC Levee Project*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2005c (June). *Addendum to Certified Environmental Impact Report*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2006a (March). *Addendum to Certified Environmental Impact Report SCH Number 2004032118*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2006b (August). *Addendum to Certified Environmental Impact Report SCH Number 2004032118*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2013 (February). *Addendum 4 to the Environmental Impact Report for the Bear River and Western Pacific Interceptor Canal Levee Improvements Project State Clearinghouse No. 2004032118.* Marysville, CA. Prepared by AECOM, Sacramento, CA.

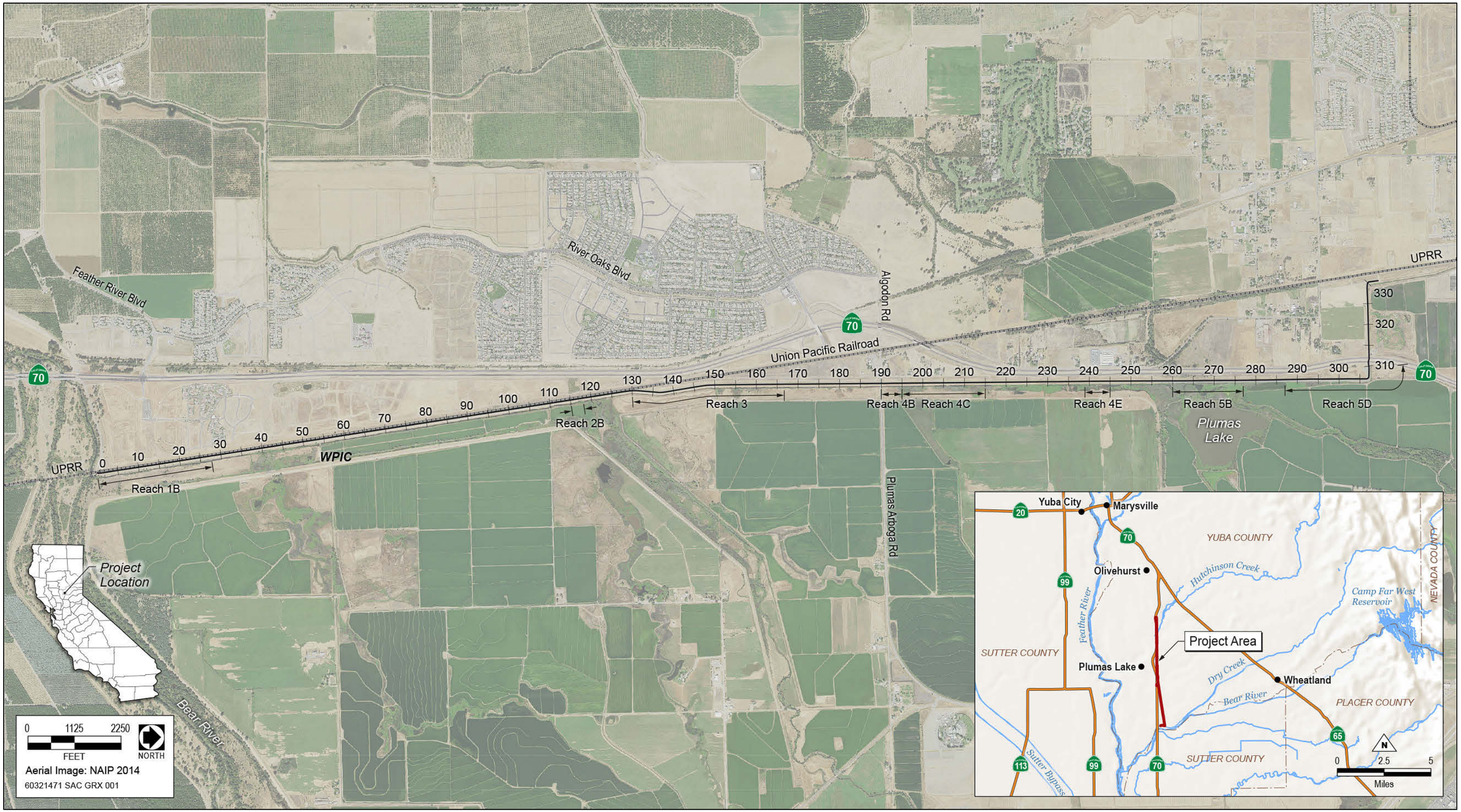
———. 2014a (May). *Geotechnical Data Report, Western Pacific Interceptor Canal West and Bear River North Levee, 200-Year Urban Levee Compliance*. Prepared by HDR, Inc. Folsom, CA.

———. 2014b (December). *Draft Final Geotechnical Alternatives Analysis (for Backcheck), 200-Year Urban Levee Criteria Compliance Determination (Amendment No. 15)*. Prepared by HDR, Inc. Folsom, CA.

Pacific Gas and Electric Company. 2010 (December). *Biological Assessment for the Palermo to East Nicolaus 115 kV Transmission Line Reconstruction Project*. Chico, CA. Prepared by ICF International, Sacramento, CA.

U.S. Army Corps of Engineers, Sacramento District. 2005. *Department of the Army Permit Evaluation and Decision Document, Three Rivers Levee Improvement Authority No. 200400685* (in support of Section 404 Permit for the Feather-Bear-WPIC Levee Improvements Project). Sacramento, CA.

Yuba County. 2011 (June). *Yuba County 2030 General Plan*. Adopted June 7, 2011. Community Development and Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.



Source: HDR 2015

Exhibit 1-1. Project Location and Vicinity Map

2 ALTERNATIVES

2.1 ALTERNATIVES ELIMINATED FROM DETAILED DISCUSSION

During development of the action alternatives, various methods were evaluated to correct identified levee deficiencies while minimizing impacts on waters of the United States, including wetlands, in the project area. Several other action alternatives that would potentially meet the purpose and objectives of the proposed action were considered but were not carried forward for the reasons described below. The array of alternatives available to remediate levees to meet the ULDC is necessarily restricted to the WPIC West Levee itself.

2.1.1 REACH 1B

The Reach 1B remediation alternatives included installing 50-foot-deep relief wells at 45-foot spacing and constructing a 300-foot undrained seepage berm. Because of issues related to relief wells, including initial development, conducting annual maintenance, and the additional right of way required for the relief wells and relief well trenches, this alternative was dismissed from further evaluation. In addition, the 300-foot undrained berm did not meet the ULDC for remediated measures and, therefore, was dismissed from further evaluation.

2.1.2 REACH 2B

The Reach 2B remediation alternatives included constructing a 47-foot-deep cutoff wall. The cutoff wall was dismissed from further evaluation because it would not be effective in improving the landside low spot that creates an isolated thin blanket, which results in this reach not meeting ULDC seepage criteria.

2.1.3 REACH 3

The Reach 3 remediation alternatives included constructing an undrained seepage berm under a drained stability berm and landside grading to fill low areas to meet seepage criteria. The drained stability berm was modeled at 10 feet wide at the top, with a 3 horizontal: 1 vertical (3:1) side slope and included a 2-foot-wide sand drain layer. The width of the undrained berm was modeled as four times the levee height, 5 feet tall at the levee toe, and 3 feet tall at the toe of the undrained berm. Low points requiring fill would need to be filled to a minimum depth of 1.5 feet above existing grade. Based on the extent of wetland fill and potentially significant effects on endangered species habitat that could result from constructing the undrained and drained berms and conducting landside grading to place fill in the low areas, the berm alternative was dismissed from further evaluation.

2.1.4 REACH 4B

The Reach 4B remediation alternatives included constructing a 26-foot-deep cutoff wall that would have required the temporary closure of Plumas-Arboga Road. Because of potentially significant impacts on traffic to and from the Sleep Train Amphitheatre and on local through traffic, this alternative was dismissed from further evaluation.

2.1.5 REACH 4C

A cutoff wall remediation alternative was considered but not analyzed for Reach 4C because it was considered unfavorable from a continuity perspective, as compared to adjoining reaches, and would have resulted in substantially increased costs.

2.1.6 REACH 4E

A berm remediation alternative was considered but not analyzed for Reach 4E because of the proximity of SR 70 to the landside levee toe.

2.1.7 REACH 5B

A cutoff wall remediation alternative was considered but not analyzed for Reach 5B because it was judged to be ineffective for improving the weak material that is present in the levee slope.

2.1.8 REACH 5D

The Reach 5D remediation alternatives included a 50-foot-deep cutoff wall and landside levee fill. The preferred option for Reach 5D is landside levee fill. A cutoff wall in Reach 5D would cost more than three times the landside fill alternative. The cutoff wall would be difficult to construct due to the near 90-degree bend in the levee. Further, after comparing the footprint of the two alternatives, the cutoff wall would not significantly reduce impacts to sensitive resources.

2.2 ALTERNATIVES EVALUATED IN DETAIL

2.2.1 NO-ACTION

NEPA requires that the lead federal agency, USACE, analyze a "no action" alternative that establishes the benchmark to compare the effects of the action alternatives. CEQA guidelines require that decision makers compare the impacts of approving the proposed project with the impacts of not approving the proposed project (14 CCR Section 15126.6[e]). CEQA also requires that the existing conditions at the time of writing are discussed, as well as what would reasonably be expected to occur in the foreseeable future.

Under the No-Action Alternative, TRLIA would not implement the remedial construction measures described in Section 2.2.2 "Proposed Action," or the all-weather access road along the landside toe of the levee. As a result, the levee would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The project area levees would continue to be maintained by RD 784. However, high water in the WPIC would likely result in water seepage through pervious sandy soils, as well as under areas of impervious clay soils, thereby exposing seepage and slope stability deficiencies in the project area. In the deficient areas, the levee could experience slumping along the levee slope, pin boils, piping of water and/or material through the levee, which could result in loss of freeboard, overtopping, or levee failure. Excessive seepage and slope instability could undermine the integrity of the levee, and could lead to emergency flood-fighting activities to prevent flooding in the possible event of levee failure. Thus, the flood risk in the project area would remain high for an urban levee area (i.e., less than 200-year flood protection).

Without the new all-weather access road, water would continue to pond along the landside levee toe, inhibiting the ability to detect seepage and potentially impeding access during emergency conditions and flood-fighting efforts.

2.2.2 PROPOSED ACTION

LOCATION

The project area is located in southern Yuba County, south of the town of Olivehurst and immediately east of SR 70. The WPIC West Levee is approximately 6.1 miles long and extends north from the confluence of the Bear River North Levee (Station 0+00) to approximately Station 307+00, where it turns west, and forms the southern levee of the Olivehurst Detention Basin west of SR 70; the levee then turns north to Station 332+00 on the west of side of the detention basin. The project area includes the approximately 5.9 miles of levee east of SR 70. Exhibit 1-1, "Project Location and Vicinity Map," in Chapter 1 shows the location of the project area and the Bear River North Levee and WPIC West Levee.

OBJECTIVES

The purpose of the proposed action is to bring the entire WPIC West Levee into compliance with the ULDC. To meet this purpose, the project objectives are to improve the WPIC West Levee to meet the ULDC for 200-year flood protection by correcting deficiencies related to seepage and slope stability. To meet the purpose and these objectives, TRLIA proposes to complete remedial construction activities to address the identified geotechnical deficiencies, and to construct a landside access road from Station 135+00 to 309+00 of the WPIC West Levee alignment for future operations and maintenance activities.

REMEDIATION MEASURES

The WPIC West Levee was divided into five discrete reaches based on subsurface characteristics, levee geometry, and past performance. When unique characteristics were encountered, such as different subsurface characteristics, past remediations, or penetrations, subreaches were assigned. (All reaches except Reach 3 have subreaches.) Each subreach is designated by a letter that follows the reach number (e.g., Reach 1B). The project area includes portions of the WPIC West Levee that do not meet ULDC geotechnical criteria and that require remedial construction or other improvements.

To determine which levee reaches or subreaches have geotechnical deficiencies, the topography, stratigraphy, and design water-surface elevations for 20 geotechnical cross sections were developed along the WPIC West Levee so that seepage and slope stability analyses could be performed. At least one cross section was taken in each reach, and multiple cross sections were taken in some reaches to determine the specific areas of deficiencies. These analyses identified deficiencies related to through-seepage, underseepage, and/or slope instability in six of the 17 subreaches along the WPIC West Levee. In addition, the Urban Levee Geotechnical Evaluation conducted by DWR showed that the levee does not meet underseepage criteria where a landside ditch is present near the levee toe in Reach 2B and at the landside levee toe in Reach 4C. Further details on the geotechnical analyses and recommended remediation measures are provided in the Geotechnical Data Report prepared by HDR, Inc. (TRLIA 2014).

Table 2-1 summarizes the remediation measures proposed to achieve ULDC compliance in the deficient reaches. It also indicates in which reaches the landside access road would be constructed. The measures proposed for remedial construction include cutoff walls, drained berms, a stability berm, and landside fill. Exhibits 2-1 through 2-12 (at the end of this chapter) depict the proposed remedial measures, the landside access road, and overall construction limits, which include staging areas and access and haul routes. The total area within the proposed

construction limits is approximately 50 acres. Two remediation options are available for Reach 5D, but only the preferred Option A is shown in Exhibit 2-12.

Table 2-1. Locations of Remediation and Landside Access Road Construction

Reach	Beginning Station	Ending Station	Length (feet)	Area (acres)	Construction
1B	0+00	30+50	3,050	8.9	70-foot-deep cutoff wall from Station 9+50 to 24+50, constructed using deep-mix method (because of proximity of active railroad tracks immediately landside of the levee)
2B	115+00	119+00	400	3.7	Landside ditch fill (minimum of 3 feet)
3	134+00	167+50	3,350	14.3	50-ft-deep cutoff wall from Station 144+50 to 167+50, constructed using open trench method Landside access road from Station 135+00 to 167+50
4A	167+50	190+10	2,260	5.3	Landside access road
4B	190+10	196+00	590	2.1	Drained berm Landside access road
4C	196+00	215+00	1,900	6.3	Drained berm Landside access road
4D	215+00	238+50	2,350	4.6	Landside access road
4E	238+50	248+50	1,000	4.2	50-foot-deep cutoff wall, constructed using open trench method Landside access road
5A	248+50	259+00	1,050	3.9	Landside access road
5B	259+00	278+00	1,900	6.9	10-foot-tall/10-foot-wide stability berm Landside access road
5C	278+00	286+00	800	2.5	Landside access road
5D (Option A)	286+00	310+50	2,450	14.0	Landside fill (minimum of 3.5 feet) Landside access road from Station 286+00 to 309+00
5D (Option B)	286+00	310+00	2,400	8.5	50-foot deep cutoff wall Landside access road from Station 286+00 to 309+00

REMEDIATION METHODS

Cutoff Walls

Levee remediation measures for the proposed action include constructing cutoff walls. Cutoff walls are vertical walls measuring approximately 3 feet wide that consist of low-hydraulic-conductivity materials and are constructed through the levee embankment and foundation to cut off potential through-seepage and underseepage. To be effective for underseepage, cutoff walls usually tie into an impervious sublayer (aquiclude). Walls generally require no additional permanent levee footprint. However, the levee must be temporarily taken out of service and degraded to prevent hydraulic fracturing of the levee and provide a wide enough working surface to accommodate construction of the cutoff wall. The upper drawing in Exhibit 2-13 shows a cross section of a typical cutoff wall.

For the proposed action, the levee would be degraded by approximately one-third to one-half of its overall height. Degraded levee material would be side-cast along the landside and waterside of the levee to establish the working

surface. Cutoff walls would be constructed through the center of the levee and would range in depth from approximately 50 to 70 feet, as measured from the levee degrade elevation. As described below under "Construction Workers and Schedule," cutoff wall construction could occur 24 hours a day. During nighttime construction, light fixtures would be oriented to the greatest degree practical to direct light downward and away from residences to minimize light spill.

Cutoff walls would be constructed of either soil-bentonite using the open-trench method or soil-cement-bentonite using the deep-mix method. In cutoff-wall construction with soil-bentonite using the open-trench method, a 3-foot-wide trench is excavated through the center of the levee and filled with bentonite slurry to keep the trench sidewalls from caving in during excavation. Material excavated from the trench is mixed, adjacent to the trench, with bentonite slurry in appropriate proportions, then is pushed back into the excavated trench. This process creates a wall through the center of the levee with reduced permeability. In cutoff-wall construction using the deep-mix method, augers are used to drill through the center of the levee to the appropriate depth. As the augers are raised, a bentonite and cement mixture is injected through the augers and mixed into the soil to form the cutoff wall.

After the cutoff wall has been installed and undergone the appropriate settlement period, the levee embankment would be reconstructed to its original lines and grades. The reconstructed embankment would include an 8-foot-wide clay core, shown as Levee Embankment Fill (Soil Type 1) in Exhibit 2-13. Clay core material would be imported from one or more local commercial borrow sources. See "Borrow Material Sources and Needs," below, for additional information regarding the sources of and needs for borrow material. Topsoil would then be placed on the levee slopes and aggregate base along the levee crown and access ramps. Disturbed areas would then be hydroseeded with a mix of at least 30% native grass and forb seeds.

Berms

In addition to constructing cutoff walls, levee remediation measures for the proposed action include constructing a stability berm and two drained berms. A stability berm is a prism of engineered material placed on the landside slope and toe of a levee to act as a buttress to increase the stability factors of safety. Typical stability berms are about 10 feet high and 10–25 feet wide. If there is also a deficiency related to through-seepage, a filter/drain zone can be incorporated into a typical berm creating a drained berm that captures seepage that otherwise would exit on the unprotected slope, potentially eroding the embankment material.

For the proposed action, the drained berms would be 20 feet wide and 2 feet high and would include a 1-foot-thick drain layer. These berms would provide the raised base for the landside access road in the relevant reaches. The stability berm would be 10 feet high and 10 feet wide at the top, with a 2:1 side slope. To facilitate berm construction, the top 6 inches of topsoil would be stripped from the existing ground, and then the area would be disked to a depth of 6 inches, moisture-conditioned (i.e., wetting and/or drying), and compacted before the placement of fill material. Fill would be keyed and benched into the existing levee as appropriate.

Landside Fill

In addition to constructing cutoff walls and berms, levee remediation measures for the proposed action include placing fill along the landside of the levee toe. The landside fill would be placed in engineered lifts (i.e., layers).

For the proposed action, fill would be placed landside of the levee to raise low areas. The lower drawing in Exhibit 2-13 shows a cross section of the drainage ditch fill area in Reach 2B. To facilitate the placement of the landside fill, the top 6 inches of topsoil would be stripped from the existing ground, then the area would be disked to a depth of 6 inches, moisture-conditioned (i.e., wetting and/or drying), and compacted before the placement of fill material.

LANDSIDE ACCESS ROAD

A raised, all-weather access road to be used for flood fighting and operations and maintenance would be constructed along a portion of the landside toe of the levee. The toe access road would be approximately 20 feet wide and would include a 16-foot width of aggregate base. Elevations and grades for the toe access road have not yet been established. However, the toe access road would follow the existing landside elevations and would have a general 2% cross slope, to drain water away from the levee, and maximum 10% longitudinal slope. Exhibits 2-6 through 2-12 show the approximate location of the landside access road.

BORROW MATERIAL SOURCES AND NEEDS

Fill material for the levee (clay core), berms, and fill areas would be obtained either from one or more off-site borrow sources or from excess material obtained from the levee degradation operations. The construction contractor would be required to obtain any off-site borrow material, which may be imported to the project site from existing permitted commercial sources located in the Marysville or Yuba City area. If borrow material is obtained from a site that is not currently permitted, the contractor would be responsible for obtaining all necessary permits before the project-related borrow material is removed. Table 2-2 lists the estimated grading and filling quantities needed for the proposed action's remediation measures, including the two options for Reach 5D.

Table 2-2. Estimated Material Quantities

Description	Quantities for All Reaches, including Option A in Reach 5D	Quantities for All Reaches, including Option B in Reach 5D
Clearing and grubbing	69 acres*	70.4 acres*
Stripping	56,000 cu. yd.	56,800 cu. yd.
Levee embankment degradation	40,000 cu. yd.	89,800 cu. yd.
Soil-bentonite cutoff wall	159,900 sq. ft.	247,400 sq. ft.
Soil-cement-bentonite cutoff wall	99,000 sq. ft.	128,000 sq. ft.
Levee embankment fill (Soil Type 1)—from import	12,200 cu. yd.	20,000 cu. yd.
Levee embankment fill (Soil Type 2)	61,200 cu. yd.	62,900 cu. yd.
Fill (ditch, berm, landside)—from import	41,000 cu. yd.	15,200 cu. yd.
Borrow site excavation	87,100 cu. yd.	45,500 cu. yd.
Unsuitable material—export	13,500 cu. yd.	26,900 cu. yd.
Class 2 aggregate surfacing—from import	7,700 tons	16,310 tons

Notes: cu. yd. = cubic yards; sq. ft. = square feet; all quantities are estimates

* Quantities presented in this table do not directly relate to the quantities presented in Table 2-1. The above quantities are estimates developed for the purposes of the construction bid and the air quality analysis, while the quantities presented in Table 2-1 show the direct acreage related to the remedial measures.

Source: Data provided by HDR in 2014

Staging Areas and Access

Before and during construction of the proposed action, several staging areas would be developed to allow for efficient use and distribution of materials and equipment. Preliminary staging areas are shown in Exhibits 2-1, 2-6, 2-7, and 2-10, though staging could occur anywhere within the depicted construction limits. Construction materials, equipment, the batch plant, spoils, and excess material would be stored in the staging areas during the construction period. The staging areas also would provide a parking location for construction workers.

Throughout the project's various construction phases, material deliveries would be made to the project site. Access to the project site for personnel, equipment, and material delivery would be via SR 70, Feather River Boulevard, and Plumas-Arboga Road (existing paved roadways). Access along the site would be along either the levee crown or the existing routes along the landside or waterside of the levee (existing unpaved access) as shown in Exhibits 2-2 through 2-12.

Utilities and Other Considerations

SR 70 and an active Union Pacific Railroad (UPRR) line are located along the landside of the levee; use of these routes would not be affected during construction. Plumas-Arboga Road crosses the levee at the southern end of Reach 4B and would remain open during construction. In addition, Pacific Gas and Electric Company (PG&E) steel towers and overhead utility lines run adjacent to the landside of the levee and would not be affected during construction. Relocation of utilities is not anticipated to be required as part of the proposed action.

Disposal of Excess Materials

The proposed action would generate excess materials that would require disposal. Before the start of construction, the levee and work areas would be cleared and grubbed to remove vegetation, debris, rubble, trash, and other items. Material obtained from the clearing and grubbing operations would be removed from the site and taken to commercial waste or recycling facilities in the Marysville or Yuba City area, as appropriate. The top 6 inches of topsoil would then be stripped and stockpiled on-site for later reuse. Excess material resulting from levee remediation that could not be reused on-site would be hauled off-site to permitted and approved disposal areas near Marysville or Yuba City.

Construction-Related Traffic

Haul routes for imported and exported materials would be located along SR 70 and other public roads. Material imported to the project site is anticipated to be obtained from sources located in the Marysville or Yuba City area. One-way haul trips are anticipated to be from up to 30 miles away.

Reach 1B would be accessed from SR 70 via the controlled intersection at Feather River Boulevard. Plumas-Arboga Road would provide access to the middle levee reaches and would be accessed from SR 70 via the Plumas Lake Boulevard interchange, River Oaks Boulevard, and Algodon Road. Vehicles accessing Reaches 5B and 5D could do so along the levee crown and toe haul routes north from Plumas-Arboga Road; direct ingress and egress to and from northbound SR 70 would also be available.

CONSTRUCTION EQUIPMENT

Table 2-3 lists the anticipated work phases, estimates the types of equipment needed for each phase, and provides an approximate count for each piece of equipment. However, the construction contractor may use more or less equipment based on the construction schedule, the contractor's capabilities, and the availability of equipment.

Table 2-3. Construction Phases, Equipment, and Anticipated Work Durations

Construction Phase	Anticipated Number and Type of Equipment that May Be Utilized by the Contractor*	Anticipated Duration of Use	Total Phase Duration
Phase 1—clearing, grubbing, and stripping	(4) Scrapers	30 days	30 days
	(2) Water trucks	30 days	
	(2) Front-end loaders	30 days	
	(4) Pickup trucks	30 days	
Phase 2—levee degradation for cutoff wall construction (lags behind Phase 1 by approximately 1 week or more)	(4) Excavators	30 days	30 days
	(4) Scrapers	30 days	
	(4) Vibratory rollers	30 days	
	(2) Water trucks	30 days	
	(10) Haul trucks	30 days	
Phase 3—cutoff wall construction (lags behind Phase 2 by approximately 1 week or more)	(2) Hydraulic excavators	35 days	40 days
	(1) Deep-mix method equipment	35 days	
	(4) Front-end loaders	40 days	
	(1) Extended boom pallet loader	40 days	
	(4) 300-kilowatt generators	40 days	
	(4) Slurry pumps	40 days	
	(6) Pickup trucks	40 days	
	(10) Haul trucks	40 days	
	(2) Water trucks	40 days	
Phase 4—levee reconstruction, berm construction, and landside fill placement (lags behind Phase 3 by approximately 21 days or more)	(4) Scrapers	30 days	30 days
	(4) Motor graders	30 days	
	(4) Tractors with discing equipment	30 days	
	(4) Vibratory rollers	30 days	
	(2) Water trucks	30 days	
Phase 5—levee resurfacing (begins after Phase 4)	(2) Motor graders	20 days	20 days
	(2) Vibratory rollers	20 days	
	(2) Haul trucks	20 days	
	(1) Water truck	20 days	
Phase 6—hydroseeding (concurrent with Phase 5)	(2) Hydroseeding trucks	5 days	14 days
	(2) Pickup trucks	10 days	
Phase 7—demobilization and site cleanup (begins after Phase 6)	(1) Extended boom pallet loader	15 days	15 days
	(2) Haul trucks	15 days	

Note:
* Equipment may be utilized concurrently.
Source: Data provided by HDR in 2014

Construction Workers and Schedule

Crew sizes would vary depending on the construction phase but are estimated to consist of 50–100 people working one shift 6 days a week (Monday through Saturday). Construction activities would typically be limited to 7 a.m. to 8 p.m. but may be extended to 6 a.m. to 10 p.m. for equipment maintenance. Equipment maintenance would also occur on Sunday. Cutoff wall construction would be a 24-hour operation using two shifts of workers 6 days a week (Monday through Saturday). The specific number of hours that each piece of equipment would be used during the day is not known and would be up to the construction contractor. Construction workers would most likely come from the local workforce in the Marysville, Yuba City, and Sacramento areas.

Construction Phases and Project Schedule

Construction would occur over one or two construction seasons, beginning as soon as summer 2015 and ending by December 2016. If all work is completed in one construction season, it would occur in 2016. If work is completed over two construction seasons, it would occur in summer and fall 2015 and spring to fall 2016. It is anticipated that minimal work, if any, would occur between December 1, 2015 and April 15, 2016.

Table 2-3 outlines the general construction phases and durations, as well as equipment anticipated to be used in each construction phase. If all construction occurs in 2016, it would be implemented sequentially, beginning with Phase 1 and ending with Phase 7. If construction is divided between two seasons, cutoff wall construction (Phase 3) and the levee degradation, reconstruction, and resurfacing associated with the cutoff walls (Phases 2, 4, and 5) would occur in 2016. Landside construction, including the access road, berms, and fill placement (Phase 4) would be completed in 2015, to the extent feasible depending on when construction begins. Any landside construction that is not completed in 2015 would occur in 2016. Activities associated with Phases 1, 6, and 7 would occur in both seasons.

Easement and Real Estate Acquisition

In 2013, TRLIA approved Addendum 4 to the EIR for the Bear River and WPIC Levee Improvement Project (TRLIA 2013). This addendum evaluated effects of complying with requirements to acquire easements over property underlying existing or planned levees, and areas within 50 feet of the landside and waterside toes of the levee, to facilitate flood control maintenance activities along the levee corridor. To satisfy these requirements, TRLIA proposed to acquire either easements or land in fee title, depending on unique circumstances related to individual properties.

Acquisition of easements and/or land in fee title that may be necessary to account for the expanded levee footprint and access road of the proposed action would fall under the action evaluated in the addendum. Landside fill in Reach 2B, however, would occur beyond the 50-foot maintenance area that was previously evaluated. Therefore, TRLIA proposes to acquire the access necessary to establish and ensure maintenance of the appropriate elevation in the proposed fill area as part of the proposed action; such access and/or maintenance assurances may be provided through a negative covenant, easement, or fee title.

Regulatory Requirements, Permits, and Approvals

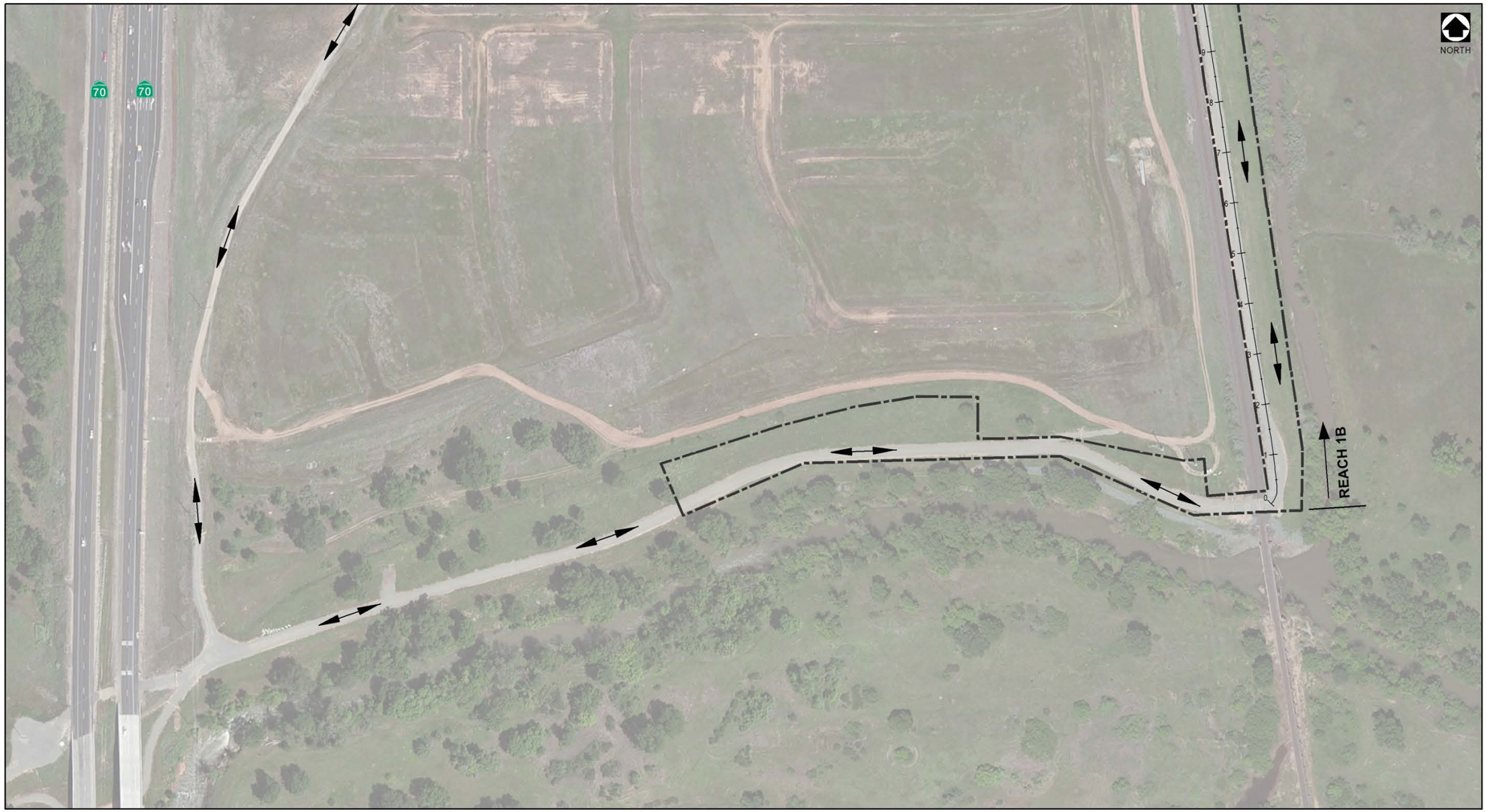
As the lead agency under CEQA, TRLIA has the principal responsibility for approving and carrying out the proposed action and for ensuring that CEQA requirements and all other applicable regulations are met. In addition

to undergoing analysis for CEQA compliance, the proposed action is being reviewed to determine the need to obtain permits and approvals under other federal, state, and local laws that may apply to the proposed action. These other permits are independent of the CEQA document, but they are being coordinated with the proposed action's CEQA compliance as closely as possible.

Federal approvals and permits are addressed by this EA under NEPA. As the lead agency under NEPA, USACE has a critical role in granting permission to modify a federal levee and issuing a permit under CWA Section 404 to authorize fill of waters of the U.S.

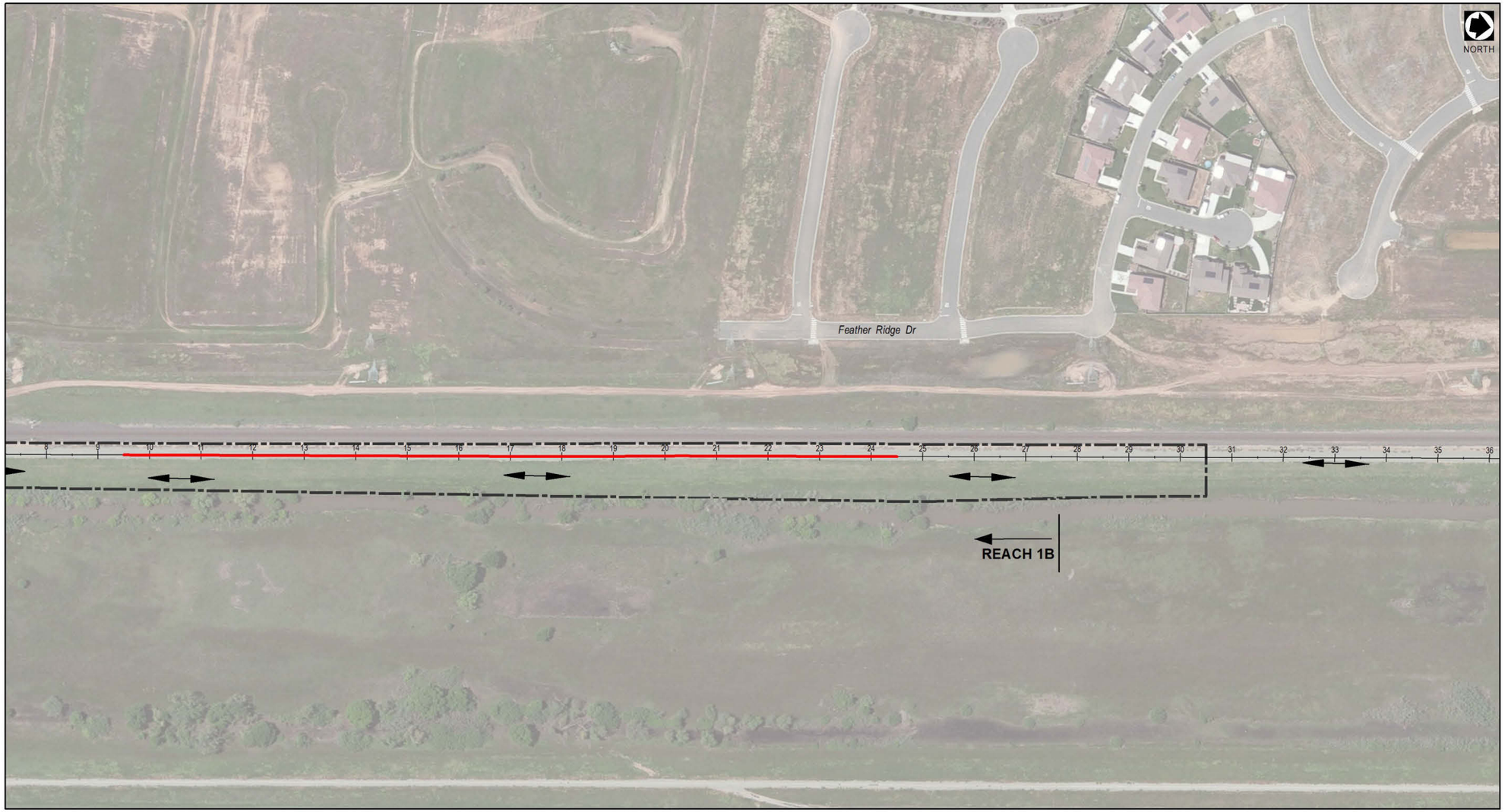
Resource-specific permits and approvals are discussed in the respective sections of the analysis in this document. Permits and approvals anticipated to apply to the proposed action include the following:

- U.S. Army Corps of Engineers—CWA Sections 404 and Rivers and Harbors Act Section 14 (referred to as Section 408)
- U.S. Fish and Wildlife Service—Federal Endangered Species Act consultation
- Central Valley Regional Water Quality Control Board—CWA Section 402 National Pollutant Discharge Elimination System stormwater permit for general construction and Waste Discharge Requirement pursuant to the Porter-Cologne Water Quality Control Act; CWA Section 401 Water Quality Certification
- California Department of Fish and Wildlife—California Endangered Species Act consultation
- Central Valley Flood Protection Board—Encroachment Permit
- Feather River Air Quality Management District—authority to construct permit
- Yuba County—grading permit
- Caltrans District 3—Encroachment Permit



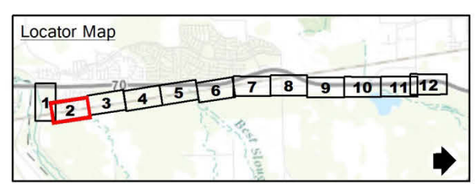
Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-1. Project Map 1



LEGEND

- Haul Route
- Cutoff Wall
- Construction Limit



0 100 200 400
FEET

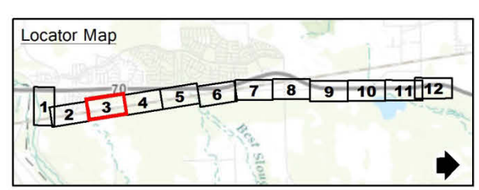
WPIC STATION 8+00 TO 36+00
REACH 1B REMEDIATIONS

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 081 3/15

Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-2. Project Map 2



0 100 200 400
FEET

LEGEND

Haul Route

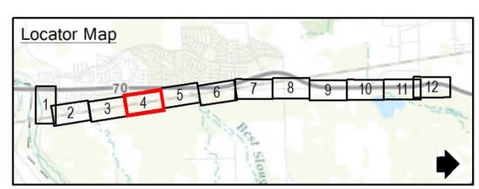
WPIC STATION 36+00 TO 65+00

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 082 2/15

Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-3. Project Map 3



0 100 200 400
FEET

LEGEND

Haul Route

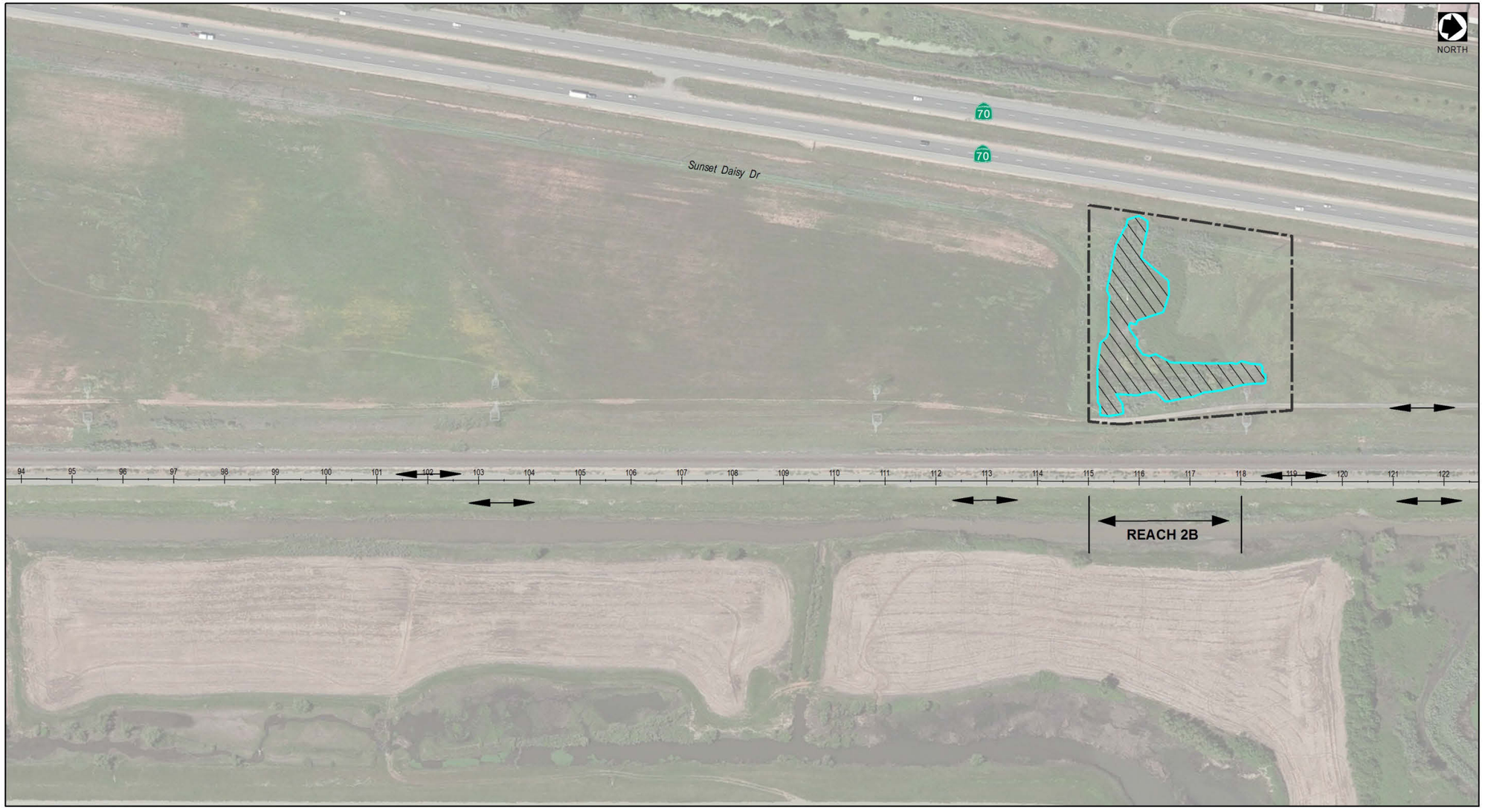
WPIC STATION 65+00 TO 94+00

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 083 2/15

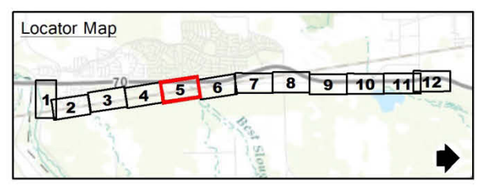
Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-4. Project Map 4



LEGEND

- Haul Route
- Construction Limit
- Landside Fill or Berm



0 100 200 400
FEET

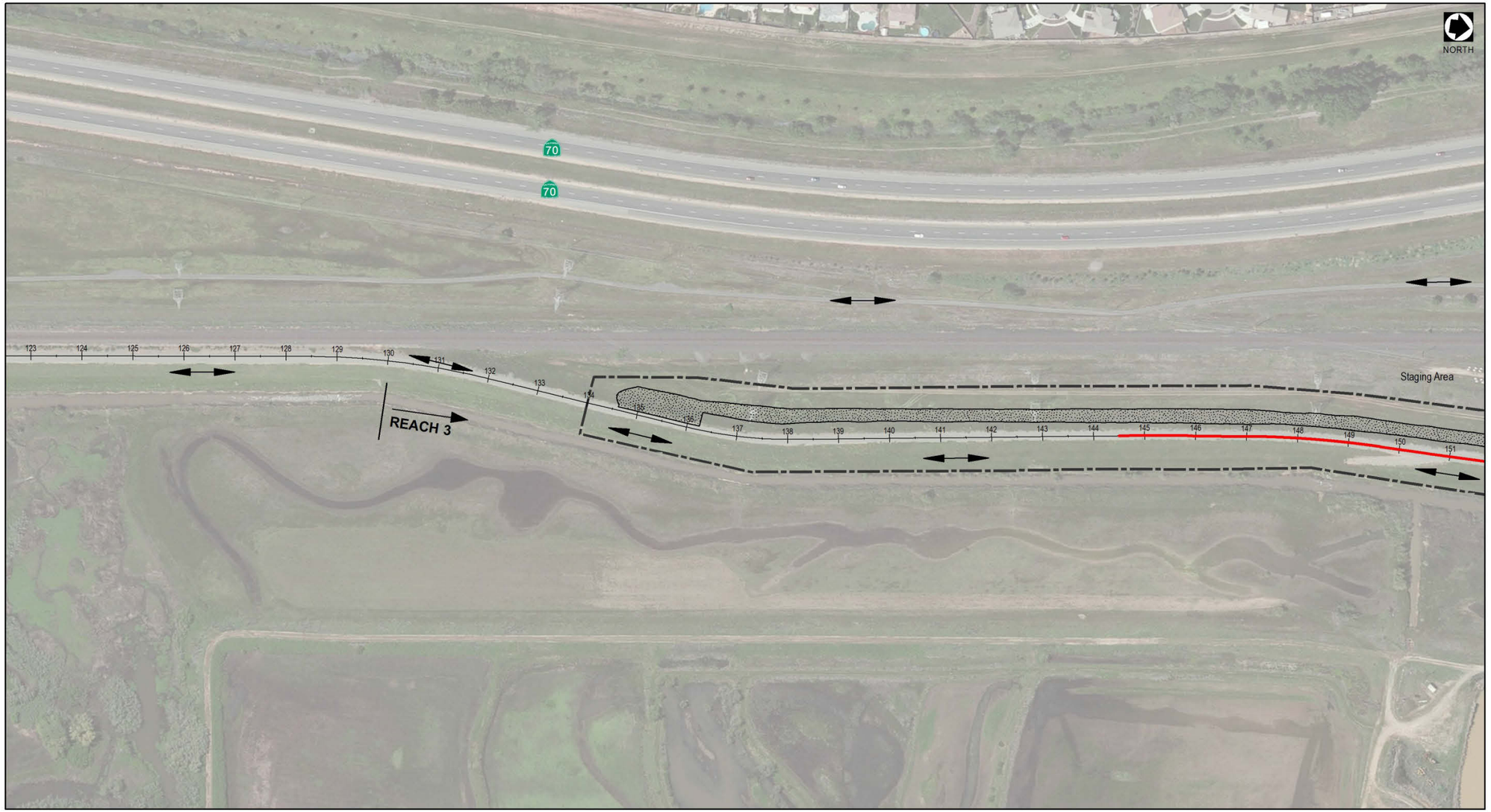
WPIC STATION 94+00 TO 124+00
REACH 2B REMEDIATIONS

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 084 2/15

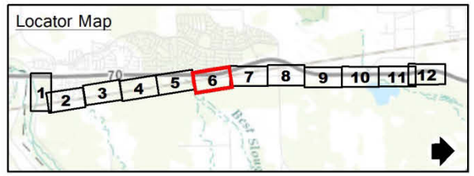
Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-5. Project Map 5



LEGEND

- Haul Route
- Cutoff Wall
- Construction Limit
- Access Road



0 100 200 400
FEET

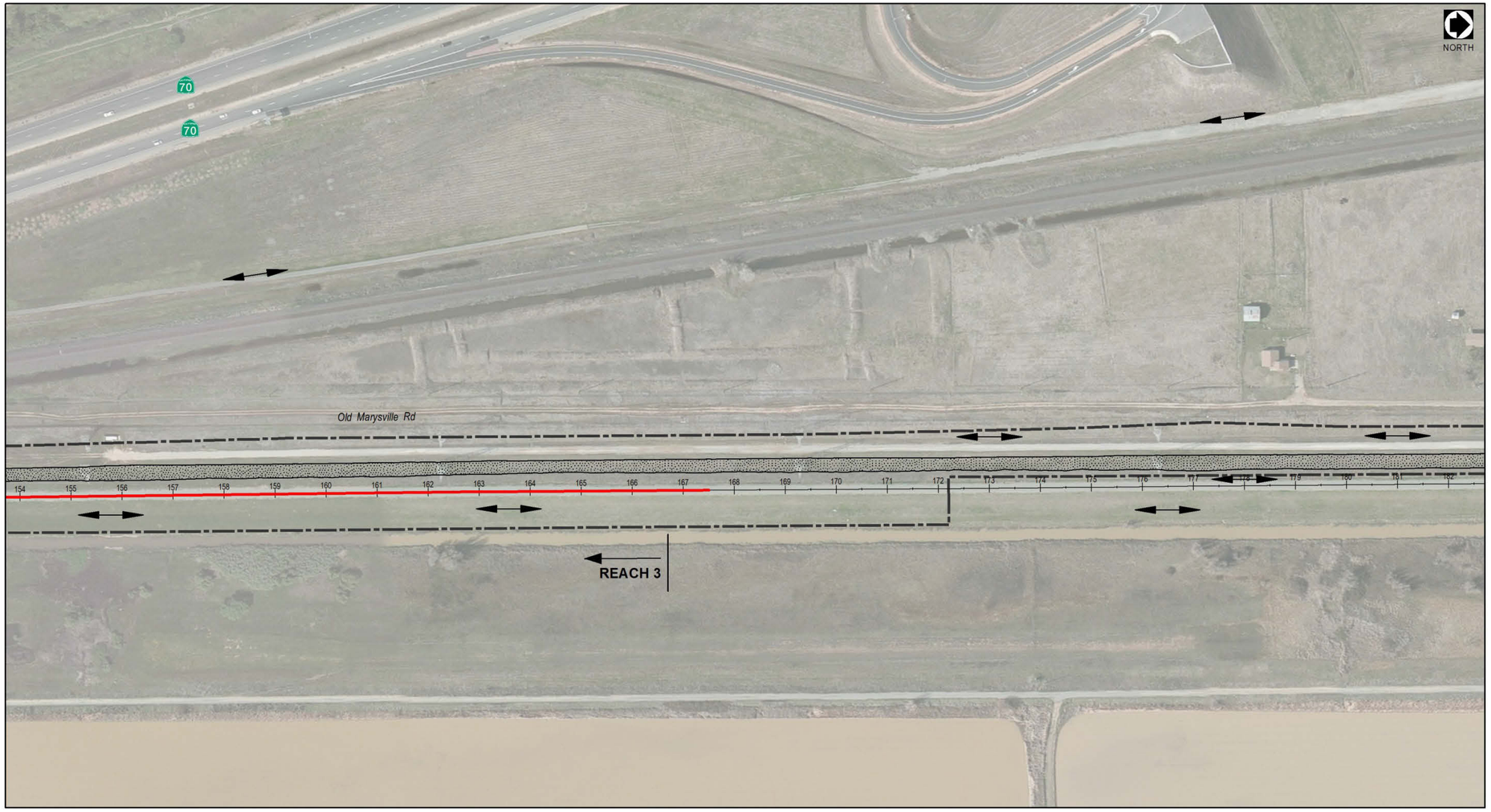
WPIC STATION 124+00 TO 153+00
REACH 3 REMEDIATIONS (SOUTHERN PORTION)

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 085 2/15

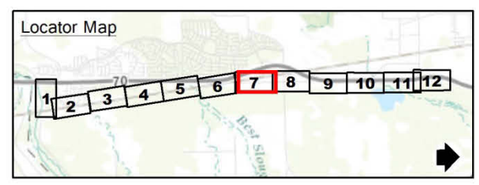
Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-6. Project Map 6



LEGEND

- Haul Route
- Cutoff Wall
- Construction Limit
- Access Road



0 100 200 400
FEET

WPIC STATION 153+00 TO 183+00
REACH 3 REMEDIATIONS (NORTHERN PORTION)

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 086 2/15

Source: HDR, Inc. 2015, adapted by AECOM in 2015

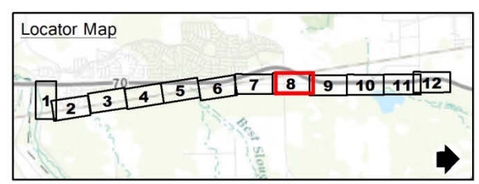
Exhibit 2-7. Project Map 7

LEGEND

Haul Route

Access Road

Construction Limit



0 100 200 400
FEET

WPIC STATION 183+00 TO 213+00
REACH 4B AND 4C REMEDIATIONS

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

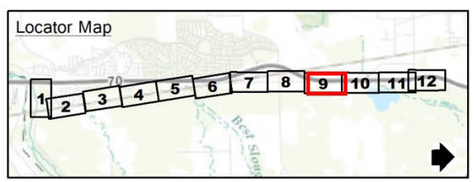
60321471 SAC GIS 087 2/15

Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-8. Project Map 8

LEGEND

- Haul Route
- Cutoff Wall
- Construction Limit
- Access Road



0 100 200 400
FEET

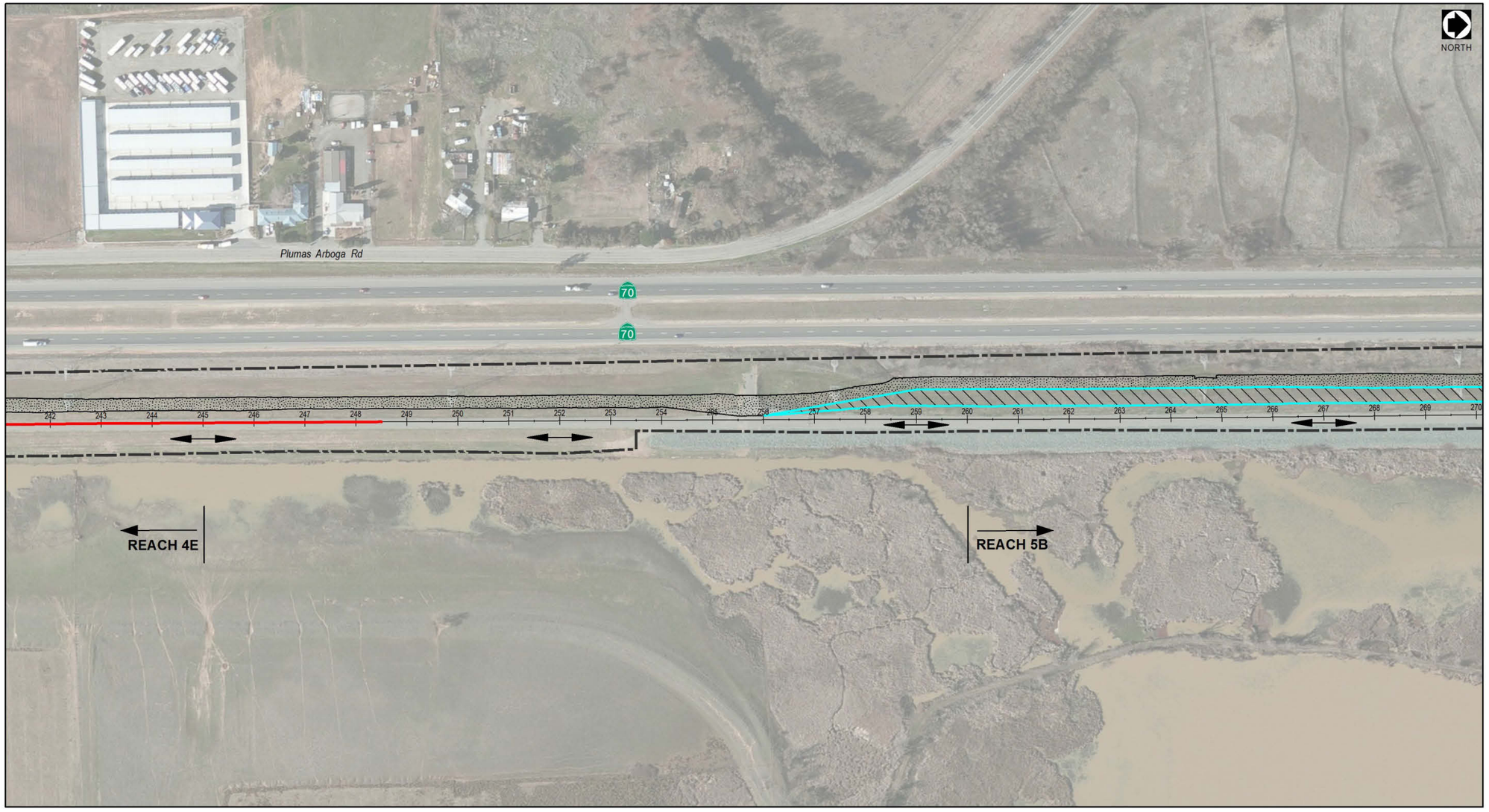
WPIC STATION 213+00 TO 243+00
REACH 4C AND 4E REMEDIATIONS

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 088 2/15

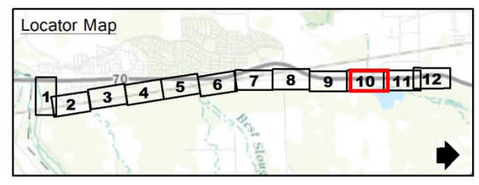
Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-9. Project Map 9



LEGEND

- Haul Route
- Cutoff Wall
- Construction Limit
- Access Road
- Landside Fill or Berm



0 100 200 400
FEET

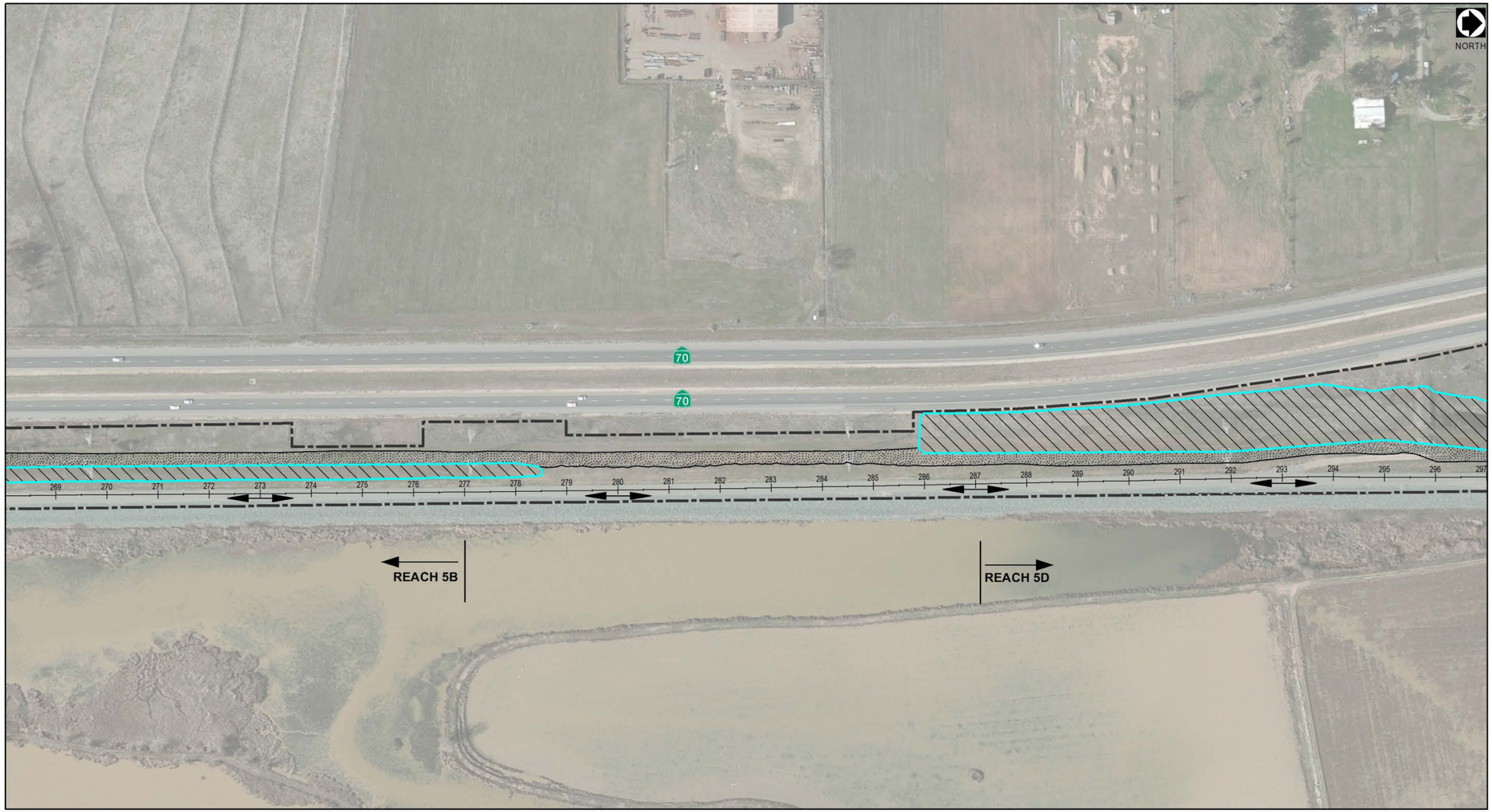
WPIC STATION 243+00 TO 270+00
REACH 4E AND 5B REMEDIATIONS

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 089 2/15

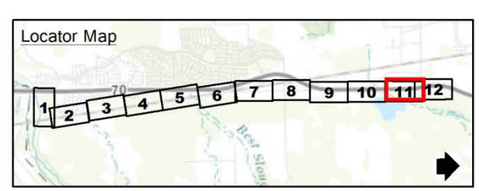
Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-10. Project Map 10



LEGEND

- Haul Route
- Construction Limit
- Access Road
- Landside Fill or Berm



0 100 200 400
FEET

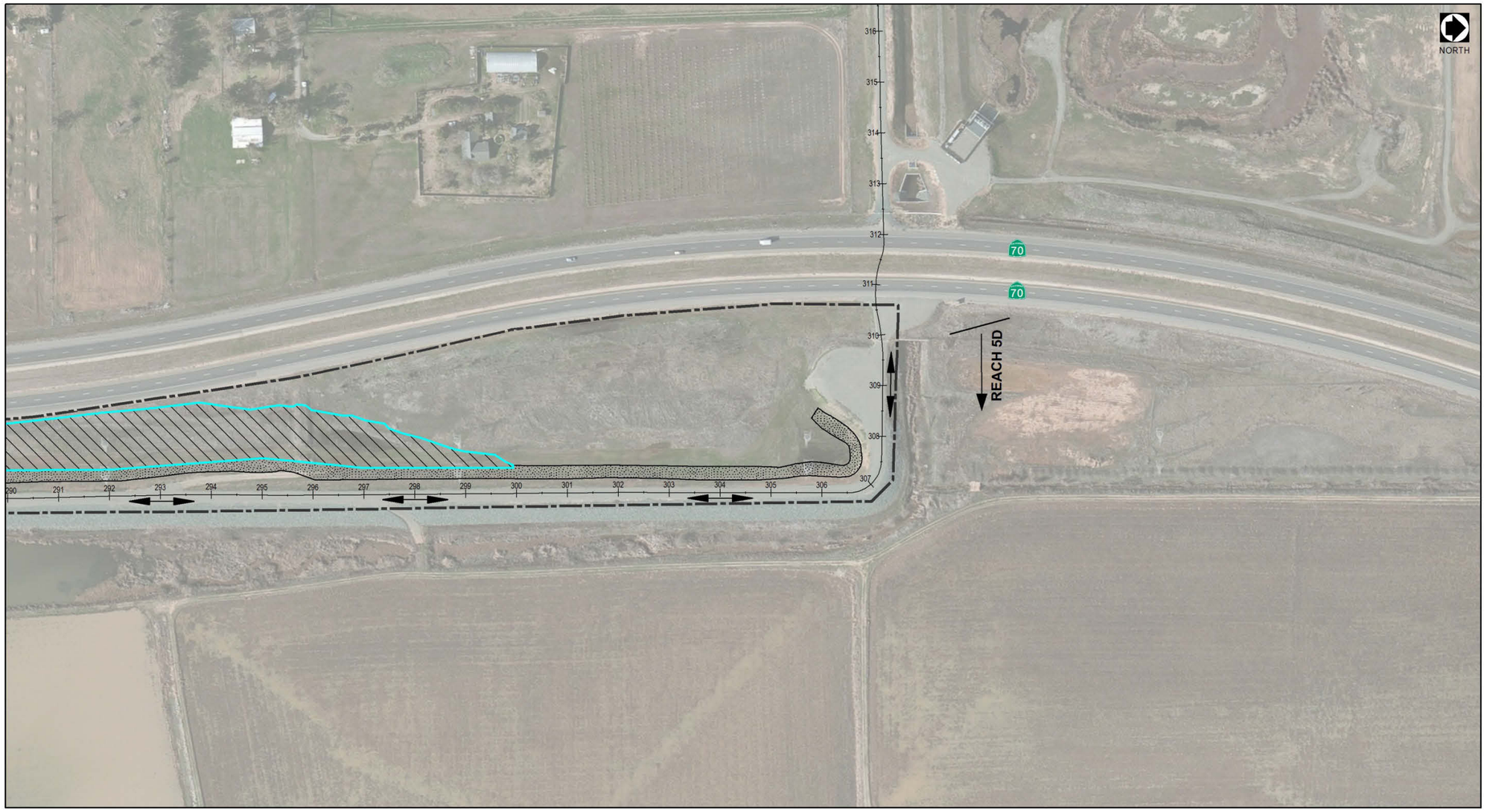
WPIC STATION 270+00 TO 290+00
REACH 5B REMEDIATIONS

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 090 2/15

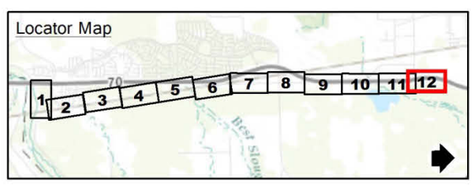
Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-11. Project Map 11



LEGEND

- Haul Route
- Construction Limit
- Access Road
- Landside Fill or Berm



0 100 200 400
FEET

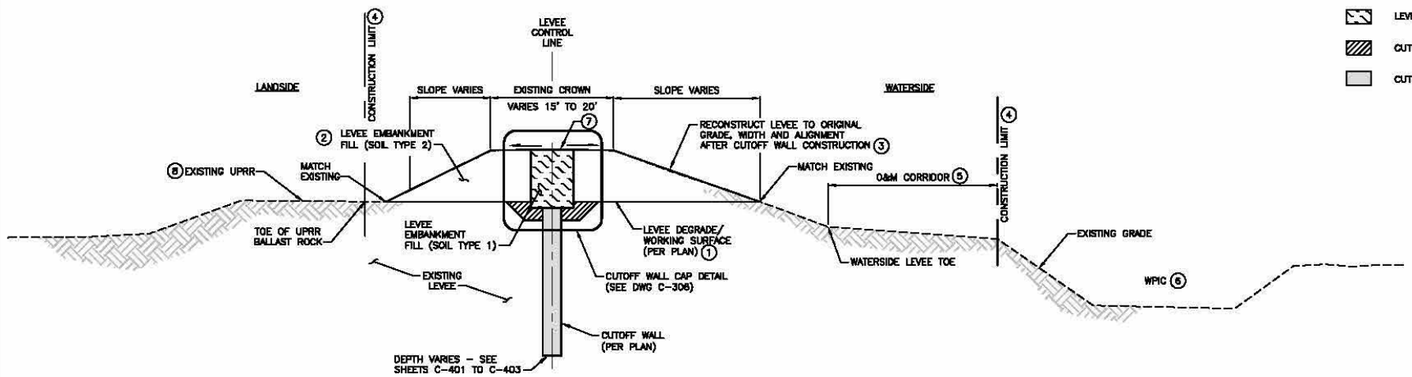
WPIC STATION 290+00 TO 311+00
REACH 5D REMEDIATIONS

TRLIA 200-YEAR URBAN LEVEE CRITERIA COMPLIANCE
YUBA COUNTY, CA

60321471 SAC GIS 091 2/15

Source: HDR, Inc. 2015, adapted by AECOM in 2015

Exhibit 2-12. Project Map 12



1 TYPICAL CUTOFF WALL ALONG UPRR
NTS

LEGEND:

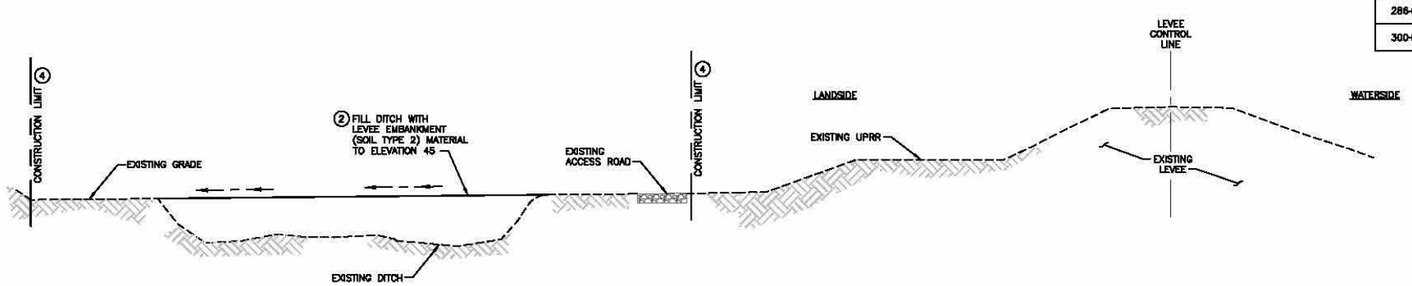
- LEVEE EMBANKMENT FILL (SOIL TYPE 1)
- CUTOFF TRENCH (SOIL TYPE 1)
- CUTOFF WALL

NOTES:

1. SEE LEVEE DEGRADE DETAIL ON SHEET C-305.
2. FILL MATERIAL SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
3. FINISH GRADE LINES SHOWN DO NOT INCLUDE PLACEMENT OF TOPSOIL. TOPSOIL PLACEMENT SHALL BE PER PROJECT SPECIFICATIONS.
4. CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMIT SHOWN ON THESE PLANS.
5. CONSTRUCTION LIMIT SHOWN IS TYPICAL. VARIATIONS ARE SHOWN ON THE PLANS. SEE SHEET G-009 TO G-010 FOR CONSTRUCTION LIMIT LAYOUT.
6. WPIC TO REMAIN. CANAL WILL BE IN OPERATION (FULL WATER) DURING CONSTRUCTION. CONTRACTOR TO PROTECT CANAL IN PLACE AND PROVIDE FENCING CONSISTENT WITH THESE PLANS.
7. CONTRACTOR SHALL SALVAGE EXISTING AGGREGATE BASE IN ACCORDANCE WITH THE SPECIFICATIONS. CROWN RESURFACING PER DETAIL ON SHEET C-305.
8. UPRR TO REMAIN. RAILROAD WILL BE IN OPERATION DURING CONSTRUCTION. CONTRACTOR TO PROTECT RAILROAD IN PLACE AND PROVIDE FENCING CONSISTENT WITH THESE PLANS.

LEVEE SECTION SCHEDULE

BEGIN	END	SECTION DESIGNATION	REHABILITATION MEASURE	DRAWING NO.
9+50	24+50	1	CUTOFF WALL	C-301
115+00	119+00	2	FILL IN DITCH	C-301
136+00	144+50	3	LANDSIDE ACCESS ROAD	C-302
144+50	167+50	4	CUTOFF WALL	C-302
167+50	188+50	3	LANDSIDE ACCESS ROAD	C-302
190+10	196+00	5	DRAIN BERM	C-303
196+00	238+50	3	LANDSIDE ACCESS ROAD	C-302
238+50	248+50	4	CUTOFF WALL	C-302
248+50	259+00	3	LANDSIDE ACCESS ROAD	C-302
259+00	278+00	6	STABILITY BERM	C-303
278+00	286+00	3	LANDSIDE ACCESS ROAD	C-302
286+00	300+00	7	LANDSIDE FILL	C-304
300+00	308+50	3	LANDSIDE ACCESS ROAD	C-302



2 FILL IN LANDSIDE DITCH
NTS

65% DESIGN

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	K. BROWN
DESIGNED BY	J. NETTLETON
DRAWN BY	H. SUAREZ
CHECKED BY	B. JOHNSON
TECHNICAL LEAD	D. JABBOUR
PROJECT NUMBER	242159

Three Rivers Levee Improvement Authority

TRLIA
WPIC West Levee
Improvement Project
Sta 0+00 to 310+00

TYPICAL LEVEE SECTIONS

FILENAME: C-301.dwg
SCALE: AS SHOWN
SHEET C-301

Source: HDR, Inc. 2015

Exhibit 2-13. Typical Cutoff Wall and Landside Fill Area

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

3.1 INTRODUCTION

This chapter describes the approach to the environmental analysis; relevant affected environment information; and the direct, indirect, and cumulative environmental consequences (impacts) and feasible mitigation measures for the action alternative identified for the WPIC 200-Year Standard Project.

For NEPA purposes, the assessment of potential environmental consequences takes into consideration the significance of the proposed action in terms of its context and its intensity (40 C.F.R. 1508.27). Determining the significance of effects under CEQA for this EA/IS is based on professional standards and judgment using the criteria in Appendix G (Environmental Checklist) of the State CEQA Guidelines.

Direct and indirect impacts are defined as follows:

- A **direct impact** is an effect that would be caused by an action and would occur at the same time and place as the action. (All impacts are direct impacts in this EA/IS unless otherwise noted.)
- An **indirect impact** is an effect that would be caused by an action but would occur later in time or at another location yet is reasonably foreseeable in the future. Examples of indirect effects include growth-inducing effects and other effects related to changes in land use patterns, population density, or growth rate, and related effects on the physical environment.
- A no-action alternative and the proposed action are evaluated at an equal level of detail in this EA/IS. (See Chapter 2, "Alternatives," for a detailed discussion of these alternatives.) USACE's EC 1165-2-216 guidance was used to focus on two scenarios: no action (i.e., no proposed alteration in place) and action (i.e., proposed alteration in place).
- The level of impact has been determined by comparing estimated effects of the proposed action with the no-action alternative, which is essentially the same as existing conditions (which CEQA Guidelines specify as the conditions present when the CEQA analysis is initiated, i.e., 2014 for the proposed action). The no-action alternative, however, has substantially higher risk of flooding; therefore, impacts resulting from flooding were evaluated as a probable event over time under the no-action alternative.

The levels of impact are defined as follows:

- **A no impact** conclusion indicates that implementing the alternative would not have any direct or indirect effects on the environment. It means no change would occur. This impact level does not require mitigation under NEPA or CEQA.
- A **less-than-significant impact** conclusion indicates that a substantial or potentially substantial adverse change in the physical environment would not occur. This impact level does not require mitigation under NEPA or CEQA.

- A **significant impact** is defined by CEQA Section 21068 as "a substantial, or potentially substantial, adverse change in the environment." Under CEQA, mitigation measures must be identified, where feasible, to reduce the magnitude of significant impacts. NEPA does not require mitigation for significant impacts.

- A **potentially significant impact** is one that, if it were to occur, would be considered a significant impact as described above; however, the occurrence of the impact cannot be determined with certainty at this time. For CEQA and NEPA purposes, a potentially significant impact is treated as if it were a significant impact. NEPA does not require mitigation for significant impacts.

The proposed action is expected to be implemented over a period of up to 16 months. Therefore, project effects would fall into the following categories:

- A **temporary effect** is a change in the environment that would occur only during project activities, all of which are estimated to be completed within approximately 16 months. Project activities within most levee reaches would be completed in less than 12 months.

- A **short-term effect** is a change in the environment that would last from the time construction ceases to within 3 years following construction.

- A **long-term effect** is a change in the environment that would last longer than 3 years. In some cases, a long-term effect could be considered a permanent effect, such as the conversion of grassland habitat to a gravel access road.

Mitigation measures to avoid, minimize, rectify, reduce, or compensate for significant and potentially significant impacts of each project alternative, in accordance with the State CEQA Guidelines, as amended (State CEQA Guidelines, Sections 15370, 15002[a][3], 15021[a][2], and 15091[a][1]) are recommended for each significant or potentially significant impact. In accordance with PRC Section 21081.6(a), the lead agency, if it approves an alternative for the project, will adopt a MMRP when it certifies the EIR. The lead agency also will be required to adopt findings identifying each significant effect of the selected alternative and the extent to which feasible mitigation measures have been adopted. Under NEPA, mitigation measures proposed in this EA/IS are not binding upon USACE; USACE can elect to include mitigation measures in a mitigated FONSI.

Mitigation measures are not identified for significant and potentially significant impacts under the no-action alternative because, under the no-action alternative, no action would be undertaken by TRLIA and TRLIA would not be required to obtain permits or enter into agreements when no action is proposed.

3.2 AESTHETICS

3.2.1 ENVIRONMENTAL SETTING

The project site is located in an agricultural/rural residential area and has little topographic variation. Agricultural fields and residential housing dominate the surrounding landscape. The dominant visual features to the west are the UPRR line and SR 70, which extend approximately parallel to the WPIC. There are generally few utility lines in the surrounding area, but PG&E steel towers and overhead utility lines also run parallel to the WPIC, landside of the WPIC West Levee. A single-family residential development is located between SR 70 and the WPIC at the southern end of the project area. Where these residential developments approach the Bear River, there are long-

distance views across open land to the existing levee. Few nonagricultural elements such as utility lines encroach on the undeveloped rural character of the views from the east. There are no designated scenic highways (Caltrans 2011; FHWA 2015) or designated scenic byways (Yuba County 2011) in the project area. No publicly owned recreation sites are located along the WPIC. There are eight public parks in the Plumas Lake development on the west side of SR 70; however, views of the WPIC from these parks to the east (towards the WPIC area) are blocked either by houses or by vegetation and the elevated berm on which SR 70 has been constructed.

3.2.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION

Potentially Significant Impact. Under the no-action alternative, the views and aesthetic quality of all project reaches would remain the same. No effects on aesthetics would occur. Under the no-action alternative, however, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, the aesthetics of the flooded area could be substantially affected, especially in the short-term while the surrounding area remains flooded. Emergency flood clean-up efforts could require substantial new sources of lighting or glare if conducted during nighttime hours. These impacts on aesthetics would be potentially significant.

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

PROPOSED ACTION

Less-than-Significant Impact. A scenic vista is generally considered a view of an area that has remarkable scenery or a natural cultural resource that is indigenous to the area. No designated scenic vistas have been officially designated for the project area or vicinity in the *Yuba County2030 General Plan* (Yuba County 2011). However, because few nonagricultural elements encroach on the undeveloped rural character of the views, these views have a high degree of intactness (YCWA 2003 in TRLIA 2004) and may be considered of high quality.

Implementing the proposed action would cause some temporary visual changes in the project area, almost exclusively during construction activities. Construction activities and associated equipment would be visible to recreationists along the Bear River, travelers along SR 70, and people at nearby farmsteads and residences. This area is rural and the presence of construction equipment would be somewhat out of character. However, no equipment would be present at the project site after project construction is completed. Therefore, this impact would be temporary and less than significant.

Construction under the proposed action would result in aboveground and long-term physical changes to the viewshed, including the presence of:

- a raised access road along the landside toe of the levee from Reach 3 through 5D,
- a drained berm under the access road in Reaches 4B and 4C,
- a stability berm landside of the levee through Reach 5B, and
- landside fill in Reaches 2B and 5D.

These physical changes would extend the levee footprint but would have minimal effect on the visual character of the project area. The berms and landside fill would not change the area's visual character, because the area would remain rural and would be revegetated with similar vegetation as part of the project. The existing levee is already part of the viewshed, such that landside berms and fill near the existing levee would not result in a substantial change to any scenic vistas. The landside access road and fill in Reach 2B would require removal of small amounts of woodland and scrub vegetation, but the overall change would be minor and the area's visual character would remain rural. These changes would not affect any sensitive receptors and would be consistent with the current visual character of the area. Therefore, this impact would be less than significant.

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

PROPOSED ACTION

No Impact. The project area is not located within the viewshed of a state scenic highway or county designated scenic byway and does not include any scenic resources within the area of a designated or eligible state scenic highway. Therefore, the proposed action would have no impact on scenic resources within a state scenic highway.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

PROPOSED ACTION

Less-than-Significant Impact. The project site's visual character is represented by rural residential areas to the west and agriculture to the east. Limited power lines, structures, and roadways are present in the project vicinity. The surrounding area is characterized by relatively flat topography, aside from the existing levees. Typical construction-related activities nearly always affect the visual character of a site. In this case, the construction impacts would be temporary in any one reach as the levee remediation and access road construction are completed. Given the relatively short time frame for construction in any one area, construction-related impacts on the visual character and quality of the project site would be less than significant.

Long-term visual changes would result from the new features added to the project site (drained berm, stability berm, landside fill, and raised access road), as described previously in this section under "a)." The existing levee is already part of the viewshed, such that landside berms and fill near the existing levee do not result in a substantial change to the existing visual character of the site. Therefore, this impact would 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?

PROPOSED ACTION

Less-than-Significant Impact. Implementing the proposed action would not require the addition of any new lighting in the project area for project operation. Construction activities would typically be limited to 7 a.m. to 8 p.m. but may be extended to 6 a.m. to 10 p.m. for equipment maintenance; nighttime lighting would be required for any equipment maintenance that occurs between sunset and 10 p.m. Furthermore, a slurry cutoff wall would be installed in Reach 1B (Exhibit 2-2), Reach 3 (Exhibits 2-6 and 2-7), and Reach 4E (Exhibits 2-9 and 2-10). Cutoff wall construction would be a 24-hour operation occurring 6 days per week, and lighting would be required during the nighttime hours. The northern end of the cutoff wall in Reach 1B would be installed approximately 500

feet south of existing homes on Feather Ridge Drive. There is no screening between the houses and Reach 1B and therefore nighttime lighting and construction equipment would be clearly visible to the residents in this housing development. Nighttime construction in Reach 3 would occur approximately 750–1,200 feet east of residential housing on the west side of SR 70, and approximately 275–700 feet east of motorists traveling on SR 70. There is no screening between SR 70 and the levee, and therefore motorists would have a clear view of nighttime lighting, which may result in glare. In some cases, a line of sparse vegetation is present behind the homes on the west side of SR 70 that would partially block views of both daytime and nighttime construction. However, project-related nighttime lighting would still be visible to these residents. Nighttime construction in Reach 4E would occur approximately 350 feet east of several homes on the west side of SR 70 and approximately 150 feet from motorists traveling on SR 70; the nighttime lighting would be clearly visible to these homes and may result in glare for motorists.

Because the cutoff wall is installed in a linear fashion, the specific area affected by nighttime light and glare would change during each night of construction; no one area would be adversely affected for more than approximately 1 week while the cutoff wall is installed in that area. During construction, light fixtures would be oriented to the greatest degree practical to direct light downward and away from residences to minimize light spill. Nearby residents can also easily block light entering their windows during any nearby cutoff wall construction activities at night. Because of the short-term duration of this impact to any one residence, this impact would be less than significant.

3.2.3 MITIGATION

There would be no significant effects on aesthetics in the project area. Most effects would be temporary, and permanent effects would be minor and would not substantially change scenic vistas or the visual character of the area. No mitigation is required.

3.3 AGRICULTURE AND FORESTRY RESOURCES

3.3.1 ENVIRONMENTAL SETTING

AGRICULTURAL RESOURCES

There are no agricultural land uses within or adjacent to the existing WPIC West Levee. Active agricultural fields are located outside of the project area east of the WPIC East Levee and scattered throughout rural areas west of Reaches 4B, 4E, 5B, and 5D.

The northernmost portion of the project area is zoned by Yuba County as AE (Exclusive Agricultural). The AE zoning district is intended to preserve the maximum amount of the limited supply of agricultural land necessary for the conservation of Yuba County's economic resources and vital for healthy agricultural economy of Yuba County.

Farmland Mapping and Monitoring Program

The California Department of Conservation (DOC) Important Farmland classifications—Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance—recognize the land's suitability for agricultural production by considering physical and chemical characteristics of the soil, such as soil

temperature range, depth of the groundwater table, flooding potential, rock fragment content, and rooting depth. The classifications also consider location, growing season, and moisture available to sustain high-yield crops. Together, Important Farmland and Grazing Land are defined by DOC as "Agricultural Land." In addition, the DOC identifies other categories based on their suitability for agricultural use. The list below provides a comprehensive description of all the categories mapped by the DOC. According to the Farmland Mapping and Monitoring Program:

- **Prime Farmland**—Land that has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields.
- **Farmland of Statewide Importance**—Land similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture.
- **Unique Farmland**—Land of lesser quality soils used for the production of the state's leading agricultural cash crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California.
- **Farmland of Local Importance**—Land that is of importance to the local agricultural economy, as defined by each county's local advisory committee and adopted by its board of supervisors.
- **Grazing Land**—Land with existing vegetation that is suitable for grazing.
- **Urban and Built-Up Lands**—Land that is used for residential, industrial, commercial, institutional, and public utility structures and for other developed purposes.
- **Land Committed to Nonagricultural Use**—Land that has a permanent commitment to development but has an existing land use of agricultural or grazing lands.
- **Other Lands**—Land that does not meet the criteria of any of the previously described categories and generally includes low-density rural developments, vegetative and riparian areas not suitable for livestock grazing, confined-animal agriculture facilities, strip mines, borrow pits, and vacant and nonagricultural land surrounded on all sides by urban development.

The Important Farmland Map for Yuba County, produced by the DOC Division of Land Resource Protection (2014), was used to evaluate the agricultural significance of the lands in the vicinity of the WPIC West Levee. According to the Yuba County Important Farmland map, the WPIC West Levee and adjacent lands as well as urban development west of the levee are designated as Urban and Built-Up Land and Other Land (DOC 2015). These designations are not considered by the DOC as Important Farmland.

Active agricultural fields east of the WPIC East Levee and scattered throughout rural areas west of Reaches 4B, 4E, 5B, and 5D coincide with land designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (DOC 2015).

FORESTRY RESOURCES

Appendix G of the State CEQA Guidelines defines forestland as land that can support 10% native tree cover and woodland vegetation of any species—including hardwoods—under natural conditions, and that allows for management of one or more forest resource—including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation—and other public benefits (PRC 12220[g]).

Small areas of riparian scrub and young oak woodland are present in isolated locations along the western edge of the WPIC West Levee (see Section 3.5, "Biological Resources," for further discussion). Although the riparian scrub and oak woodland provide habitat for common wildlife and bird species, these communities do not represent 10% native tree cover within the project area. Therefore, the riparian and oak woodland within the project area does not satisfy the requirements of PRC Section 12220(g).

3.3.2 ENVIRONMENTAL CONSEQUENCES

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding could result in inundation of active agricultural lands. Agricultural lands, most of which are designated as Important Farmland, occur in rural areas west of the WPIC West Levee (DOC 2015). Severe flood events in these areas could have adverse effects on agricultural resources in the area of inundation. The extent and severity of impacts would vary substantially depending on the time of year and intensity of the flood event. Flood events could result in scouring of agricultural land and the loss of topsoil. Flooding of agricultural areas would likely destroy or damage agricultural crops, leading to a reduction in agricultural productivity. Abandonment of or failure to maintain cultivation of productive agricultural land after a flood event would result in the conversion of agricultural land to nonagricultural uses and the long-term loss of Important Farmland in those areas. Therefore, this impact would be potentially significant**.**

PROPOSED ACTION

No Impact. As discussed previously, the WPIC West Levee and adjacent lands are designated in the Yuba County Important Farmland map, published by DOC's Division of Land Resource Protection, as Urban and Built-Up Land and Other Land (DOC 2015). The conversion of these lands would not be considered a significant impact under the State CEQA Guidelines.

Active agricultural fields east of the WPIC East Levee and scattered throughout rural areas west of Reaches 4B, 4E, 5B, and 5D coincide with land designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. However, construction of the proposed components would not occur on Important Farmland but on land designated as Urban and Built-Up Land and Other Land. None of the proposed components would transect or encroach upon agricultural parcels or affect the continuation of agricultural operations in areas outside of the

project area. Staging areas would not be located on agricultural lands, and site access would be along the levee crown and existing unpaved routes landside and waterside of the levee.

In addition, implementing the proposed action would protect agricultural lands, most of which are designated as Important Farmland, in rural areas west of the WPIC West Levee. The proposed action would reduce the potential for inundation that results in scouring of agricultural land, loss of topsoil, or reduced agricultural productivity.

For the reasons described above, implementing the proposed action would not result in the conversion of Important Farmland to nonagricultural uses. No impact would occur.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding could result in inundation of active agricultural lands. Agricultural lands, most of which are zoned by Yuba County as AE, occur west of the northern portion of project area, as described previously in this section under "a)." Severe flood events in these areas could have adverse effects on agricultural resources in the area of inundation. The extent and severity of impacts would vary substantially depending on the time of year and intensity of the flood event. Flood events could result in scouring of agricultural land and the loss of topsoil. Flooding of agricultural areas would likely destroy or damage agricultural crops, leading to a reduction in agricultural productivity. Abandonment of or failure to maintain cultivation of productive agricultural land after a flood event would conflict with the AE zoning districts intent to preserve the maximum amount of the limited supply of agricultural land necessary to conserve Yuba County's agricultural economy. Therefore, this impact would be potentially significant**.**

PROPOSED ACTION

No Impact. Under the California Land Conservation Act of 1965, also known as the Williamson Act, local governments can enter into contracts with private property owners to protect land (within agricultural preserves) for agricultural and open space purposes. Yuba County does not participate in the Williamson Act program.

The northern most portion of the project area is zoned by Yuba County as AE, and this zoning district is intended to preserve the maximum amount of the limited supply of agricultural land necessary for the conservation of Yuba County's agricultural economy. Flood control facilities are a permitted use in the AE zoning district. Therefore, implementing the proposed action would not conflict with existing zoning for agricultural uses. No impact would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. The project area is not zoned as forestland, timberland, or a Timberland Production Zone. Therefore, any impacts associated with levee failure under the no-action alternative would not conflict with existing zoning for, or cause rezoning of, forestry resources. No impact would occur.

PROPOSED ACTION

No Impact. The project area is not zoned as forestland, timberland, or a Timberland Production Zone. Thus, implementing the proposed action would not conflict with existing zoning for, or cause rezoning of, forestry resources. No impact would occur.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented and the access road would not be constructed. Existing habitat conditions would not be modified, and no construction activities that could affect riparian scrub or oak woodland communities would occur, other than those potentially associated with the continuation of existing levee inspection and maintenance requirements. Under these conditions, excessive seepage and slope instability along certain levee segments would likely continue and the flood risk would remain high. If no action is taken to repair the deficient levee segments, a levee failure could damage or uproot riparian and oak vegetation. Emergency levee repair work, cleanup and reconstruction after a flood event, and other activities in response to a levee breach also could result in the disturbance of riparian scrub and oak woodland (see Section 3.5, "Biological Resources," for further discussion). Therefore, this impact would be potentially significant.

PROPOSED ACTION

No Impact. As stated previously, the project area does not contain forestland as defined by PRC Section 12220(g). Therefore, implementing the proposed action would not result in the loss of forestland or conversion of forestland to non-forest uses. No impact would occur.

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?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. See above responses in this section to "a)" and "d)." The no-action alternative could result in other changes in the physical environment that could directly or indirectly result in the conversion of agricultural land, including Important Farmland, to nonagricultural uses and result in the conversion of forestland to non-forest uses. Therefore, this impact would be potentially significant.

PROPOSED ACTION

No Impact. See above responses in this section to "a)" and "d)." Implementing the proposed action would not result in other changes in the physical environment that could directly or indirectly result in the conversion of agricultural land, including Important Farmland, to nonagricultural uses or result in the conversion of forestland to non-forest uses. Therefore, no impact would occur.

3.3.3 MITIGATION

There would be no significant short- or long-term effects related to agricultural or forestry resources in the project area because the project area is not zoned for agricultural uses and there are no active agricultural land uses or forestland in the project area. No mitigation is required.

3.4 AIR QUALITY

3.4.1 ENVIRONMENTAL SETTING

The project site is located in the Sacramento Valley Air Basin (SVAB), which includes all of Butte, Colusa, Glenn, Shasta, Sutter, Tehama, Yolo, and Yuba counties; the western portion of Placer County; and the eastern portion of Solano County. The air quality of a region is determined by natural factors such as topography, climate, and meteorology, in addition to the presence of existing air pollution sources and conditions.

In Yuba County, the long-term planning and regulation of air quality conditions is the responsibility of the Feather River Air Quality Management District (FRAQMD). Air quality in the project area also is regulated at the federal level by the U.S. Environmental Protection Agency (EPA) and at the state level by the California Air Resources Board (ARB). At the local level, FRAQMD has developed rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

ARB and EPA currently focus on the following air pollutants as indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, particulate matter (PM), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants."

EPA has established primary and secondary national ambient air quality standards (NAAQS) for the following criteria air pollutants: ozone, CO, nitrogen dioxide, sulfur dioxide, respirable particulate matter with aerodynamic diameter less than 10 micrometers (PM_{10}), fine particulate matter with aerodynamic diameter less than 2.5 micrometers ($PM_{2.5}$), and lead. The primary standards protect the public health of the most sensitive populations (e.g., children, elderly, and asthmatics) and the secondary standards protect public welfare (e.g., visibility, vegetation damage).

In addition, ARB has established California ambient air quality standards (CAAQS) for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing PM, and the above-mentioned criteria air pollutants. In most cases, the CAAQS are more stringent than the NAAQS. Differences in the standards generally are explained by the health-effects studies considered during the standard-setting process and the interpretation of the studies. The CAAQS incorporate an additional margin of safety to protect sensitive receptors, particularly children and infants.

FRAQMD has established numeric thresholds of significance to evaluate construction emissions based on average daily emissions. In addition to the CEQA Appendix G Checklist questions, the following FRAQMD construction thresholds of significance are used in this analysis to determine the significance of the proposed action's construction emissions:

- generate average daily emissions of reactive organic gases (ROG) or oxides of nitrogen (NO_X) that exceed 25 pounds per day; or
- generate maximum daily emissions of PM_{10} that exceed 80 pounds per day.

3.4.2 ENVIRONMENTAL CONSEQUENCES

a) Conflict with or obstruct implementation of the applicable air quality plan?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. Cleanup actions (e.g., emergency response, reconstruction of infrastructure) in the event of a flood could generate substantial air quality emissions associated with on-road emergency vehicles and cleanup construction equipment, potentially exceeding FRAQMD thresholds. Therefore, potential cleanup activities associated with the no-action alternative could generate pollutant emissions that would impede implementation of the applicable air quality plan, and the resulting impact would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Construction of the proposed action would generate air pollutant emissions associated with heavy-duty construction equipment, material haul trucks, construction worker vehicles, and ground disturbance activities. Construction-related emissions were modeled for the proposed action using the California Emissions Estimator Model (CalEEMod) Version 2013.2.2 and ARB's on-road emissions inventory model, EMFAC 2011 (CAPCOA 2013; ARB 2013). Construction parameters such as construction schedule, number and types of construction equipment, and number of construction workers were provided by TRLIA. Where project-specific information was not available, default parameters contained in CalEEMod were used to model emissions. It should be noted that CalEEMod typically contains conservative assumptions to avoid underestimating construction emissions when project-specific information is not available. Results of the modelling are provided in Appendix A.

FRAQMD recommends evaluating a project's average daily emissions of ROG and NO_X over the lifetime of construction activities. Accordingly, the proposed action's total construction-related ROG and NO_X emissions were averaged over the lifetime of the project (approximately 180 work days). For particulate matter emissions, FRAQMD recommends that projects evaluate the maximum daily emission against their threshold of significance. Table 3.4-1 presents the total emissions over the lifetime of the proposed action, average daily emissions of ROG and NO_X, and maximum daily PM emissions (i.e., PM_{10} and $PM_{2.5}$). It should be noted that the proposed action

could be constructed over two construction seasons rather than a single construction season. However, because FRAQMD's thresholds are in units of average daily emissions (averaged over the total number of working days) and maximum daily emissions, and the fact that conducting work over two construction seasons would have little effect on the overall duration of the proposed action (i.e., total working days), the emissions shown in Table 3.4-1 represents daily emissions anticipated to occur under either a one- or two-construction season scenario.

Table 3.4-1. Unmitigated Construction Emissions Associated with the Proposed Action

Construction Phase	Pollutants			
	ROG[a]	NO_X[a]	PM_{10}[b]	$PM_{2.5}$[b]
Phase 1	0.12	1.61	490.78	77.66
Phase 2	0.17	2.12	353.67	58.33
Phase 3	0.22	2.40	14.13	6.50
Phase 4	0.35	7.70	1,236.89	197.71
Phase 5	0.04	0.62	61.50	11.29
Phase 6	0.01	0.07	1.21	0.98
Phase 7	0.01	0.18	1.02	0.71
Total Emissions (tons)	**0.91**	**14.71**	**–**	**–**
Average Daily Emissions (lb/day)[c]	**10.14**	**163.46**	**–**	**–**
Maximum Daily Emissions (lb/day)[c]	**–**	**–**	**1,236.89**	**197.71**
FRAQMD Thresholds (lb/day)[d]	**25**	**25**	**80**	**–**
Exceeds FRAQMD Threshold?	**No**	**Yes**	**Yes**	**–**

Notes: FRAQMD = Feather River Air Quality Management District; lb = pounds; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with aerodynamic diameter less than 2.5 micrometers; PM_{10} = respirable particulate matter with aerodynamic diameter less than 10 micrometers; ROG = reactive organic gases

[a] Emissions of ROG and NO_X are shown in units of total tons unless noted otherwise.

[b] Emissions of PM_{10} and $PM_{2.5}$ are shown in units of maximum pounds per day unless noted otherwise.

[c] The average daily and maximum daily emissions shown are based on a 1-year construction period. If construction occurs over a 2-year period, total construction activities and construction work days are anticipated to generally remain the same. Therefore average daily construction emissions would be similar to those shown above under either construction schedule. For maximum daily emissions, it is possible a 2-year construction period would slightly reduce maximum daily fugitive PM dust emissions; however, the emissions shown above represent the worst-case maximum daily emissions.

[d] FRAQMD thresholds of significance are in units of average pounds per day for ROG and NO_X and maximum pounds per day for PM_{10}.

Source: Data compiled by AECOM in 2015

As shown in Table 3.4-1, the proposed action's average daily construction emissions of NO_X and maximum daily emissions of PM_{10} would exceed the FRAQMD thresholds of significance. Therefore, the proposed action would conflict with or obstruct implementation of air quality planning efforts. This impact would be significant.

Mitigation Measures AQ-1, AQ-2, AQ-3, and AQ-4, described below, have been identified to address this impact. As shown in Table 3.4-2 below, even with implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3, NO_X and PM_{10} emissions would continue to exceed FRAQMD's thresholds of significance. However, with implementation of Mitigation Measure AQ-4, FRAQMD's Off-Site Mitigation Program would be used to reduce all emissions to a less-than-significant level. As a result, this impact would be less than significant with mitigation incorporated.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. Cleanup actions (e.g., emergency response, reconstruction of infrastructure) in the event of a flood could generate substantial air quality emissions associated with on-road emergency vehicles and cleanup construction equipment, potentially exceeding FRAQMD thresholds. Therefore, potential cleanup activities associated with the no-action alternative could contribute to an existing or projected air quality violation, and the resulting impact would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Construction emissions are considered temporary, but they have the potential to represent a significant impact on air quality. Construction activities for the proposed action would generate temporary emissions of ROG and NO_X, CO, PM_{10}, and $PM_{2.5}$. Emissions of the ozone precursors ROG and NO_X are generated primarily by on-road mobile sources (delivery vehicles and construction worker vehicles) and off-road construction equipment. The level of emissions generated varies as a function of vehicle trips per day for worker commute trips; the types and number of heavy-duty, off-road equipment used; and the intensity and frequency of their operation.

Fugitive PM dust is one of the pollutants of greatest concern with respect to construction activities. Construction-related emissions of fugitive PM dust can vary greatly depending on the level of activity, the specific operations taking place, the number and types of equipment operated, vehicle speeds, local soil conditions, weather conditions, and the amount of earth disturbance. The movement of soil materials to and from the project site would be the primary source of fugitive PM dust emissions from construction activities. Movement of off-road construction equipment and work trucks on unpaved roads also can generate emissions of fugitive PM dust.

Each air district develops regional air quality thresholds establishing limits on project-level emissions to enable the region to attain and maintain ambient air quality standards. Projects that would generate emissions exceeding these thresholds would potentially contribute to an existing or projected air quality violation. Anticipated construction emissions for the proposed action were evaluated based on this criterion. As shown in Table 3.4-1, NO_X and PM_{10} emissions from construction activities for the proposed action would exceed FRAQMD's regional thresholds of significance. Therefore, construction under the proposed action could potentially contribute to an existing or projected air quality violation. This temporary construction-related impact would be significant. Mitigation Measures AQ-1, AQ-2, AQ-3, and AQ-4, described below, have been identified to address this impact.

With implementation of Mitigation Measures AQ-1, AQ-2, AQ-3, and AQ-4, construction emissions would not exceed FRAQMD's thresholds of significance and the proposed action would not contribute to an existing or projected air quality violation. As a result, this impact would be less than significant with mitigation incorporated.

c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. Cleanup actions (e.g., emergency response, reconstruction of infrastructure) in the event of a flood could generate substantial air quality emissions associated with on-road emergency vehicles and cleanup construction equipment, potentially exceeding FRAQMD thresholds. These thresholds are used to determine whether a project would result in a cumulatively considerable incremental contribution to a significant cumulative impact related to attainment or maintenance of regional air quality standards. Therefore, potential cleanup activities associated with the no-action alternative could result in a cumulatively considerable incremental contribution of pollutants to an existing significant cumulative impact on air quality.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development within the SVAB, and this regional impact is cumulative rather than being attributable to any one source. A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and reasonably foreseeable future projects. Pursuant to CEQA, the cumulative analysis should focus on whether a specific project would result in a cumulatively considerable incremental contribution in pollutant emissions to a significant cumulative impact. FRAQMD's thresholds are designed to identify those projects that would result in significant levels of air pollution on a project level, and to assist the region in attaining the applicable CAAQS and NAAQS. Projects that would exceed these thresholds would be considered significant on a project level and would be considered to make a cumulatively considerable incremental contribution to a significant cumulative impact related to the region's nonattainment status with respect to NAAQS and CAAQS.

After completion of the proposed action, only minimal operational and maintenance activities would occur. These long-term operational activities for the proposed action would not generate regional air quality emissions that would exceed any of FRAQMD's thresholds of significance. However, construction-related emissions associated with the proposed action would exceed FRAQMD's thresholds of significance, which are used to determine whether a project would result in a cumulatively considerable incremental contribution to a significant cumulative impact related to attainment or maintenance of regional air quality standards. Therefore, this impact would be significant.

Mitigation Measures AQ-1, AQ-2, AQ-3, and AQ-4, described below, have been identified to address this impact. With implementation of these mitigation measures, construction emissions would not exceed FRAQMD's thresholds of significance, and the proposed action would not result in a cumulatively considerable incremental

contribution to a significant cumulative impact related to attainment or maintenance of regional air quality standards. As a result, this impact would be less than significant with mitigation incorporated.

d) Expose sensitive receptors to substantial pollutant concentrations?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flooding during a 200-year event would have the potential to result in vehicle volume contributions to local intersections and increases in toxic air contaminant (TAC) emissions associated with cleanup activities following the flood event. Emergency and cleanup construction vehicles could contribute vehicle volumes to local and regional intersections. It is possible that cleanup construction activities could range from relatively small projects such as removal of debris to reconstruction of infrastructure that would require large amounts of heavy-duty construction equipment. Although the exact magnitude of emergency vehicle volumes and magnitude and locations of cleanup construction cannot be determined at this time, cleanup activities could potentially expose sensitive receptors to CO or TAC emissions that would exceed FRAQMD thresholds of significance. Therefore, potential cleanup construction activities associated with the no-action alternative could expose sensitive receptors to substantial pollutant concentrations, resulting in a potentially significant impact.

PROPOSED ACTION

Construction-Related Toxic Air Contaminants

Less-than-Significant Impact. Some members of the population are especially sensitive to emissions of air pollutants: children, older adults, persons with preexisting respiratory or cardiovascular illness, and athletes and others who exercise frequently. These people should be given special consideration when evaluating a project's air quality impacts. Sensitive receptors are residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The nearest sensitive receptor to the project site is a residence located approximately 250 feet from the construction area.

The greatest potential for TAC emissions would be related to diesel PM emissions generated during operation of heavy-duty construction equipment. During construction under the proposed action, off-road diesel construction equipment used for earthmoving activities would generate diesel PM emissions. The dose to which receptors are exposed is the primary factor used to determine health risk and is a function of the concentration and duration of exposure. According to the state Office of Environmental Health Hazard Assessment, assessments that determine the health risks from exposure of residential receptors to TAC emissions should be based on a 70-year exposure period (OEHHA 2003). However, health risk assessments should be limited to the period or duration of activities associated with the emissions activity.

Construction activities would occur at varying distances from the sensitive receptors located nearby. Emissions would occur intermittently throughout the day, as construction equipment is required, rather than as a constant plume of emissions from the site. Construction activities for the proposed action would continue for

approximately 6 months, after which all emissions would cease. Therefore, even using the conservative assumption that a single receptor would be exposed to the full 6-month construction period, sensitive receptors would be exposed to TAC emissions for less than 1% of the total 70-year exposure time for a typical health risk assessment.

The proposed action is a linear project in which construction activities would move along the proposed levee reaches. Therefore, the closest sensitive receptor, located 250 feet from the project site, would be exposed to only a fraction of the total 6-month construction-related emissions of TACs. In other words, construction activities would move away from the receptor and subsequent emissions would occur farther away from that particular receptor.

Because of the relatively short construction and exposure period, the highly dispersive nature of diesel PM, and the distance from sensitive receptors, it is not anticipated that the proposed action would expose sensitive receptors to substantial pollutant concentrations that would result in a health hazard impact or exceed applicable health risk standards. This impact would be less than significant.

Carbon Monoxide Hotspots

Less-than-Significant Impact. During construction activities, the proposed action would contribute vehicle trips to local roadways, potentially increasing congestion at affected intersections. Local mobile-source CO emissions and concentrations near roadway intersections are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. However, under specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels, creating “CO hotspots” (exceedances of NAAQS or CAAQS).

FRAQMD does not have a recommended methodology for evaluating CO hotspots. Therefore, it is appropriate to consider methodologies developed by other air districts. The Bay Area Air Quality Management District (BAAQMD) has developed a screening threshold to determine whether a project would cause an intersection to potentially generate a CO hotspot. To avoid underestimating CO concentrations, the screening thresholds have been developed with conservative assumptions. Therefore, a project that would not exceed the screening thresholds would be highly unlikely to generate a CO hotspot. According to this methodology, a project would have the potential to generate a CO hotspot if it would contribute a substantial volume of vehicle trips to an intersection that exceeds 44,000 vehicles per hour.

It is not anticipated that the proposed action would generate a substantial number of vehicle trips on local roadways that would exceed BAAQMD’s threshold for CO hotspots. A large majority of the construction-related trips would occur in rural areas with low population density and minimal daily roadway traffic and congestion. Therefore, it is highly unlikely that construction worker vehicles or haul trucks would affect roadway intersections that currently experience high congestion or that would service traffic volumes near BAAQMD’s threshold of 44,000 vehicles per hour. Therefore, the proposed action would not contribute vehicle trips to local intersections that exceed the screening thresholds that would cause a CO hotspot. This impact would be less than significant.

Operations and Maintenance

Less-than-Significant Impact. The proposed action's operations and maintenance activities would consist of inspections, patrolling, and incremental maintenance work. TAC emissions associated with operations and maintenance would be generated by heavy-duty construction equipment used for road maintenance. However, these activities would occur infrequently and would be temporary. Because any maintenance work would occur in small increments, it is not anticipated to generate substantial TAC emissions. The emissions would typically be nominal compared with the proposed construction activities. Therefore, operations and maintenance activities are not anticipated to expose sensitive receptors to substantial pollutant concentrations that would result in a health hazard impact or exceed applicable health risk standards. In addition, as described previously, vehicle trips associated with operations and maintenance activities would occur weekly (for inspections) or annually (for weed abatement), and only a single worker trip would be required. Therefore, the operations and maintenance activities would not generate vehicle traffic that would substantially affect any intersection or that would exceed the screening thresholds that would cause a CO hotspot. This impact would be less than significant.

e) Create objectionable odors affecting a substantial number of people?

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. Although the magnitude and location of cleanup-related construction emissions cannot be determined at this time, cleanup construction activities associated with the no-action alternative are not anticipated to generate objectionable odors affecting a substantial number of people.

PROPOSED ACTION

Less-than-Significant Impact. The occurrence and severity of odor impacts depend on numerous factors such as the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. Offensive odors rarely cause any physical harm, but they can be very unpleasant, causing considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. FRAQMD recommends that the lead agency consider a project's potential to locate receptors near an existing odor source or to locate an odor source near existing sensitive receptors.

Construction activities for the proposed action are not anticipated to expose nearby off-site receptors to objectionable odors. Sources that may emit odors during construction include exhaust from diesel construction equipment and heavy-duty trucks, which some individuals could consider offensive. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. Because of the diffusive properties of diesel exhaust (Zhu et al. 2002), and because residential receptors would be located more than 250 feet from the nearest construction activities, nearby receptors would not be affected by diesel exhaust odors associated with project construction. Typical construction techniques would be used and the odors generated would be temporary and typical of most construction sites. All construction-related odors would cease upon the completion of construction activities for the proposed action.

Project operations would not add any new odor sources. Because the proposed action's construction activities would be intermittent and temporary, it is not anticipated that the proposed action would result in a substantial contribution to the existing odor emissions. As a result, implementing the proposed action would not create objectionable odors affecting a substantial number of people. This impact would be less than significant.

The proposed action's operations and maintenance activities would generate minimal odor emissions associated with infrequent maintenance activities during the life of the project. It is not anticipated the proposed action's incremental maintenance activities would create objectionable odors affecting a substantial number of people. This impact would be less than significant.

3.4.3 MITIGATION

Mitigation Measure AQ-1: Implement Feather River Air Quality Management District Standard Mitigation Measures.

As required for all projects located in FRAQMD's jurisdiction, TRLIA and its construction contractor(s) will implement the following Standard Mitigation Measures:

- Implement the Fugitive Dust Control Plan.
- Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40% opacity or Ringelmann 2.0).
- The contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of on-site operation.
- Limit idling time to 5 minutes—saves fuel and reduced emissions. (State idling rule: Commercial diesel vehicles—13 CCR Chapter 10, Section 2485, effective 02/01/2005; off-road diesel vehicles—13 CCR Chapter 9, Article 4.8, Section 2449, effective 05/01/2008.)
- Use existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.

Portable engines and portable engine-drive equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, may require ARB portable equipment registration with the state or local district permit. The owner/operator shall be responsible for arranging appropriate consultations with ARB or FRAQMD to determine registration and permitting requirements before equipment operation at the site.

Timing: During all construction activities.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure AQ-2: Implement Feather River Air Quality Management District Best Available Mitigation Measures for Construction Phase.

In accordance with FRAQMD's recommendation to implement the Best Available Mitigation Measures for Construction Phases if construction-related emissions continue to exceed FRAQMD thresholds of significance, TRLIA and its construction contractor(s) will implement the following measures:

- All grading operations on a project should be suspended when winds exceed 20 miles per hour (mph) or when winds carry dust beyond the property line despite implementation of all feasible dust control measures.
- Construction sites shall be watered as directed by the Department of Public Works or Air Quality Management District and as necessary to prevent fugitive dust violations.
- An operational water truck should be available at all times. Apply water to control dust as needed to prevent visible emissions violations and off-site dust impacts.
- On-site dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce windblown dust emissions. Incorporate the use of approved nontoxic soil stabilizer according to manufacturer's specifications to all inactive construction areas.
- All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions.
- Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all inactive construction areas (previously graded areas that remain inactive for 96 hours), including unpaved roads and employee/equipment parking areas.
- To prevent track-out, wheel washers should be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out.
- Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the project site.
- Provide temporary traffic control as needed during all phases of construction to improve traffic flow, as deemed appropriate by the Department of Public Works and/or the California Department of Transportation and to reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 mph.

- Reduce traffic speeds on all unpaved surfaces to 15 mph or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, on-site enforcement, and signage.

- Reestablish ground cover on the construction site as soon as possible and prior to final occupancy, through seeding and watering.

- Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et al.) may be conducted at the project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials offsite for disposal by open burning.

Timing: During all construction activities.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure AQ-3: Use Tier 4 Equipment for All Construction Activities.

All heavy-duty construction equipment used for the proposed action shall be Tier 4 engines or achieve comparable emissions standards as those of Tier 4 engines.

Timing: During all construction activities.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure AQ-4: Contribute to Feather River Air Quality Management District Off-Site Mitigation Program.

TRLIA shall pay a deposit down payment to FRAQMD, to be determined at the time the project is approved, for the off-site mitigation fee. This deposit shall be held by FRAQMD during construction activities and shall be used against the final off-site mitigation fee following completion of the proposed action.

TRLIA and its construction contractor(s) will monitor construction activities throughout all construction phases. Data regarding construction activities shall be collected and reported to FRAQMD on a monthly basis, and total construction emissions shall be calculated at the end of construction activities. The construction-activities data shall include but shall not be limited to the following items:

- Construction equipment
  - Equipment type and number of pieces
  - Horsepower
  - Hours of actual operation

- Haul trucks (heavy-duty trucks)
  - Number of heavy-duty haul truck trips
  - Trip distance for haul truck trips

- Construction workers
  - Number of construction workers per day

FRAQMD shall collect the monthly construction activity reports for recordkeeping and shall monitor the progression of the proposed action. After completion of the proposed action (or completion of the construction season if the project extends over one year) the actual construction emissions and corresponding off-site mitigation fees shall be calculated based on actual construction activities. The original deposit down payment shall be subtracted from this total and TRLIA shall be responsible for paying the remaining fee to FRAQMD within an agreed-upon period.

Timing: Before, during, and after construction activities.

Responsibility: TRLIA and its construction contractor(s).

Residual Impact after Mitigation Measures

Even with implementation of Mitigation Measure AQ-1, it is anticipated that construction-related emissions would continue to exceed the FRAQMD thresholds of significance. FRAQMD recommends that projects that implement the Standard Mitigation Measures, but continue to exceed the thresholds of significance, implement the Best Available Mitigation Measures for Construction Phases. Mitigation Measure AQ-2 provides this additional mitigation.

At the time of this analysis, the precise construction activities associated with the proposed action cannot be determined. The analysis described above provides a conservative estimate of construction activities to avoid underestimating emissions. Table 3.4-2 presents the proposed action's air quality emissions following implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3. Even with implementation of these mitigation measures, the proposed action's construction-related NO_X and PM_{10} emissions would continue to exceed FRAQMD thresholds of significance. For projects that would continue to exceed FRAQMD thresholds of significance even after implementation of all feasible mitigation, FRAQMD recommends that the project contribute to its Off-Site Mitigation Program. To pay an accurate amount to the off-site mitigation fee program, Mitigation Measure AQ-4 would be implemented to monitor construction activities.

Table 3.4-2. Mitigated Construction Emissions Associated with the Proposed Action

Construction Phase	Pollutants			
	ROG[a]	NOX[a]	PM10[b]	PM2.5[b]
Phase 1	0.02	0.32	129.35	20.49
Phase 2	0.03	0.27	91.35	14.50
Phase 3	0.04	0.28	5.32	1.40
Phase 4	0.17	5.53	317.98	53.20
Phase 5	0.01	0.28	15.65	2.88
Phase 6	0.00	0.02	0.47	0.30
Phase 7	0.01	0.16	1.63	0.71
Total Emissions (tons)	**0.29**	**6.85**	**–**	**–**
Average Daily Emissions (lb/day) [c]	**3.18**	**76.14**	**–**	**–**
Maximum Daily Emissions (lb/day) [c]	**–**	**–**	**317.98**	**53.20**

Table 3.4-2. Mitigated Construction Emissions Associated with the Proposed Action				
	Pollutants			
Construction Phase	ROG[a]	NOX[a]	PM10[b]	PM2.5[b]
FRAQMD Thresholds (lb/day) [d]	25	25	80	–
Exceeds FRAQMD Threshold?	No	Yes	Yes	–

Notes: FRAQMD = Feather River Air Quality Management District; lb = pounds; NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

[a] Emissions of ROG and NO_X are shown in units of total tons unless noted otherwise.

[b] Emissions of PM_{10} and $PM_{2.5}$ are shown in units of maximum pounds per day unless noted otherwise.

[c] The average daily and maximum daily emissions shown are based on a 1-year construction period. If construction occurs over a 2-year period, total construction activities and construction work days are anticipated to generally remain the same. Therefore average daily construction emissions would be similar to those shown above under either construction schedule. For maximum daily emissions, it is possible a 2-year construction period would slightly reduce maximum daily fugitive PM dust emissions; however, the emissions shown above represent the worst-case maximum daily emissions.

[d] FRAQMD thresholds of significance are in units of average pounds per day for ROG and NO_X and maximum pounds per day for PM_{10}.

Source: Data compiled by AECOM in 2015

Implementation of Mitigation Measures AQ-1, AQ-2, AQ-3, and AQ-4 will result in a less-than-significant impact on air quality.

3.5 BIOLOGICAL RESOURCES

3.5.1 ENVIRONMENTAL SETTING

Information on the biological resources known or with potential to occur in the project area and vicinity is based on field surveys conducted by AECOM biologists on July 15, October 1, November 7, and December 9–10, 2014 and March 31, 2015. In addition, information was obtained by reviewing historical aerial photography and biological resource databases, including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS) online inventory of rare and endangered plants (CNPS 2014). Documents addressing biological resources in the project area and the region also were reviewed. These include the *Yuba County 2030 General Plan* and associated EIR (Yuba County 2011a, 2011b) and biological assessments and other environmental documents prepared for the WPIC West Levee improvements completed by TRLIA in 2006 (TRLIA 2004, 2005a, 2005b) and the Palermo to East Nicolaus 115 kV Transmission Line Reconstruction Project (PG&E 2010; CPUC 2010).

The project site is located in a relatively undisturbed area, except where it intersects Plumas-Arboga Road and west of the levee, north and south of the road, where several residences are present. A small residential development is also present to the west, in the southern portion of the project site. The area is subject to relatively low disturbance levels on a regular basis; however, it was substantially altered in the recent past as a result of TRLIA improvements to the WPIC West Levee, completed in 2006, and replacement of the PG&E transmission line, completed in 2013.

VEGETATION AND WILDLIFE

Exhibit 3.5-1 depicts vegetation and land cover types present on the project site. On-site vegetation is dominated by nonnative annual grassland on the levee slopes and waterside berm, and along the landside of the levee.

Dominant grasses in these areas include soft chess (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), wild oat (*Avena fatua*), false barley (*Hordeum murinum*), and Italian ryegrass (*Festuca perennis*). Common forbs throughout the project site include broadleaf filaree (*Erodium botrys*), dissected geranium (*Geranium dissectum*), black mustard (*Brassica nigra*), and English plantain (*Plantago lanceolata*). Seasonal wetlands and other seasonally ponded habitats are scattered throughout the landside grasslands, totaling approximately 1.5 acres. Most of the seasonal wetlands are characterized by coyote thistle (*Eryngium vaseyi*), curly dock (*Rumex crispus*), and Italian rye grass.

Several small areas of landside scrub and young oak woodland are present on the project site. The Reach 2B fill area is a topographic depression that appears to have been excavated, possibly in association with adjacent agricultural fields that are now fallow. The eastern portion is dominated by a narrowleaf willow (*Salix exigua*) thicket, and other areas support coyote brush (*Baccharis pilularis*), black mustard, blessed milk thistle (*Silybum marianum*), and Himalayan blackberry (*Rubus armeniacus*). Reach 5B supports patches of willow scrub and scattered young valley oaks (*Quercus lobata*) interspersed with blackberry and California rose (*Rosa californica*).

Habitat within the WPIC east of the project site is also dominated by annual grassland vegetation, with scattered small patches of riparian vegetation and isolated trees and shrubs. Aquatic habitat is generally restricted to a narrow channel, approximately 20 feet wide, immediately east of the West Levee. Aquatic habitat is more extensive in Reaches 5B and 5D, where large areas of freshwater marsh vegetation and open water are present; the waterside slope of the levee is armored with riprap in these northern reaches.

Annual grasslands that dominate the project site generally support a relatively low diversity of wildlife species, but several common reptile, bird, and mammal species are known or likely to occur, based on observations made during the field surveys. Small mammals are likely to occur in these grassland areas, but there is little evidence of burrowing activity on the levee slopes, and no California ground squirrels (*Spermophilus beechyi*) were observed during the field surveys. Small areas of riparian scrub and oak woodland present in isolated locations along the western edge of the project site support a wider variety of wildlife species and likely provide nesting habitat for common birds. Riparian and marsh habitats along the WPIC immediately east of the project area also provide greater habitat variety, support additional wildlife species, and provide bird nesting habitat. In addition, open waters of the canal support fish and other species restricted to aquatic habitats.

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources addressed in this section are those that are afforded consideration or protection under CEQA, the California Fish and Game Code, the California Endangered Species Act (CESA), Federal Endangered Species Act (ESA), CWA, and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

Special-Status Species

Special-status species consist of plants and animals in the following categories:

- species officially listed by the state or federal government as endangered, threatened, or rare;
- candidates for state or federal listing as endangered or threatened;
- taxa (taxonomic categories or groups) that meet the criteria for listing, even if not currently included on any list, as described in State CEQA Guidelines Section 15380;

- species identified by CDFW as species of special concern;
- species listed as Fully Protected under the California Fish and Game Code;
- species afforded protection under local or regional planning documents; and
- taxa considered by CDFW to be "rare, threatened, or endangered in California" and assigned a California Rare Plant Rank (CRPR).

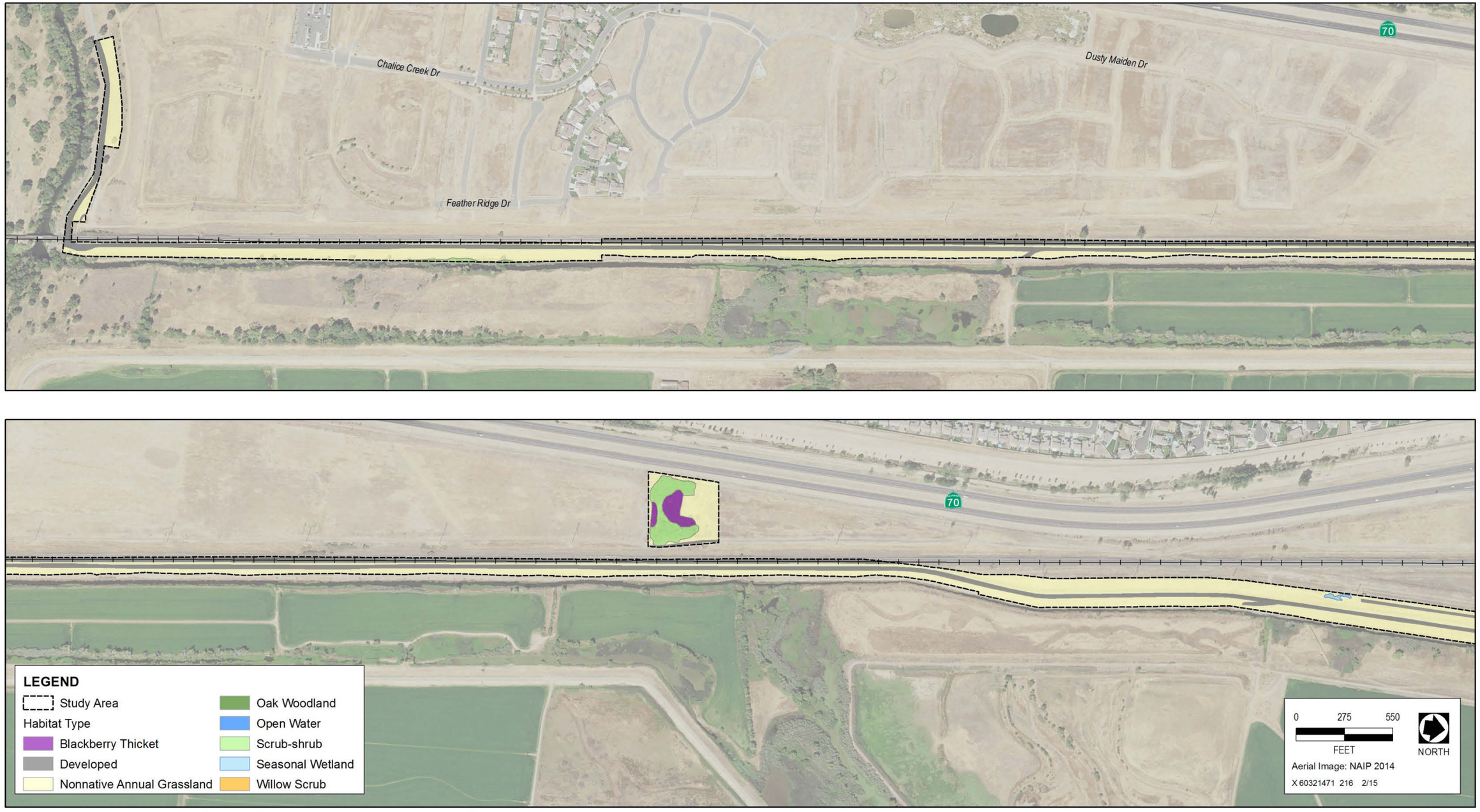
The CRPR system includes six rarity and endangerment ranks for categorizing plant species of concern. All plants with a CRPR are considered "special plants" by CDFW. The term "special plants" is a broad term used by CDFW to refer to all plant taxa inventoried in the CNDDB, regardless of their legal or protection status. Plants ranked as CRPR 1A, 1B, 2A, and 2B may qualify as endangered, rare, or threatened species within the definition of State CEQA Guidelines Section 15380, and CDFW recommends that CEQA documents evaluate potential impacts on CRPR 1 and 2 species.

The term "California species of special concern" is applied by CDFW to animals not listed under the Federal ESA or CESA, but that are nonetheless declining at a rate that could result in listing, or that historically occurred in low numbers and have known threats to their persistence.

An initial list was developed consisting of special-status species that could occur on or adjacent to the project site if suitable habitat conditions are present. This initial list was developed by reviewing records from the CNDDB (CDFW 2014) and CNPS Inventory (2014) and a list generated from the USFWS database of endangered species under the jurisdiction of the Sacramento Fish and Wildlife Office (USFWS 2014). These sources were queried for the Nicolaus and Olivehurst U.S. Geological Survey 7.5-minute quadrangles, within which the project area is located, and the 10 surrounding quadrangles: Sheridan, Pleasant Grove, Sutter Causeway, Knights Landing, Verona, Browns Valley, Wheatland, Yuba City, Sutter, and Gilsizer Slough.

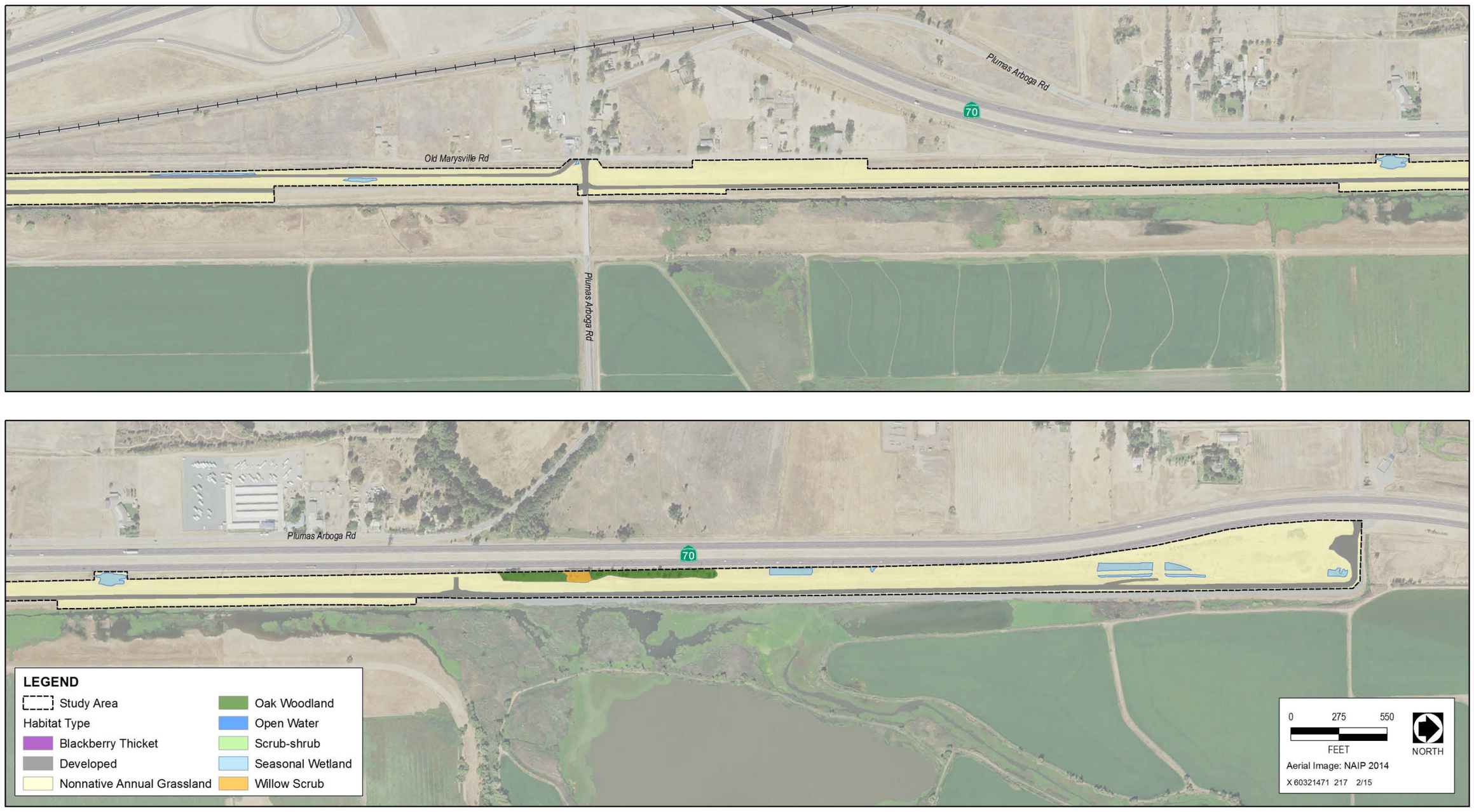
Exhibit 3.5-2 shows the location of special-status species occurrences recorded in the CNDDB within 5 miles of the project site. Several species were eliminated from further consideration because the project site and adjacent areas do not provide suitable habitat (e.g., riparian woodland, fallow agricultural fields, alkali soils, mima mound topography) and/or the site is outside the species' current known range.

Table 3.5-1 summarizes information about the species that were evaluated for potential to occur on or adjacent to the project site. Conclusions regarding potential for occurrence are based on results of the 2014 and 2015 field surveys and review of information from the database searches and documents prepared for TRLIA's previous WPIC West Levee improvements and the Palermo to East Nicolaus 115 kV Transmission Line Reconstruction Project.



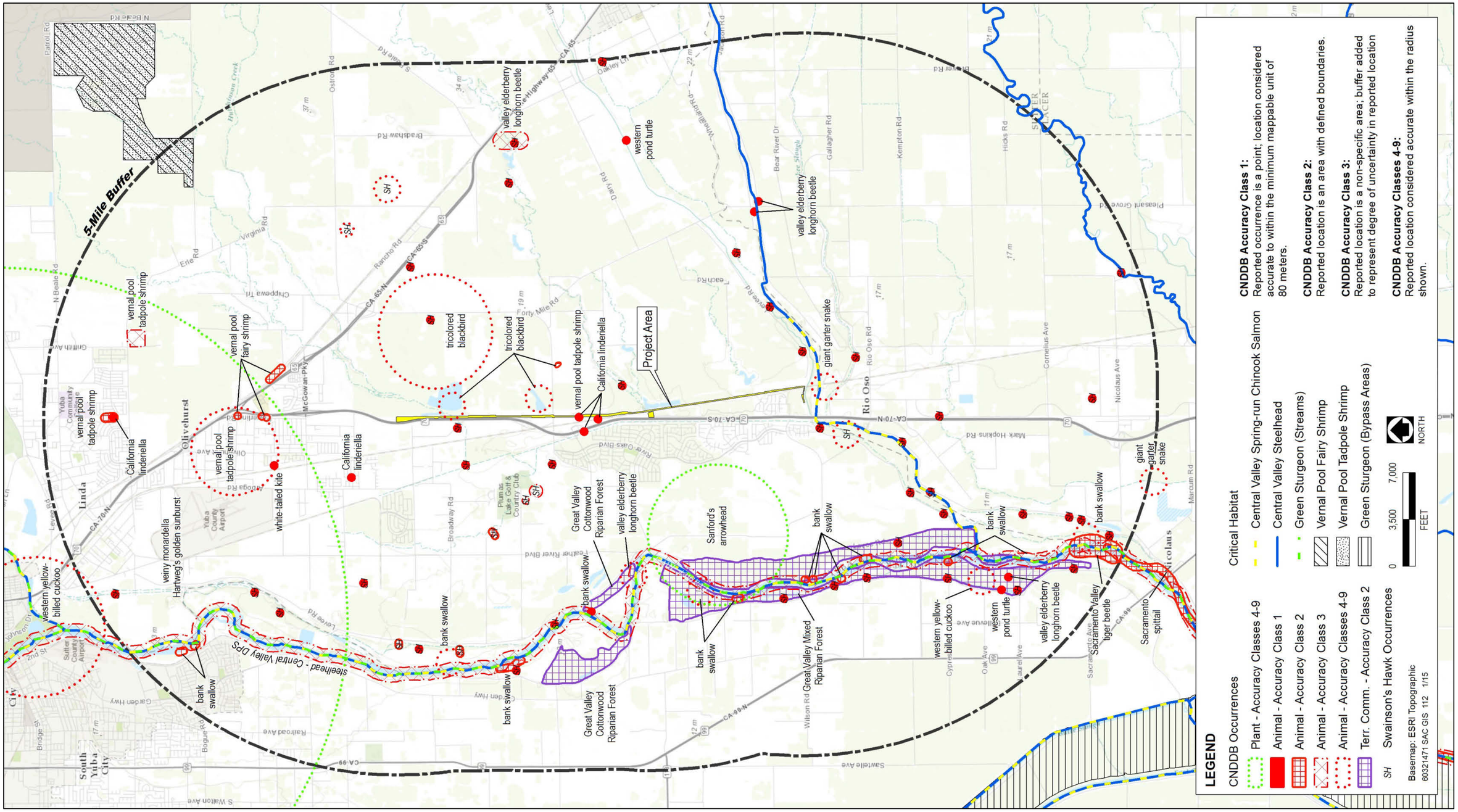
Source: Data compiled by AECOM in 2014

Exhibit 3.5-1a. Vegetation and Land Cover Types on the Project Site



Source: Data compiled by AECOM in 2014

Exhibit 3.5-1b. Vegetation and Land Cover Types on the Project Site



Source: CDFW 2014

Exhibit 3.5-2. CNDDB Occurrences within 3 Miles of the Project Site

Table 3.5-1. Special-Status Species with Potential to Occur on or Adjacent to the Project Site					
Species	Status[1]			Habitat Associations	Potential for Occurrence in the Project Area
	Federal	State	CRPR		
Plants					
Woolly rose-mallow *Hibiscus lasiocarpos var. occidentalis*	–	–	1B.2	Freshwater marshes and swamps, generally on wet river banks and low slough islands; also recorded in riprap on levee slopes.	Moderate; could occur in aquatic habitats within the WPIC.
Sanford's arrowhead *Sagittaria sanfordii*	–	–	1B.2	Shallow freshwater marshes and swamps.	Moderate; could occur in aquatic habitats within the WPIC.
Fish					
Green sturgeon, southern DPS *Acipenser medirostris*	T	SSC	–	Spawns in rivers with suitable gravel; rears in freshwater and estuarine habitats.	Moderate; likely to occur in the Feather and lower Bear Rivers and could wander up the WPIC.
Hardhead *Mylopharadon conocephalus*	SC	SSC	–	Adults occur in deep, clear pool and run habitats; juveniles occur in shallow water and along the shoreline of stream reaches.	Moderate; likely to occur in the Feather and lower Bear Rivers and could wander up the WPIC.
Central Valley steelhead DPS *Oncorhynchus mykiss*	T	–	–	Spawns in cold streams with suitable gravel; rears in seasonal floodplains, rivers and tributaries, and the Bay-Delta.	Moderate; likely to occur in the Feather and lower Bear Rivers and could wander up the WPIC.
Chinook salmon, Central Valley fall/late fall–run ESU *Oncorhynchus tshawytscha*	SC	SSC	–	Spawns in cold streams with suitable gravel; rears in seasonal floodplains, rivers and tributaries, and the Bay-Delta.	Moderate; likely to occur in the Feather and lower Bear Rivers and could wander up the WPIC.
Chinook salmon, Central Valley spring-run ESU *Oncorhynchus tshawytscha*	T	T	–	Spawns in cold streams with suitable gravel; rears in seasonal floodplains, rivers and tributaries, and the Bay-Delta.	Moderate; likely to occur in the Feather and lower Bear Rivers and could wander up the WPIC.
Invertebrates					
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	–	–	Closely associated with elderberry, which is an obligate host for the beetle larvae.	Moderate; elderberry shrubs are present in and adjacent to the southern portion of the project area.
Conservancy fairy shrimp *Branchinecta conservatio*	E	E	–	Large, deep vernal pools.	Low; on-site seasonal wetlands provide relatively poor habitat.
Vernal pool fairy shrimp *Branchinecta lynchi*	T	–	–	Vernal pools, including a wide range of sizes and depths.	Moderate; seasonal wetlands in the project area provide potentially suitable habitat.
Vernal pool tadpole shrimp *Lepidurus packardi*	E	–	–	Vernal pools, typically medium to large.	Moderate; seasonal wetlands in the project area provide habitat of marginal quality and individuals have been detected in a pool adjacent to the project site.

Table 3.5-1. Special-Status Species with Potential to Occur on or Adjacent to the Project Site					
Species	Status[1]			Habitat Associations	Potential for Occurrence in the Project Area
	Federal	State	CRPR		
Reptiles					
Giant garter snake *Thamnophis gigas*	T	T	–	Open water and emergent vegetation in marshes, sloughs, and other aquatic habitats; also requires grassy banks and vegetation openings for basking and higher elevation refuge from winter flooding.	Moderate; WPIC provides suitable aquatic habitat and project site provides suitable upland habitat, but no occurrences of the species have been confirmed in the region and it is not known whether populations persist.
Northern western pond turtle *Actinemys marmorata*	–	SSC	–	Permanent or nearly permanent water bodies in various habitats, including ponds, marshes, rivers, streams, and ditches.	High; WPIC provides suitable aquatic habitat and upland areas in the WPIC could provide suitable nesting habitat.
Birds					
White-tailed kite *Elanus leucurus*	–	FP	–	Nests in riparian zones, oak woodlands, and isolated trees; forages in grasslands and agricultural fields.	High; grasslands on and adjacent to the project site provide suitable foraging habitat, and trees adjacent to the project site, particularly in the southern portion, provide suitable nest sites.
Northern harrier *Circus cyaneus*	–	SSC	–	Nests and forages in grasslands, agricultural fields, and marshes; nests on the ground in patches of dense, often tall, vegetation in undisturbed areas.	High; grasslands and marsh habitat on and adjacent to the project site provide suitable foraging and nesting habitat.
Swainson's hawk *Buteo swainsoni*	–	T	–	Nests in riparian forest and scattered trees; forages in grasslands and agricultural fields.	High; grasslands on and adjacent to the project site provide suitable foraging habitat, and trees adjacent to the project site, particularly in the southern portion, provide suitable nest sites.
Burrowing owl *Athene cunicularia*	–	SSC	–	Nests and forages in grasslands, agricultural lands, open shrublands, and open woodlands with natural or artificial burrows or friable soils.	Low; potentially suitable habitat is present on and adjacent to the project site, but no California ground squirrels or suitable burrows were observed during the 2014 surveys, and the nearest CNDDB occurrences of the species are approximately 15 miles south.
Loggerhead shrike *Lanius ludovicianus*	–	SSC	–	Forages and nests in grasslands, shrublands, and open woodlands.	Moderate; suitable foraging habitat is present throughout the project site, and small scrub and woodland habitat patches provide suitable nest sites.
Song sparrow ("Modesto" population) *Melospiza melodia*	–	SSC	–	Nests and forages in dense vegetation in marsh, riparian forest and scrub, and along irrigation and drainage canals.	Moderate; suitable nesting and foraging habitat is present in the WPIC.

Table 3.5-1. Special-Status Species with Potential to Occur on or Adjacent to the Project Site					
Species	Status[1]			Habitat Associations	Potential for Occurrence in the Project Area
	Federal	State	CRPR		
Tricolored blackbird *Agelaius tricolor*	–	E	–	Nests in dense cattails and tules, riparian scrub, grain crops, and other low dense vegetation; forages in grasslands and agricultural fields.	Moderate; grasslands on and adjacent to the project site provide suitable foraging habitat, and a nest colony was present approximately 0.25 mile east of the project site in 2007 and 2008.

Notes: Bay-Delta = San Francisco Bay/Sacramento–San Joaquin River Delta; CDFW = California Department of Fish and Wildlife; CNDDB = California Natural Diversity Database; DPS = distinct population segment; ESU = evolutionarily significant unit; NMFS = National Marine Fisheries Service; USFWS = U.S. Fish and Wildlife Service

[1] Status Definitions:

Federal Listing Categories (NMFS/USFWS)
T = Threatened
E = Endangered
SC = Species of concern
– = No status

State Listing Categories (CDFW)
T = Threatened
E = Endangered
R = Rare
SSC = Species of special concern
FP = Fully Protected
– = No status

CDFW California Rare Plant Ranks
1B = Plants rare, threatened, or endangered in California and elsewhere
2B = Plants rare, threatened, or endangered in California, but more common elsewhere
Extensions:
.1 = Seriously endangered in California (>80% of occurrences are threatened and/or high degree and immediacy of threat)
.2 = Fairly endangered in California (20–80% of occurrences are threatened)

Sources: CDFW 2014; CNPS 2014; USFWS 2014; based on data collected and compiled by AECOM in 2014 and 2015

Special-Status Plants

The project site does not provide suitable habitat for special-status plants. The CNDDB documents occurrences of several species, but these species have specific habitat, soil, and/or elevation requirements that are not available on-site. For example, the seasonal wetlands present on-site provide relatively disturbed and degraded habitat that is unsuitable for species restricted to grasslands with a high density of vernal pools. In addition, no special-status plants were found during focused surveys for special-status plants that were conducted on the landside of the levee before construction of the previous WPIC West Levee improvements. Two species, woolly rose-mallow and Sanford's arrowhead, have potential to occur in aquatic habitat in the WPIC adjacent to the project site.

Special-Status Fish and Wildlife

Five special-status fish species and 12 special-status wildlife species were determined to have at least low potential to occur in or adjacent to the project area, based on habitat conditions, current species ranges, and occurrences documented in the CNDDB. Several additional species that may occur in the local region were eliminated from further evaluation in this document because they are restricted to well-developed riparian woodland and forest and other specific habitat conditions that are not present on or immediately adjacent to the project site.

Fish

Five special-status fish taxa are known or likely to occur in the Feather River and Bear River and could occasionally wander partway up the WPIC: two evolutionarily significant units (ESUs) of Chinook salmon (*Oncorhynchus tshawytscha*), a distinct population segment of steelhead (*O. mykiss*), North American green sturgeon (*Acipenser medirostris*), and hardhead (*Mylopharadon conocephalus*). All of these taxa, except hardhead, are anadromous, beginning life in freshwater but spending most of their lives in the sea before returning to freshwater to spawn. The WPIC does not provide spawning habitat for any of these species, but migrating individuals and rearing juveniles could occasionally use aquatic habitat in the WPIC.

Invertebrates

Three species of special-status invertebrates could occur in the project area: the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) and two species of crustaceans that occur in vernal pools and other seasonal wetlands. Seven blue elderberry (*Sambucus nigra* ssp. *cerulea*) shrubs that provide suitable habitat for the beetle are present adjacent to the southern portion of the project site (Exhibit 3.5-3). However, no exit holes indicating that these shrubs have supported developing beetles were observed during focused surveys conducted on October 1, 2014 and March 31, 2015.

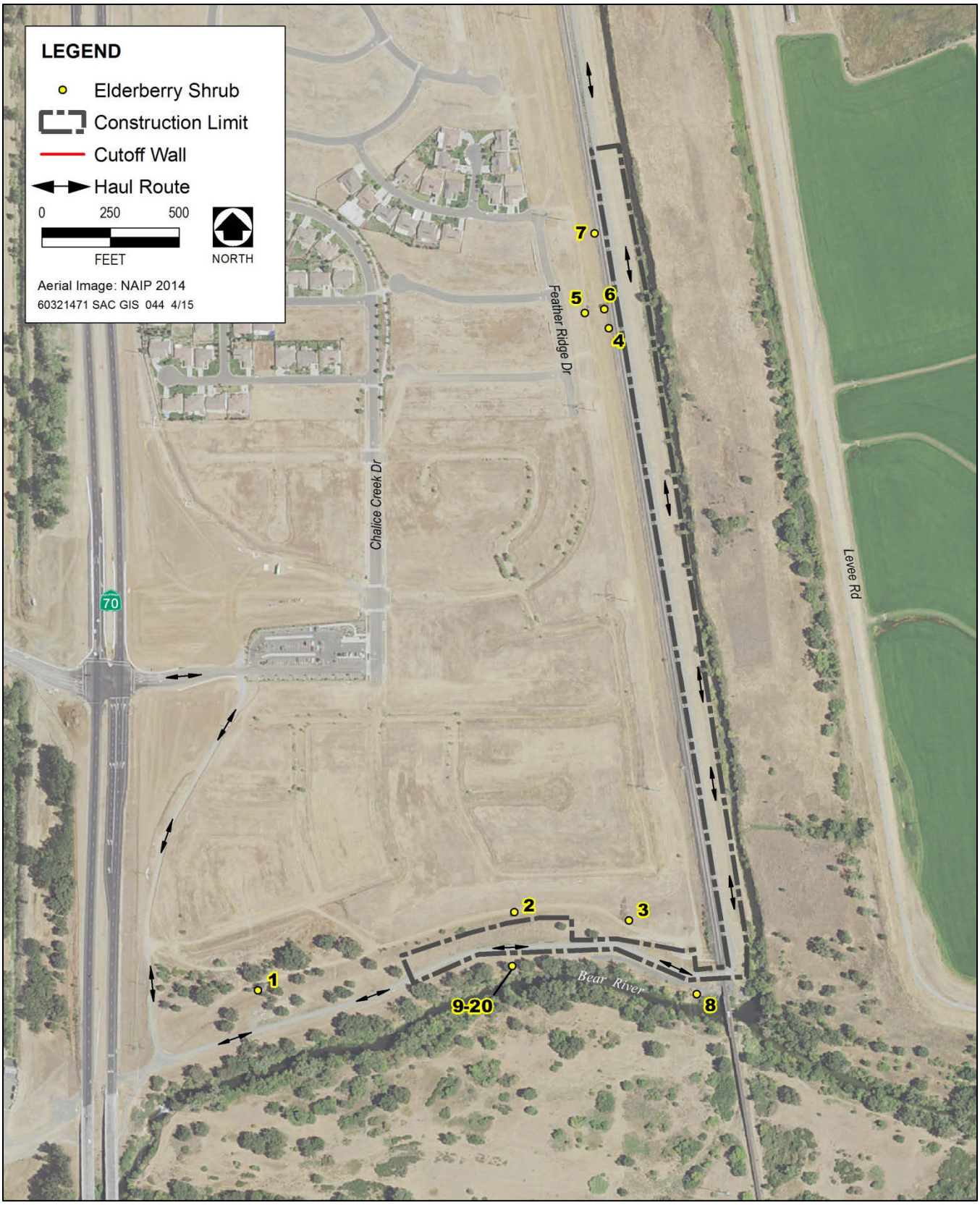
Most of the seasonal wetlands scattered along the landside of the levee in Reaches 3–5D (Exhibit 3.5-1) provide potentially suitable habitat for vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*), the latter of which was documented in a pool adjacent to the project site during surveys conducted for the previous WPIC West Levee improvements. A total of 0.70 acre of potentially suitable seasonal wetland habitat for these species is present on the project site.

Reptiles

The project area provides potentially suitable habitat for giant garter snake (*Thamnophis gigas*), but there are no confirmed records of the species in the area east of the Feather River, north of the Bear River, and south of the Yuba River. No giant garter snakes were documented during 2005 and 2014 trapping efforts at Beale Air Force Base (Hansen, pers. comm., 2014), and none were observed during surveys and monitoring conducted for previous levee improvements implemented by TRLIA in the region. However, no comprehensive focused surveys for the species have been conducted in the area, and it is possible that giant garter snakes persist in the WPIC and other areas of suitable habitat in the region.

The suitability of aquatic and upland habitats on and adjacent to the project site was assessed during field surveys conducted on July 15 and November 7, 2014. Based on observations made during these surveys, suitable aquatic habitat is limited to the WPIC. Potentially suitable upland habitat includes areas within 200 feet of aquatic habitat in the WPIC, including the levee slopes, waterside bench, and landside grasslands. Developed roadways and maintenance corridors on the levee crown and near the levee toe are not considered suitable upland habitat, because they are covered with gravel or regularly graded and do not support burrows or vegetation.

Northern western pond turtle (*Actinemys marmorata*) also could occur in aquatic habitats in the WPIC and nest in nearby suitable uplands. The project area is unlikely to be used for nesting, because the levee does not provide suitable nesting substrate and its relatively steep slopes likely deter turtles from dispersing to suitable uplands



Source: Data compiled by AECOM in 2015

Exhibit 3.5-3. Elderberry Shrubs Locations Adjacent to the Project Site

along the landside of the levee. Therefore, nesting turtles are more likely to use less-disturbed and higher quality upland habitat in the WPIC and to the east.

Birds

Several species of raptors and other special-status birds could occur on or adjacent to the project site. Potentially suitable nesting habitat is very limited, however, and no active nests of special-status birds were documented during focused surveys conducted for the previous WPIC West Levee improvements project or the PG&E transmission line replacement. Grasslands along the landside of the levee provide suitable foraging habitat for raptors, but the few potential raptor nest trees occur in relatively disturbed areas associated with scattered residences west of the project area and at the southern end of the WPIC. Grasslands in most portions of the project site are unlikely to be used for nesting by northern harrier because of the generally sparse vegetation and relatively high disturbance levels. The only CNDDB occurrence of a raptor nest site near the project area is a Swainson's hawk (*Buteo swainsoni*) nest that was located several hundred feet west of Reach 5B in 2003.

Although the habitat is also potentially suitable for burrowing owl, no ground squirrels or suitable burrows were observed during the field surveys conducted for the proposed action, and the species was not detected during surveys conducted for the previous levee improvements or the transmission line replacement. In addition, the nearest recent occurrences of the species documented in the CNDDB are from approximately 15 miles south of the project site. Therefore, burrowing owl is unlikely to occur on the project site and be affected by the proposed action.

Shrubby vegetation and several small trees in the western portions of Reaches 2B and 5B and at scattered locations in the WPIC could provide suitable nest sites for loggerhead shrike (*Lanius ludovicianus*). Potential nesting habitat for Modesto song sparrow (*Melospiza melodia*) and tricolored blackbird (*Agelaius tricolor*) is limited to shrubby vegetation in the fill area in Reach 2B and suitable vegetation in portions of the WPIC. Two tricolored blackbird nest colonies have been documented east of the WPIC, but only one of them is known to have been active in the past 20 years.

Critical Habitat

Critical habitat is a geographic area containing features determined by USFWS or NMFS to be essential to the conservation of a species listed as threatened or endangered under the ESA. Critical habitat does not have to be occupied by that species at the time it is designated, but it may be considered necessary for the recovery of the species.

Critical habitat designated for spring-run Chinook salmon and Central Valley steelhead includes the Feather River and lower Bear River, including where the WPIC joins the Bear River immediately adjacent to the project site (Exhibit 3.5-1). Critical habitat designated for green sturgeon includes the Feather River but does not extend up the lower Bear River to the project site. The nearest area of critical habitat designated for vernal pool fairy shrimp and vernal pool tadpole shrimp extends southwest from Beale Air Force Base, approximately 6 miles northeast of the project area.

Essential Fish Habitat

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires that essential fish habitat (EFH) be identified

and described in federal fishery management plans. EFH includes waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity. Freshwater EFH for Pacific Coast salmon in the Central Valley includes waters currently or historically accessible to salmon, as described in Myers et al. (1998). The project area is adjacent to Pacific Coast salmon EFH, and Central Valley spring-run Chinook salmon ESU and Central Valley fall-/late fall–run Chinook salmon ESU are species managed under the Pacific coast salmon fishery management plan that could likely occur in waters adjacent to the project area.

Other Habitats Protected under Federal and State Regulations

Aquatic features on and adjacent to the project site qualify for protection under Section 404 of the CWA, Section 1602 of the California Fish and Game Code, and/or the Porter-Cologne Act. Under Section 404 of the Federal CWA, USACE regulates discharge of dredged or fill material into waters of the United States, including wetlands. Wetlands that support hydrophytic vegetation, hydric soil types, and wetland hydrology may be jurisdictional under Section 404 of the CWA. The WPIC is considered a water of the United States, and seasonal wetlands on the landside of the levee have been verified as jurisdictional wetlands by USACE in the past. A delineation of waters of the United States on the project site was conducted on December 9 and 10, 2014, according to methods established in the USACE wetlands delineation manual (Environmental Laboratory 1987) and Arid West Supplement (Environmental Laboratory 2008). The draft delineation report (TRLIA 2015), including maps and acreage of all potentially jurisdictional habitats in the delineation study area, has been submitted to USACE for verification. In the report, a total of 1.50 acres of potentially jurisdictional seasonal wetlands and willow scrub are identified as occurring landside of the levee in the delineation study area.

3.5.2 ENVIRONMENTAL CONSEQUENCES

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 the U.S. Fish and Wildlife Service?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Existing habitat conditions would not be modified, and no construction activities that could affect special-status species would occur, other than those potentially associated with the continuation of existing levee inspection and maintenance requirements. Under these conditions, excessive seepage and slope instability along certain levee segments would likely continue and the flood risk would remain high. If no action is taken to completely repair the deficient levee segments, a levee failure could inundate areas that may currently provide habitat for special-status species. If flooding is severe enough, it could damage or uproot elderberry shrubs and nesting habitat for special-status birds, result in sedimentation or contamination and degrade seasonal wetlands that support vernal pool crustaceans, and cause mortality of giant garter snakes that may be hibernating in low-lying uplands landside of the levee. Emergency levee repair work, cleanup and reconstruction after a flood event, and other activities in response to a levee breach could also disturb special-status species and their habitats. Therefore, the impact of the no-action alternative on candidate, sensitive, or special-status species would be potentially significant.

PROPOSED ACTION

Special-Status Plants

Less-than-Significant Impact with Mitigation Incorporated. Seasonal wetlands on the project site do not provide suitable habitat for special-status plants, and no special-status plants were detected during surveys conducted before previous WPIC West Levee improvements. Therefore, fill of seasonal wetlands on the landside of the levee is unlikely to affect special-status plants.

Adjacent aquatic habitats in the WPIC, however, provide potentially suitable habitat for woolly rose-mallow and Sanford's arrowhead. The proposed construction area includes the waterside levee slope and bench at the top of the western bank of the WPIC in areas where a cutoff wall would be constructed. A portion of the waterside slope would be degraded to accommodate construction of the cutoff wall, and levee material would be temporarily stockpiled on the waterside bench in these areas. Habitat for special-status plants could be indirectly affected by levee degradation, waterside stockpiling, and cutoff wall construction. These activities have the potential to indirectly affect aquatic habitat if soils and/or contaminants enter the WPIC. Special-status plants that occupy affected habitat could be adversely affected if habitat quality were degraded sufficiently to result in loss of plants or render the habitat unsuitable.

Because construction activities could indirectly adversely affect special-status plants, if present in habitat adjacent to the project site, this impact would be potentially significant. Implementation of Mitigation Measure BIO-1 would minimize the potential for indirect effects on potentially suitable habitat for special-status plants in the WPIC. As a result, this impact would be less than significant with mitigation incorporated.

Special-Status Fish

Less-than-Significant Impact with Mitigation Incorporated. The WPIC does not provide spawning habitat for any special-status fish species, and potential rearing habitat is of marginal quality. However, individuals could wander up the WPIC during migration and/or rearing. No construction activity would occur within aquatic habitat of the WPIC or Bear River and no riparian vegetation would be removed. However, levee degradation and waterside stockpiling of material could adversely affect special-status fish by impairing water quality. Impacts on fish habitat could occur immediately adjacent to and downstream of the construction area and would include potential increases in sediments, turbidity, and contaminants. These could affect the physical health of fish within the WPIC, and potentially where the WPIC flows into the Bear River if effects extend far enough downstream. Ground-disturbing and stockpiling activities have the potential to temporarily impair water quality if disturbed and eroded soil is discharged into the channel. Soil and associated contaminants that enter the WPIC through stormwater runoff and erosion could increase turbidity, stimulate algae growth, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms.

Because construction activities could degrade water quality and adversely affect special-status fish, if present in the WPIC or the adjacent portion of the Bear River, this impact would be potentially significant. Implementation of Mitigation Measure BIO-1 would avoid or minimize potential for water quality degradation. As a result, this impact would be less than significant with mitigation incorporated.

Valley Elderberry Longhorn Beetle

Less-than-Significant Impact with Mitigation Incorporated. Nineteen elderberry shrubs are located within 100 feet of the Reach 1B construction area and access route, in the southern portion of the project site. Four of these shrubs are separated from the construction area for the Reach 1B cutoff wall by the UPRR, and an additional 13 shrubs are waterside of the Bear River North Levee. No project activity would occur in these areas; therefore, these 17 shrubs would not be susceptible to accidental damage from construction vehicles or personnel. Construction activities near the other two elderberry shrubs could accidentally damage the shrubs and result in a significant impact on the local valley elderberry longhorn beetle population, if beetles are present during project activities. Implementation of Mitigation Measure BIO-2 would avoid adverse effects on these shrubs. As a result, this impact would be less than significant with mitigation incorporated.

Vernal Pool Crustaceans

Less-than-Significant Impact with Mitigation Incorporated. Seasonal wetlands that provide potentially suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp are present on and adjacent to the project site, landside of the WPIC West Levee. Approximately 0.70 acre of potentially suitable habitat is anticipated to be directly filled by construction of the access road and landside berm, landside fill, and grading to alleviate ponding near the levee toe in Reaches 3, 4A, 4D, and 5D. This habitat includes 0.24 acre of seasonal wetlands in Reach 3 that apparently have become established since PG&E's 2013 transmission line replacement. Because these seasonal wetlands were established recently and are highly disturbed, and given the lack of a hydrologic connection to more suitable habitat likely occupied by vernal pool crustaceans, these pools are unlikely to be occupied by special-status vernal pool crustaceans.

In addition, habitat adjacent to the project site is not anticipated to be indirectly affected. Field evaluation of the site's topography and hydrologic conditions indicate that project construction is unlikely to alter the hydrology. The actual impact on habitat that could be occupied by vernal pool fairy shrimp and vernal pool tadpole shrimp is anticipated to be relatively small. However, known occurrences on these species are locally rare. Therefore, fill of potentially suitable habitat and inadvertent degradation of additional habitat would result in a significant impact on local populations if the habitat is occupied by vernal pool crustaceans. Implementation of Mitigation Measure BIO-3 would minimize indirect impacts on and compensate for the loss of habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. As a result, this impact would be less than significant with mitigation incorporated.

Northern Western Pond Turtle

Less-than-Significant Impact. Channels and ponds in the WPIC provide suitable aquatic habitat for northern western pond turtle. However, the potential for direct injury or mortality of pond turtles during project construction is relatively low because no work would occur in aquatic habitat in the WPIC.

Pond turtles are unlikely to use uplands in the construction area, and instead are likely to remain in aquatic and upland habitats east of the project site. The levee does not provide suitable nesting substrate for pond turtles, and turtles are unlikely to traverse it to access landside uplands. In addition, human disturbance is much greater on the project site than along most portions of the WPIC, and uplands along the WPIC provide much higher quality nesting and hibernation habitat.

If individual pond turtles are present adjacent to construction areas when project activities begin, they are likely to leave areas of disturbance. The potential for death or injury of pond turtles as a result of project construction is low. In the unlikely event that such death or injury were to occur, the number of individuals affected would likely be very low.

Because potential impacts on pond turtles would likely be limited to a small number of individuals, the proposed action is unlikely to result in a substantial adverse effect on the species. This impact would be less than significant.

Giant Garter Snake

Less-than-Significant Impact with Mitigation Incorporated. There is no evidence that giant garter snakes occur in the project vicinity; however, very few surveys for the species have been conducted in the region, and populations could persist in areas of suitable habitat, including in the WPIC. No project activities would occur in suitable aquatic habitat for the snake, but project activities would temporarily disturb approximately 45 acres of suitable upland habitat within 200 feet of aquatic habitat, and access-road construction would result in the permanent loss of approximately 10 acres of grassland habitat. Ground-disturbing activities in these areas could result in displacement, injury, or death of individuals if giant garter snakes use the habitat for basking, hibernating, or aestivating.

Levee improvements were completed in 2006 and a transmission line along the levee toe was replaced in 2013. As a result, the levee slopes and landside uplands have been extensively disturbed in recent years. Soils in the disturbed areas are relatively compacted, and the levee shows almost no evidence of activity by burrowing mammals and provides very few opportunities for hibernation and aestivation. Therefore, the greatest potential for direct impacts on giant garter snake would likely occur along the haul route on the waterside bench, which could be used as basking habitat.

Because giant garter snake populations that may persist in the region are likely relatively small, the death or injury of an individual and permanent loss of suitable upland habitat would be potentially significant impacts as they could reduce the stability, survival, and/or productivity of the local population. Implementation of Mitigation Measure BIO-4 would minimize the potential for take of individuals and compensate for habitat loss. Therefore, this impact would be less than significant with mitigation incorporated.

Special-Status Birds

Less-than-Significant Impact with Mitigation Incorporated. The project site and vicinity provide suitable foraging and nesting habitat for six special-status bird species—Swainson's hawk, white-tailed kite, northern harrier, loggerhead shrike, Modesto song sparrow, and tricolored blackbird. Project activities would temporarily disturb foraging habitat for species that use grassland areas along the landside of the levee, but a relatively small amount of habitat would be affected and alternative foraging areas are present in the immediate vicinity.

Potential nesting habitat on the project site is very limited and of marginal quality, but vegetation removal and disturbance in fill areas in Reaches 2B and 5D and the access road corridor in Reach 5B could result in direct loss of active nests. In addition, noise and visual disturbances associated with project construction could adversely affect active nests of special-status birds present nearby. Adverse effects of sufficient magnitude could result in nest abandonment, a reduction in the level of care provided by adults (e.g., duration of brooding, frequency of

feeding), or forced fledging. This would be a potentially significant impact as it could reduce the stability, survival, and/or productivity of local populations. Implementation of Mitigation Measure BIO-5 would minimize disturbance and avoid the loss of active nests of special-status birds resulting from project activities. Therefore, this impact would be less than significant with mitigation incorporated.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Existing habitat conditions would not be modified, and no construction activities that could affect riparian habitat or other sensitive natural communities would occur, other than those potentially associated with the continuation of existing levee inspection and maintenance requirements. Under these conditions, excessive seepage and slope instability along certain levee segments would likely continue and the flood risk would remain high. If no action is taken to repair the deficient levee segments, a levee failure could damage or uproot riparian vegetation. Emergency levee repair work, cleanup and reconstruction after a flood event, and other activities in response to a levee breach also could result in the disturbance of riparian habitat. Therefore, the impact of the no-action alternative on such habitat would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. The proposed action would not require removal of any waterside riparian vegetation, and no work would occur in aquatic habitat in the WPIC. However, the construction area includes the waterside levee slope and bench at the top of the western bank of the WPIC in areas where a cutoff wall would be constructed. A portion of the waterside slope would be degraded to accommodate cutoff-wall construction, and levee material would be temporarily stockpiled on the waterside bench in these areas. Levee degradation and waterside stockpiling of material have the potential to indirectly affect aquatic habitat and vegetation if soils and/or contaminants enter the WPIC. This impact would be potentially significant as it could substantially degrade habitat quality. Implementation of Mitigation Measure BIO-1 would avoid and minimize potential adverse effects on habitat in the WPIC. As a result, this impact would be less than significant with mitigation incorporated.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Existing jurisdictional habitat conditions would not be modified, and no construction activities that could temporarily or permanently affect jurisdictional waters of the United States would occur, other than those potentially associated with the continuation of existing levee inspection and maintenance requirements. Under these conditions, excessive seepage and slope instability along certain levee segments would likely continue and the flood risk would remain high. If no action is taken to repair the deficient levee segments, a levee failure could occur along the WPIC West Levee and result in fill or

contamination of seasonal wetlands landside of the levee. Emergency cleanup and repair work and related earthmoving activities following a levee breach could also result in disturbance or fill of waters of the United States. Therefore, the impact of the no-action alternative on federally protected wetlands would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. A total of 1.35 acres of seasonal wetlands and 0.20 acre of willow scrub along the landside of the WPIC West Levee are expected to be verified by USACE as waters of the United States. The seasonal wetlands would be filled as a result of construction of the access road and landside berms, landside fill, and grading to alleviate ponding near the levee toe in Reaches 3, 4A, 4D, 5B, 5C, and 5D. The willow scrub would be partially affected by access-road construction in Reach 5B. Additional seasonal wetlands adjacent to the project site would not likely be indirectly affected because field evaluation of the topography and hydrologic conditions indicate that project construction is unlikely to alter their hydrology. Aquatic habitat in the WPIC adjacent to the project site is a water of the United States and, therefore, regulated under Section 404 of the CWA. The proposed action would not affect this habitat directly, but levee degradation and waterside stockpiling of material have the potential to indirectly affect aquatic habitat if soils and/or contaminants enter the WPIC.

Fill of seasonal wetlands and potential indirect impacts on waters of the United States in the WPIC would be a significant impact. Implementation of Mitigation Measure BIO-6 would avoid and minimize potential adverse effects on federally protected wetlands. As a result, this impact would be less than significant with mitigation incorporated.

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?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. No important movement corridors or wildlife nursery sites exist in the area that would likely be subject to flood inundation. Therefore, no impact on a wildlife corridor or wildlife nursery site would occur.

PROPOSED ACTION

Less-than-Significant Impact. A wildlife corridor is generally a topographical or landscape feature or movement area that connects two open-space habitat parcels that otherwise would be entirely fragmented or isolated from one another. The project site does not serve as a wildlife corridor and no wildlife nursery sites are known to occur in the project vicinity. Wildlife likely use the adjacent WPIC as a movement corridor, but project construction is unlikely to substantially disrupt such movement because the corridor is relatively wide and would provide movement opportunities in areas away from construction disturbance. Therefore, this impact would be less than significant.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. If no action is taken to repair the deficient levee segments, a levee failure could occur along the WPIC West Levee. Emergency cleanup and repair work and related earthmoving activities after a levee breach could result in erosion and damage to or removal of trees, wetlands, and salmonid habitat that are addressed in the Natural Resources Element of the 2030 General Plan (Yuba County 2011a). Therefore, cleanup and repair work could conflict with the county policies protecting biological resources, and the impact of the no-action alternative would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. The Natural Resources Element of the 2030 General Plan (Yuba County 2011a) includes several policies and actions designed to protect natural resources, specifically trees, wetlands, and riparian and salmonid habitats.

Policy NR10.1 indicates that building placement, grading, and circulation should be planned to retain as much existing native vegetation as feasible, with a priority on preserving existing oak trees that have a diameter at breast height (dbh) of 6 inches or greater and all other trees that have a dbh of 30 inches or greater. In addition, Action NR10.1 indicates that Yuba County will adopt a tree preservation ordinance by 2015 that addresses native oaks and large trees and describes how significant impacts are to be determined. No such ordinance has been adopted to date. A small portion of the oak woodland habitat in Reach 5B would be removed to accommodate the landside berm and access road. This area supports relatively few oak trees, most of which are likely less than 6 inches dbh, but several larger native oaks may be present and could be removed. A small area of scrub habitat would be removed in Reach 2B, but this area does not support and oak trees of 6 inches or greater or large trees of other native species. Because the proposed action was designed to avoid tree removal to the extent feasible and a tree preservation ordinance has not been adopted, the proposed action would not conflict with this policy and action.

Action NR5.1 of the Natural Resources Element requires delineation of rivers, streams, lakes, ponds, or wetland features that could be affected by a proposed project. As indicated previously, a preliminary wetland delineation has been completed but has not been verified by USACE.

Policy NR5.7 indicates that new developments and public investments near Yuba County's streams and rivers shall be designed to avoid tree removal, erosion, or other modifications that would adversely affect salmonid habitat. Levee degradation and waterside stockpiling of material under the proposed action have the potential to indirectly affect aquatic habitat in the WPIC that could be occasionally used by salmonids. In addition, Action NR5.3 requires implementation of setbacks from wetlands and riparian areas located near proposed private and public projects. The proposed action would result in fill of 1.35 acres of seasonal wetlands and loss of 0.20 acre of willow scrub along the landside of the levee and includes project activities immediately adjacent to aquatic habitat and vegetation in the WPIC. Therefore, the project would conflict with Policy NR5.7 and Action NR5.3, resulting in a significant impact. Implementation of Mitigation Measures BIO-1 and BIO-6 would minimize conflict with local policies and ordinances. As a result, this impact would be less than significant with mitigation incorporated.

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?

NO-ACTION ALTERNATIVE

No Impact. No adopted federal habitat conservation plan (HCP), state natural community conservation plan (NCCP), or other approved local, regional, or state conservation plan currently exists for Yuba County. Yuba and Sutter Counties, in collaboration with CDFW, USFWS, and NMFS, are developing a regional conservation plan that will be a joint federal HCP and state NCCP; however, the plan has not yet been approved and it is speculative to assume approval. Therefore, the no-action alternative would not conflict with an adopted HCP or similar plan, and no impact would occur.

PROPOSED ACTION

No Impact. The proposed action would not conflict with any provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP. Yuba and Sutter Counties, in collaboration with CDFW, USFWS, and NMFS, are developing a regional conservation plan that will be a joint federal HCP and state NCCP; however, the plan has not yet been approved and it is speculative to assume approval. Therefore, the proposed action would not conflict with an adopted HCP or similar plan, and no impact would occur.

3.5.3 MITIGATION

Mitigation Measure BIO-1: Minimize Potential Indirect Effects on Special-Status Plant Habitat in the Western Pacific Interceptor Canal.

TRLIA and its construction contractor(s) will implement the following measure to reduce potential effects on special-status plants:

Before on-site construction activities begin, the construction area boundaries shall be fenced to clearly delineate the extent of project activities. Silt fencing shall be used along waterside construction area boundaries and access routes to minimize the potential for indirect effects on aquatic habitat in the WPIC, in which special-status plants could occur.

Timing: Before ground-disturbing activities in or adjacent to areas supporting suitable habitat for special-status plant species.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure BIO-2: Avoid and Minimize Impacts on Elderberry Shrubs.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential effects on habitat for valley elderberry longhorn beetle:

- A worker awareness training program shall be conducted for all construction personnel before they start work on the project. The program shall summarize relevant laws and regulations that protect biological resources and discuss sensitive habitats and species, the role of biological monitors, applicable avoidance and minimization measures to protect species and habitats, and the penalties for not complying with such measures. Proof of training shall be provided to USFWS.

- Before on-site construction activities begin, fencing shall be placed to clearly delineate the extent of project activities and provide a buffer around elderberry shrubs to prevent accidental damage during construction activities. USFWS shall be consulted regarding the appropriate size of the buffers, but to the maximum extent feasible, fencing shall be placed a minimum of 20 feet from the dripline of elderberry shrubs that could be damaged by project activities.

- A biological monitor shall conduct inspections of the construction area to ensure that impact avoidance and minimization measures are properly implemented. A report of monitoring activities and observations shall be prepared and provided to USFWS upon completion of project activities.

- Signs shall be placed on fencing in the vicinity of elderberry shrubs, stating: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and it must not be disturbed. This species is protected by the Endangered Species Act. Violators are subject to prosecution, fines, and imprisonment." The signs shall be clearly readable from a distance of 20 feet and shall be maintained throughout the construction period.

- Dust control measures shall be implemented for all ground-disturbing activities associated with Reach 1B construction activities and along the haul route to Reach 2B. These measures may include applying water to haul routes and other unvegetated areas in which equipment is operating. To avoid attracting Argentine ants, no water shall be sprayed within the dripline of an elderberry shrub.

- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant shall be used or stored within 100 feet of elderberry shrubs adjacent to the construction area.

- Areas of ground disturbance within 100 feet of elderberry shrubs shall be restored to pre-project conditions when construction activities are complete.

Timing: Before and during ground-disturbing activities.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure BIO-3: Minimize Potential for Indirect Impacts on and Compensate for Fill of Suitable Habitat for Vernal Pool Crustaceans.

TRLIA and its construction contractor(s) will implement the following measures to reduce and compensate for potential effects on vernal pool fairy shrimp and vernal pool tadpole shrimp:

- Before on-site construction activities begin, the construction area boundaries shall be fenced to clearly delineate the extent of project activities. Silt fencing shall be used to delineate the boundaries of landside construction areas and the haul route to Reach 2B where suitable habitat for vernal pool crustaceans is present adjacent to the project site.

- TRLIA shall coordinate with USFWS to develop and implement an appropriate mitigation strategy to compensate for habitat loss. Mitigation would likely include purchasing preserved and restored or created vernal pool habitat at a USFWS-approved mitigation bank. Appropriate mitigation ratios shall be developed during consultation with USFWS but are anticipated to be based on 3 acres of habitat

preservation and 1 acre of habitat creation for each acre of habitat loss. TRLIA shall obtain incidental take authorization if deemed necessary by USFWS. The performance standard is anticipated to be no net loss of vernal pool crustacean habitat.

Timing: Before ground-disturbing activities in areas supporting suitable habitat for special-status vernal pool crustaceans.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure BIO-4: Minimize Potential for Take of Giant Garter Snake and Compensate for Loss of Upland Habitat.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential effects on giant garter snake:

- Unless specifically authorized by USFWS and CDFW, construction activities within 200 feet of aquatic habitat within the WPIC shall not begin before May 1. Initial ground disturbance in all construction areas shall be completed by October 1, and construction activities shall be completed as soon thereafter as possible.

- Before on-site construction activities begin, silt fencing shall be installed along the construction area boundaries and access routes on the waterside of the levee to prevent accidental vehicle incursion, minimize the potential for water quality degradation, and deter snakes from entering construction areas.

- A worker awareness training program shall be conducted for all construction personnel before they start work on the project. The program shall summarize relevant laws and regulations that protect biological resources and discuss sensitive habitats and species, the role of biological monitors, applicable avoidance and minimization measures to protect species and habitats, and the penalties for not complying with such measures. Proof of training shall be provided to USFWS and CDFW.

- Construction areas shall be surveyed for giant garter snakes by a qualified biologist within 24 hours before on-site project activities begin. Additional surveys shall be conducted within 24 hours before initial ground disturbance begins. Surveys shall be repeated after any lapse in construction activity of 2 weeks or longer.

- A biological monitor shall conduct inspections of the construction area to ensure that impact avoidance and minimization measures are being implemented properly. A report of monitoring activities and observations shall be prepared and provided to USFWS and CDFW upon completion of project activities.

- If deemed appropriate by the biological monitor, an escape ramp shall be placed at each end of any trench left open when construction activities are finished for the day, to allow animals that may have become trapped in the trench to climb out overnight. The ramp may be constructed of dirt fill, wood planking or other suitable material placed at an angle no greater than 30 degrees.

- No snakes shall be harassed, harmed, or killed, and they shall be allowed to leave the construction area on their own volition. If a possible giant garter snake is observed retreating into an underground burrow or is otherwise stationary within the construction area, construction activities shall not begin or shall cease immediately in the reach where the snake is present, the biological monitor shall be notified immediately, and appropriate actions shall be taken to minimize potential for harm of the snake.

- After completion of construction activities, all temporary flagging, fencing, and/or barriers shall be removed from the project site. All disturbed soil surfaces shall be revegetated during the same construction season that disturbance occurs. Levee slopes, stability berms, fill areas, and other uplands disturbed during project activities shall be hydroseeded with a quick-growing and sterile mix of at least 30% locally native grass and forb seeds.

- TRLIA shall coordinate with USFWS and CDFW to develop and implement an appropriate mitigation strategy to compensate for habitat loss and potential take of giant garter snake. Mitigation would likely include purchasing created giant garter snake habitat at a USFWS- and CDFW-approved mitigation bank (e.g., Sutter Basin Conservation Bank). Appropriate mitigation ratios shall be developed during consultation with USFWS and CDFW but are anticipated to be based on 3 acres of mitigation habitat for every 1 acre of habitat permanently lost and/or 1 acre of mitigation habitat for every 1 acre of waterside habitat that is disturbed. Mitigation habitat shall include aquatic and upland components at a ratio of 2 acres of upland for each acre of aquatic. TRLIA shall obtain incidental take authorization if deemed necessary by USFWS and/or CDFW. The performance standard is anticipated to be no net loss of giant garter snake habitat.

Mitigation Measure BIO-5: Minimize Disturbance and Potential Loss of Active Nests of Special-Status Birds.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential effects on nesting special-status birds:

- Focused surveys for Swainson's hawk and other nesting raptors shall be conducted by a qualified biologist before on-site project activities begin. To the extent feasible, surveys shall follow guidelines provided in *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). A minimum of one survey shall be conducted no more than 14 days before project activities begin. Surveys for Swainson's hawk nests shall include all accessible areas of suitable nesting habitat located within 0.25 mile of areas subject to project disturbance, and surveys for other raptors shall include accessible suitable nesting habitat within 500 feet of project disturbance.

- If active raptor nests are found, appropriate buffers shall be established and maintained around the nest sites to avoid nest failure resulting from project activities. The appropriate size and shape of the buffers shall be determined by a qualified biologist and may vary depending on the species, nest location, nest stage, and construction activity. The buffers may be adjusted if a qualified biologist determines that such an adjustment would not be likely to adversely affect the nest. Monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting

birds or their young. No project activity shall begin within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use.

- Surveys for the colonially nesting tricolored blackbird shall include suitable habitat within up to 1,000 feet of areas subject to project disturbance, depending on the potential extent of indirect impact. Surveys for loggerhead shrike and song sparrow shall include suitable habitat within up to 200 feet of the disturbance areas, depending on the species and potential for impact. Surveys shall be conducted within 10 days before on-site project activities begin in a given area during the migratory bird nesting season (March 1–August 31).

- If any active nests of tricolored blackbird, loggerhead shrike, or song sparrow are observed, or behaviors indicating the presence of active nests are observed, appropriate buffers around the nest sites shall be determined by a qualified biologist and maintained to avoid nest failure resulting from project activities. The size of the buffer shall depend on the species, nest location, nest stage, and specific construction activities to be performed while the nest is active. The buffers may be adjusted if a qualified biologist determines that such an adjustment would not be likely to adversely affect the nest. If buffers are adjusted, monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting birds or their young. No project activity shall begin within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use.

Mitigation Measure BIO-6: Minimize Potential for Indirect Impacts on and Compensate for Fill of Waters of the United States.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential effects on federally protected wetlands to “no net loss”:

- Before on-site construction activities begin, the construction area boundaries shall be fenced to clearly delineate the extent of project activities. Silt fencing shall be installed along the construction area boundaries and access routes on the waterside of the levee and shall be used to delineate the boundaries of the landside construction area and the haul route to Reach 2B where seasonal wetlands are present adjacent to the project site.

- A Section 404 permit for fill of seasonal wetlands along the landside of the levee and Section 401 certification shall be obtained before any groundbreaking activity begins within 50 feet of, or fill or dredged material is discharged into, any wetland or other water of the United States. All requirements for any permits obtained shall be fulfilled in the time frames required by the permits.

- Permanent fill shall be compensated on a “no-net-loss” basis. The specific acreages, locations, and methods used for such replacement or restoration shall be agreeable to USACE and the Central Valley Regional Water Quality Control Board (RWQCB) (depending on agency jurisdiction), as determined during the Section 404 and Section 401 permitting processes, respectively. Compensation for loss of seasonal wetlands is anticipated to be partially fulfilled through the purchase of vernal pool credits at a mitigation bank to compensate for loss of vernal pool crustacean habitat, upon USACE approval. Any additional mitigation requirement would likely be fulfilled through purchase of

seasonal wetland credits at a USACE-approved mitigation bank (e.g., Colusa Basin Mitigation Bank). The performance standard is anticipated to be no net loss of jurisdictional habitat.

Residual Impact after Mitigation Measures

Implementation of Mitigation Measures BIO-1 through BIO-6 will result in a less-than-significant impact on biological resources.

3.6 CULTURAL RESOURCES

3.6.1 ENVIRONMENTAL SETTING

CULTURAL RESOURCES

Information on cultural resources presented in this section is based on the *Cultural Resources Inventory and Evaluation Report for the Bear River and Western Pacific Interceptor Canal Levee Improvements Project, Yuba County, California* (Jones & Stokes 2004) and "The Central Valley: A View from the Catbird's Seat" in *California Prehistory: Colonization, Culture, and Complexity* (Rosenthal et al. 2007).

Prehistoric Era

There is little archaeological evidence that humans used the Central Valley during the late Pleistocene and early Holocene (12,000–6000 B.C.). The most likely explanation for the lack of evidence is a deficiency in the archaeological record, rather than an absence of human use; most Pleistocene- and Holocene-era sites are deeply buried in accumulated gravels and silts, or have eroded away.

The earliest archaeological evidence of human use of the Central Valley dates to approximately 3000 B.C., in the Early Horizon period (6000–2000 B.C.). During this period, a generalized subsistence strategy is thought to have been replaced by a more specialized strategy. This intensification is exhibited in what Fredrickson (1973 in Jones & Stokes 2004) has identified as the Windmiller Pattern. Artifact assemblages and faunal remains at Windmiller sites indicate that a diverse range of resources was exploited, including seeds, small game, and fish.

The Middle Horizon period dates from approximately 2000 B.C. to A.D. 500. Sites from this period also have been found in the Central Valley. The adaptive pattern most frequently apparent during this period is called the Berkeley Pattern (Fredrickson 1973 in Jones & Stokes 2004), although sites displaying Windmiller Pattern assemblages also have been dated to the Middle Horizon. The Berkeley Pattern differs from the Windmiller Pattern primarily through an increased emphasis on the exploitation of acorns as a staple. In the archaeological record, acorn exploitation is evidenced by more numerous and varied mortars and pestles. The Berkeley Pattern also is noted for its especially well-developed bone-tool industry and such technological innovations as ribbon flaking of chipped stone artifacts. During the Middle Horizon period, flexed burials replaced extended burials and the use of grave goods generally declined.

The Late Horizon period is defined as occurring between A.D. 500 and the arrival of the Spanish in central California. The predominant pattern during this period is called the Augustine Pattern (Fredrickson 1973 in Jones and Stokes 2004). This pattern is characterized by large village sites, increased acorn and nut processing, the introduction and use of bows and arrows, and the use of clam shell disc beads as the primary medium of exchange. During the last part of the Late Horizon period, cremation became a common mortuary practice.

Ethnographic Context

The project area was inhabited ethnographically by the Nisenan, or Southern Maidu, during the period recorded ethnographically by early Euro-American arrivals. Nisenan territory comprised the drainages of the Yuba, Bear, and American Rivers, as well as the lower drainages of the Feather River. The Nisenan, together with their northern neighbors the Maidu and Konkow, form the Maiduan language family of the Penutian linguistic stock. Kroeber (1925 in Jones & Stokes 2004) noted three dialects: Northern Hill Nisenan, Southern Hill Nisenan, and Valley Nisenan. Other researchers made finer dialect distinctions.

The smallest social and political unit was the family. Each extended family was represented by a leader. These family leaders were called to council by a headman. The headman served as an advisor to a village. The headman of the dominant village in a cluster of villages (tribelet) had the authority to call on the surrounding villages to resolve social and political situations. The duties of the headman were to advise his people, call and direct special festivities, arbitrate disputes, act as an official host, and call the family leaders to council. The position of headman was usually hereditary but could be chosen. A woman could serve in this position if a suitable male relative was not available.

It appears that the Nisenan located their settlements based primarily on elevation, exposure, and proximity to water and other resources. Permanent villages were usually located on low rises along major watercourses. Villages ranged in size from three houses to up to 40 or 50. Houses were domed structures covered with earth and tule or grass and measured 10–15 feet in diameter. Brush shelters were used in the summer and at temporary camps during food-gathering rounds. Larger villages often had semisubterranean dance houses, which were covered in earth and tule or brush and had a central smokehole at the top and an east-facing entrance. Another common village structure was a granary, used for storing acorns.

The Nisenan occupied permanent settlements from which specific task groups set out to harvest the Central Valley's seasonal bounty of flora and fauna. The Valley Nisenan economy involved riverine resources, in contrast with the Hill Nisenan, whose resource base consisted primarily of acorns and game. The only domestic plant was native tobacco, but many wild species were closely husbanded. The acorn crop from the blue oaks and black oaks was managed so carefully that it served as the equivalent of agriculture and could be stored against winter shortfalls in resources. Deer, rabbit, and salmon were the chief sources of animal protein in the aboriginal diet, but many other insect and animal species were taken when available.

Historic Era

Europeans first explored the area that is now Yuba County in 1808, when Spanish explorer Gabriel Moraga led an expedition from Mission San Jose to the northern Sacramento Valley. The earliest Euro-American settlement in what is now Yuba County coincided with the establishment of land grants by the Mexican government. John A. Sutter obtained the first such grant, the New Helvetia Rancho, in 1841. The New Helvetia Rancho encompassed lands on the east bank of the Feather River.

European-Americans settled what present-day Yuba County intensively during the California Gold Rush. Beginning in 1849, prospectors and entrepreneurs overran the streams of the Sierra Nevada, including the Yuba River, in search of riches. Placer miners initially established claims and settlements on watercourses, and then gradually worked back from the flats adjacent to streams, ridges, and hillsides. The flood of 1850 prompted

miners to work areas located above the high-water mark of the Yuba River. By 1857, hydraulic mining began to replace the placer methods.

Agriculture and stock raising were the primary industries in the present-day Yuba County region during the 19th century. The Gold Rush precipitated growth in agriculture and ranching, as ranchers and farmers realized handsome returns from supplying food and other goods to miners. Frequent floods, however, plagued the residents of the Feather Bear floodplain and posed a significant threat to the viability of agricultural interests and further settlement of Yuba County.

Initial efforts at flood control were usually uncoordinated, consisting of small levees and drains constructed by individual landowners. These efforts proved insufficient to protect cultivated land, and much land east of the Feather River remained marshland that was unsuitable for agriculture. In 1861, the state legislature created the State Board of Swampland Commissioners to reclaim swamp and overflow lands. The board established 32 districts that attempted to enclose large areas with natural levees. Lack of cooperation among landowners within the districts led to chronic financial crisis. When the legislature terminated the State Board of Swampland Commissioners in 1866, responsibility for swamp and overflow land fell to the individual counties. Many counties offered incentives to landowners for reclaiming agriculturally unproductive land. If a landowner could certify that he or she had spent at least $2 per acre in reclamation, the county would refund the purchase price of the property to the owner. Speculators took advantage of this program, and a period of opportunistic and often-irrational levee building followed.

In 1908, residents of Yuba County had formed RD 784, which includes land in the project area. The district was formed partially in response to the flood of 1907. At the time of its formation, RD 784 encompassed 22,762 acres of land, much of which was owned by the Farm Land Investment Company. RD 784 built substantial levee and drainage systems to restrain floodwaters from the Bear and Feather rivers and incorporated levees built by the Farm Land Investment Company and other landowners.

In 1911, the newly established State Reclamation Board took jurisdiction over reclamation districts, including RD 784. That year, with approval from the State, the Sacramento Flood Control Plan was implemented. The plan proposed an ambitious program of construction of levees, weirs, and bypasses along the river. In 1920, RD 784 voters approved a plan to improve levees along the Yuba, Bear, and Feather rivers and to improve drainage in the vicinity of Messick Lake, Plumas Lake, and other backwater marshes along the Feather River. USACE assisted RD 784 with the construction of a levee system at the eastern boundary of the district. Reclamation efforts in RD 784 promoted settlement and development of the land between Rio Oso and Marysville. Presently the district covers roughly 29,000 acres.

Regulatory Setting

Section 106 of the National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their undertakings, or those they fund or permit, on properties that may be eligible for listing, or that are listed in the National Register of Historic Places (NRHP). The regulations in 36 C.F.R. § 60.4 describe the criteria used to evaluate cultural resources for inclusion in the NRHP. Cultural resources can be significant on the federal, state, or local level. Such resources are required to retain integrity and must exhibit an association with broad patterns

of our history, be associated with an important person, embody a distinctive characteristic, or yield information important to prehistory or history.

The NRHP is a register maintained by the Secretary of the Interior that identifies districts, sites, buildings, structures, and objects of significance in American history, architecture, archaeology, engineering, and culture. A property may be listed in the NRHP if it meets criteria for evaluation defined in 36 C.F.R. § 60.4:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:
>
> A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B) That are associated with the lives of persons significant in our past; or
>
> C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D) That have yielded, or are likely to yield, information important in prehistory or history.

The regulations implementing Section 106 call for consultation with the State Historic Preservation Officer (SHPO), Indian tribes, and interested members of the public throughout the process. The four principal steps are as follows:

1) Initiate the Section 106 process (36 C.F.R. § 800.3).

2) Identify historic properties, resources eligible for inclusion in the NRHP (36 C.F.R. § 800.4).

3) Assess the effects of the undertaking to historic properties in the area of potential effects (36 C.F.R. § 800.5).

4) Resolve adverse effects (36 C.F.R. § 800.6).

Adverse effects on historic properties often are resolved through preparation of a memorandum of agreement or a programmatic agreement developed in consultation with the lead federal agency, the SHPO, Indian tribes, and interested members of the public. The Advisory Council on Historic Preservation is also invited to participate.

CEQA

CEQA provides a broad definition of what constitutes a cultural or historical resource. Cultural resources can include traces of prehistoric habitation and activities, historic-era sites and materials, and places used for traditional Native American observances or places with special cultural significance. In general, any trace of human activity more than 50 years in age must be treated as a potential cultural resource.

CEQA states that if a project would have significant impacts on important cultural resources, then alternative plans or mitigation measures must be considered. However, only significant cultural resources (termed "historical resources") need to be addressed. The State CEQA Guidelines define a historical resource as a resource listed or eligible for listing in the California Register of Historical Resources (CRHR) (PRC Section 5024.1). A resource may be eligible for inclusion in the CRHR if it:

1) is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2) is associated with the lives of persons important in our past;

3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4) has yielded, or may be likely to yield, information important in prehistory or history.

The State CEQA Guidelines also require consideration of unique archaeological resources (Section 15064.5). As used in PRC Section 21083.2, the term "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1) contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information;

2) has a special and particular quality, such as being the oldest of its type or the best available example of its type; or

3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition to meeting one or more of the above criteria, resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

Yuba County 2030 General Plan

The *Yuba County 2030 General Plan* (Yuba County 2011) contains a goal, policies, and actions regarding cultural resources. Goal NR6, Cultural Resources, is to identify, protect, and preserve Yuba County's important prehistoric and historic resources.

The following policies were adopted to support Goal NR6:

- **Policy NR6.1:** New developments involving the movement, scraping, or levelling of soil in areas of moderate or high potential for prehistoric resources shall conduct archeological background research, site analysis, and surveying to inform site design and avoid impacts to prehistoric sites.

- **Policy NR6.2:** The County will require environmental assessment and mitigation for impacts to cultural resources, per state and federal legislation and regulation.
- **Policy NR6.3:** If potential paleontological or prehistoric resources are detected during construction, work shall stop and consultation is required to avoid further impacts.
- **Policy NR6.4:** Roads, water and sewer lines, and stormwater infrastructure should be located to avoid impacts to significant cultural resources.
- **Policy NR6.5:** The County will encourage adaptive reuse of historic structures in a way that maintains important aspects of the historic character.
- **Policy NR6.6:** Priority investment should go to preserving or rehabilitating historic structures that are grouped in close proximity, are particularly good examples of a specific architectural style, or are associated with important people or events in the County's history.
- **Policy NR 6.7:** The County will disseminate information to property owners regarding tax incentives and other federal and state programs that support the rehabilitation of historic structures.

Action NR6.1 states that development projects that could have significant adverse impacts on prehistoric or historic resources will be required to assess impacts and provide mitigation. The following steps, or those deemed equally effective by Yuba County, would be followed as part of the proposed action:

- Request information from the Native American Heritage Commission (NAHC) regarding Native American groups that may have important sites in areas that could be affected by project development.
- Involve the local Native American community in determining the appropriate mitigation of impacts on significant prehistoric sites.
- Consult the county's historic and cultural resources database and updated information from the North Central Information Center regarding cultural resources sites, structures, or landscapes that could be affected by project activities.
- Avoid potential impacts on significant cultural resources to the greatest extent feasible through project site planning.
- Retain a qualified professional archaeologist or architectural historian, as appropriate, to complete the determination of impacts, significance, and mitigation.
- If impacts are unavoidable, mitigate to a less-than-significant level.
- Provide the North Central Information Center with appropriate California Department of Parks and Recreation site record forms and cultural resources reports.
- Require a professional archaeologist to monitor ground-disturbing activities in areas of high prehistoric resource sensitivity.

PALEONTOLOGICAL RESOURCES

Geologic Setting

The project site is located on the eastern side of the Sacramento Valley, southeast of the Sutter Buttes. Most of the surface of the Sacramento Valley is covered with alluvium of Holocene age (i.e., 11,700 years Before Present [B.P.] to present day) and Pleistocene age (i.e., 11,700–1,800,000 years B.P.). This alluvium is composed of sediments from the Sierra Nevada to the east and the Coast Ranges to the west that were carried by water and deposited on the valley floor.

A review of geologic maps prepared by Wagner et al. (1987), Saucedo and Wagner (1992), and William Lettis & Associates, Inc. (2014) indicates that the project site is underlain by the following geologic formations:

- **Levee and channel deposits.** These are Holocene-age deposits of active stream channels and their natural levees, as well as adjacent broad alluvial fans.
- **Basin deposits.** These are Holocene-age fine-grained deposits of silt and clay in flood basins between modern watercourses (locally including marsh deposits).
- **Modesto Formation.** This formation is Pleistocene in age and can be divided into upper and lower members. The upper member is composed primarily of unconsolidated, unweathered gravel, sand, silt, and clay. This unit may range in age from 9,000 to 26,000 years B.P. The lower member is composed of consolidated, slightly weathered gravel, sand, silt, and clay. Age estimates for the lower member range from 29,000 to 73,000 years B.P. In the project vicinity, the Modesto Formation forms primarily alluvial terraces, but also some alluvial fans, from existing rivers and streams; these terraces are topographically higher than the underlying terraces and fans of the Riverbank Formation (Helley and Harwood 1985).
- **Riverbank Formation.** This formation is Pleistocene in age; estimates place the age between 130,000 and 450,000 years B.P. (Marchand and Allwardt 1981). In the project vicinity, the Riverbank Formation forms higher alluvial fans and terraces of major rivers and can be divided into upper and lower members. Sediments in the Riverbank Formation consist of weathered reddish gravel, sand, and silt that form alluvial terraces and fans. In the Sacramento Valley, this formation contains more mafic rock fragments than the San Joaquin Valley and thus tends toward stronger soil-profile developments that are more easily distinguishable from the younger Modesto Formation (Helley and Harwood 1985).

Paleontological Resources Inventory

Background research was conducted to develop a baseline paleontological resource inventory of the study area and to establish the paleontological sensitivity of each geologic unit present. Each geologic formation exposed in the study area was assigned a paleontological sensitivity based on the number of previously recorded fossil sites from that unit and the scientific importance of the fossil remains recorded. These methods are consistent with Society of Vertebrate Paleontology guidelines (SVP 1995) for assessing the importance of paleontological resources.

Geologic maps and available published and unpublished geological and paleontological literature covering the bedrock and surficial geology of the study area were reviewed to determine the exposed and subsurface rock units, to assess the potential paleontological productivity of each rock unit, and to delineate their respective areal

distribution in the study area. The number and location of previously recorded fossil sites from rock units exposed in the study area and the types of fossil remains that each rock unit has produced were evaluated based on published and unpublished geological and paleontological literature.

The literature review was supplemented by a records search of the University of California, Berkeley Museum of Paleontology (UCMP) on February 10, 2015 (UCMP 2015).

Paleontological Resources Assessment by Rock Unit

Levee and Channel Deposits/Basin Deposits

The levee and channel deposits, as well as the basin deposits, are of Holocene age. By definition, to be considered a unique paleontological resource, a fossil must be more than 11,700 years old. Holocene deposits contain only the remains of extant, modern taxa (if any resources are present), which are not considered "unique" paleontological resources. Therefore, these formations are considered to be of low paleontological sensitivity.

Modesto and Riverbank Formations

The Pleistocene epoch, known as the "great ice age," began approximately 1.8 million years ago. Based on his survey of vertebrate fauna from the nonmarine late Cenozoic deposits of the San Francisco Bay region, Savage (1951) concluded that two major divisions of Pleistocene-age fossils could be recognized: the Irvingtonian (older Pleistocene fauna) and the Rancholabrean (younger Pleistocene and Holocene fauna). The age of the later Pleistocene, Rancholabrean fauna was based on the presence of bison and on the presence of many mammalian species that inhabit the same area today. In addition to bison, larger land mammals identified as part of the Rancholabrean fauna include mammoths, mastodons, camels, horses, and ground sloths.

Remains of land mammals have been found throughout the Central Valley at various localities in alluvial deposits referable to the Modesto and Riverbank Formations. Jefferson (1991a, 1991b) compiled a database of California late Pleistocene vertebrate fossils from published records, technical reports, unpublished manuscripts, information from colleagues, and inspection of museum paleontological collections at more than 40 public and private institutions. He listed hundreds of sites that have yielded Rancholabrean vertebrate fossils that could be referrable to the Modesto and Riverbank Formations throughout the Central Valley.

Several localities near the cities of Davis and Woodland have yielded the remains of Rancholabrean-age rodents, snakes, horses, antelope, Harlan's ground sloth, mammoth, and saber-toothed tiger from sediments referable to the Riverbank Formation (Hay 1927; UCMP 2015). Three sites in Sutter County have yielded Rancholabrean vertebrate fossils recovered from Pleistocene-age sediments. UCMP locality V-3915 on Oswald Road (approximately 5.5 miles west of the project site) yielded remains from a Pleistocene-age bison in sediments referable to the Modesto Formation. UCMP locality V-6426 near Gilsizer Slough, approximately 10 miles west of the project site, yielded a vertebra from a Pleistocene (Irvingtonian) age Proboscidea (an order that includes mammoths, mastodons, and elephants) in sediments referable to the Modesto Formation. UCMP locality V-4043 in the Sutter Buttes yielded remains from a Pleistocene-age horse in sediments referable to the Riverbank Formation.

At least nine Rancholabrean-age vertebrate fossil sites are recorded from the Riverbank Formation in Sacramento County. The most recent of these was the July 2, 2004, discovery of Pleistocene-age mammoth remains during paleontological monitoring of trenching activities in Elk Grove for the Sacramento Municipal Utility District

(Kolber 2004). Mammoth remains recovered from the site included a tusk, ribs, teeth, and portions of a shoulder blade. UCMP locality V-74086, located in south Sacramento at Ehrhardt Avenue, also contained fossilized Rancholabrean-age mammoth remains. The other UCMP sites in Sacramento—localities V-6747, V-6846, V-68141, V-69129, and V-75126—contained remains of Rancholabrean-age bison, camel, coyote, horse, Harlan's ground sloth, mammoth, woodrat, fish, mole, snake, and gopher. Pleistocene-age fossils were recovered from the Riverbank Formation at the ARCO Arena site (Hilton et al. 2000), and included remains of Harlan's ground sloth, bison, coyote, horse, camel, squirrel, antelope or deer, and mammoth. Finally, San Diego Society of Natural History locality 0663 (Jefferson 1991a, 1991b) included fossil specimens of Rancholabrean-age horse and camel recovered from sediments in Sacramento.

Fossil specimens from the Riverbank Formation have been reported by Marchand and Allwardt (1981) near the type locality in the city of Riverbank. These authors also reported fossil specimens from the Modesto Formation near its type locality in the city of Modesto.

In the Stockton area, UCMP locality V-4822 at Lincoln Village yielded a Rancholabrean-age horse specimen. Locality V-5107, near SR 99 at Mormon Slough, yielded seven specimens from a Rancholabrean-age Columbian mammoth, horse, and unidentified carnivore. Hay (1927) reported remains of camel, horse, and mammoth at another site in Stockton.

Several fossil specimens from a Columbian mammoth were recovered during construction activities in the *Central Lathrop Specific Plan* area, in the city of Lathrop, from sediments of the Modesto Formation.

Specimens from sediments referable to the Modesto Formation have been reported at other locations throughout the Central Valley (UCMP 2015). For example, UCMP localities V-3315, V-4807, V-4808, V-4809, V-4810, V-4819, and V-66150 along the Delta Mendota Canal west of Tracy yielded numerous specimens from bison, mammoth, ground sloth, horse, and gopher. In the same area, the Wagner's Aqueduct site, V-70122, yielded three specimens from the class Osteichthyes (bony fishes). Localities V-4804 and V-4867 from the Reiche Gravel Pit, west of the Delta Mendota Canal, yielded three specimens of horse and mammoth remains. Locality V-66150 at the Tracy Gravel Pit yielded a specimen of Jefferson's ground sloth, while locality V-3315 at the Hetch Hetchy Tunnel yielded remains from a Rancholabrean-age camel.

Near Modesto, locality V-81119, along Woodland Avenue, yielded one specimen of a Rancholabrean-age camel. Locality V-3959, near the Tuolumne River, yielded one Rancholabrean-age horse specimen. Locality V-81120, listed as "North Avenue, Modesto," yielded one specimen of a Rancholabrean-age bison. Locality V-72007, approximately 3 miles north of the city center, yielded three Rancholabrean-age specimens of Jefferson's ground sloth and mammoth.

In addition, the "Tranquility" site in Fresno County (locality V-4401) has yielded more than 130 Rancholabrean-age fossils of fish, turtles, snakes, birds, moles, gophers, mice, wood rats, voles, jack rabbits, coyote, red fox, grey fox, badger, horse, camel, pronghorn antelope, elk, deer, and bison from sediments referable to the Modesto Formation.

The results of the UCMP (2015) paleontological records search indicated that no fossil remains have been recorded within the project site. However, the occurrence of Pleistocene vertebrate fossil remains in sediments referable to the Modesto and Riverbank Formations throughout the Central Valley indicates that these are paleontologically sensitive rock formations.

3.6.2 ENVIRONMENTAL CONSEQUENCES

METHODS

Cultural Resources

AECOM cultural resources staff members performed the current archaeological and historical investigations for the proposed action. These investigations included a records search conducted at the Northeast Information Center (NEIC Report #W15-16) and the North Central Information Center (NCIC Report #YUB-15-2) on January 29 and February 2, 2015, respectively. A sacred lands request was submitted to the NAHC on January 29, 2015. A response from the NAHC was sent on February 20, 2015. The NAHC response indicated that a search of the sacred lands file failed to indicate the presence of any Native American resources in the project area. The NAHC letter also provided a list of Native American representatives who might have knowledge regarding cultural resources in the project area. The NAHC suggested contacting these representatives for possible further information. A letter was sent to the Native American representatives on February 26, 2015. A pedestrian surface survey of the project site was performed February 3 and 4, 2015; the results of the investigation are presented below.

The records search identified four previously recorded cultural resources within the project boundaries and a 0.5-mile search radius. The resources located within the project area include P-58-1372 (a segment of the UPRR); P-58-1374 (a refuse scatter dating to circa 1940s or later); P-58-1744 (associated transformer for the UPRR); and P-58-2580 (two high-tension steel electrical transmission towers). Of these, only the UPRR segment (P-58-1372) was recommended eligible for listing in the NRHP (Jones & Stokes 2004) and is listed on the Directory of Properties in the Historic Property Data File for Yuba County. In addition, RD 784 is itself a historic-era resource. RD 784 and its related features (WPIC and associated levees, drains, ditches, culverts, and pumps) were evaluated in 1994 by JRP Historical Consulting Services. Jones & Stokes found none of the resources eligible for the NRHP, either individually or as part of a system.

A segment of the RD 784 levee system (Unit No. 145) was assessed to consider USACE Project levees in the context of being part of a larger system of planned and engineered flood control measures in California. The portion of Unit No. 145 that is located in the project area appears to meet NRHP criteria as a contributing element of the larger RD 784 levee system that was developed as part of the Sacramento River Flood Control Project, a flood control program implemented throughout the region in the early 20th century. The segment is not individually eligible; however, it is an integral part of this system that contributed to comprehensive flood control and related agriculture development in the greater Sacramento Valley. Although the individual levee segment has been modified through periodic maintenance and upgrades which have affected integrity of feeling to some degree, levee Unit No. 145 generally retains its original alignment and its overall integrity of location, setting, and association. Some related features such as the pump and culverts are no longer extant. However, their removal does not detract from the overall integrity of the resource when considered under the new USACE evaluation criteria for Project levees.

An archaeological pedestrian survey was conducted for all portions of the project area except those that were underneath standing water. Only RD 784's Unit No. 145 and the UPRR (P-58-1372H) could be relocated. The associated railroad transformer, P-58-1744, was probably destroyed during levee improvements that occurred after resource recordation in 2000. Resource P-58-1374H was not observed at the location listed on its Primary Record; it also was likely destroyed during recent improvement efforts. The dual towers of P-58-2580 are no

longer present, as they were removed as part of the PG&E transmission line replacement project completed in 2013. No new resources were identified during the pedestrian survey.

Paleontological Resources

The project's potential impacts on paleontological resources were evaluated using the significance criteria set forth in Appendix G of the State CEQA Guidelines, which state that a project would have a significant impact on paleontological resources if it would directly or indirectly destroy a unique paleontological resource or site. For this analysis, a unique resource or site is one that is considered significant under the following professional paleontological standards.

A paleontologically important rock unit is one that has a high potential paleontological productivity rating and is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed at the project site refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit. Exposures of a specific rock unit at the project site are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in other locations.

An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:

- a type specimen (i.e., the individual from which a species or subspecies has been described);
- a member of a rare species;
- a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;
- a skeletal element different from, or a specimen more complete than, those now available for its species; or
- a complete specimen (i.e., all or substantially all of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Marine invertebrates are generally common; the fossil record is well developed and well documented, and they would generally not be considered a unique paleontological resource. Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare.

IMPACTS

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. If no action is taken to repair the deficient levee segments, a levee failure and flooding could occur, potentially damaging or destroying historical resources. Therefore, impacts associated with historical resources would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. The UPRR (P-58-1372) is a historical resource located in the project area. The project site crosses the resource only at the far southern end of the project boundary. The proposed action does not include any components that would directly affect the UPRR, and any indirect impacts, such as visual impacts, would be only temporary. P-58-1744 could not be relocated and has likely been destroyed since it was last updated. P-58-2580 was removed in 2013. Therefore, impacts to these previously recorded resources would be less than significant.

A segment of the RD 784 levee is also located in the project area. The levee segment, Unit No. 145, appears to meet NRHP eligibility and is therefore considered a historical resource for the purposes of CEQA. It is a small but integral part of a larger USACE Project levee system that contributed to flood control and agricultural development in the Sacramento Valley. The levee segment would retain its integrity of location, setting, and association and the resource's function as a levee would not be altered. Because levee Unit 145 would still convey its historical significance as a component part of a larger flood-control system, the impact would be less-than-significant.

The possibility remains that the project may cause a substantial adverse change in the significance of unidentified historic resources. Because of the possibility for damage to a previously unidentified significant cultural resource, this impact would be potentially significant. Implementing Mitigation Measure CUL-1, identified below, would reduce any impact to a less-than-significant level. Therefore, this impact would be less than significant with mitigation incorporated.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. If no action is taken to repair the deficient levee segments, a levee failure and flooding could occur. Such failure could introduce sediments and/or scour surfaces where archaeological resources are located,

potentially resulting in fill and/or degradation of these resources. Therefore, impacts associated with archaeological resources would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. The pedestrian survey did not identify any new archaeological resources within the project boundary. The record search conducted for the project did identify one archaeological resource, P-58-1374H (a refuse scatter dating to circa 1940s or later). The refuse scatter was not located during the pedestrian survey and it has likely been destroyed since it was first reported. Given the extensive, recent project activity that has occurred entirely within the current project boundary, it is unlikely that any unidentified archeological resources are present within the project boundary. Nonetheless, it is still possible that significant archaeological resources could be discovered within the project boundary. If present, significant buried archaeological resources could be adversely affected by construction activities, including grading and excavation. Therefore, this impact would be potentially significant. Implementing Mitigation Measure CUL-1, identified below, would reduce the potential impact associated with the project's potential to disturb previously unidentified archaeological resources to a less-than-significant level. Therefore, this impact would be less than significant with mitigation incorporated.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. If no action is taken to repair the deficient levee segments, a levee failure and flooding could occur. Such failure could introduce sediments and/or scour surfaces where unique paleontological resources or geologic features are located, potentially resulting in damage or destruction of these resources. Therefore, impacts associated with unique paleontological resources and geologic sites would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. The levee and channel deposits, as well as the basin deposits, are of Holocene age. Holocene deposits contain only the remains of extant, modern taxa (if any resources are present), which are not considered "unique" paleontological resources. Therefore, these formations are considered to be of low paleontological sensitivity and project-related earthmoving activities in these formations would have a less-than-significant impact on unique paleontological resources.

However, as discussed in detail above in Section 3.6.1, "Environmental Setting," hundreds of Pleistocene-age vertebrate fossils have been recovered from the Modesto and Riverbank Formations throughout the Central Valley, including locations near the project site in Sutter County, and in Sacramento County and farther south in the San Joaquin Valley. Therefore, the Modesto and Riverbank Formations are considered paleontologically sensitive. Thus, project-related earthmoving activities in these formations would have a potentially significant impact on unique paleontological resources. Mitigation Measure CUL-2, described below, has been identified to address this impact. Implementing Mitigation Measure CUL-2 would reduce potentially significant impacts related to damage or destruction of unique paleontological resources to a less-than-significant level because

construction workers would be alerted to the possibility of encountering paleontological resources and, in the event that resources were discovered, fossil specimens would be recovered and recorded and would undergo appropriate curation. Therefore, this impact would be less than significant with mitigation incorporated.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. If no action is taken to repair the deficient levee segments, a levee failure and flooding could occur. Such failure could introduce sediments and/or scour surfaces where human remains are located, potentially resulting in disturbance or damage of remains. Therefore, impacts associated with human remains would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. There is no indication that any area on the project site has been used for human burial purposes in the recent or distant past, and human remains are unlikely to be encountered during construction under the proposed action. However, in the unlikely event that human remains, including those interred outside of formal cemeteries, are discovered during subsurface activities, the human remains could be inadvertently damaged. Therefore, this potential impact would be potentially significant. Implementing Mitigation Measure CUL-3, identified below, would reduce potentially significant impacts related to disturbance of human remains to a less-than-significant level. Therefore, this impact would be less than significant with mitigation incorporated.

3.6.3 MITIGATION

Mitigation Measure CUL-1: Avoid Potential Effects on Previously Undiscovered Archaeological Resources.

To minimize the potential for destruction of or damage to previously undiscovered archaeological resources during project-related earthmoving activities, TRLIA and its construction contractor(s) will implement the following measure:

- Before the start of any project-related earthmoving activities, TRLIA shall retain a qualified archaeologist to train all construction personnel involved with earthmoving activities, including the site superintendent, regarding the possibility of encountering archaeological resources, the appearance and types of resources likely to be seen during construction, and proper notification procedures should archaeological resources be encountered.

- If buried or previously unidentified archaeological resources are discovered during project activities, all work within a 100-foot radius of the find shall cease. TRLIA shall hire a professional archaeologist meeting the *Secretary of the Interior's Professional Standards for Archaeologists* to assess the discovery and recommend what, if any, further treatment or investigation is necessary for the find. Any necessary treatment/investigation shall be coordinated with TRLIA, USACE, and the SHPO and shall be completed before project activities continue in the vicinity of the find.

Timing: During all construction phases.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure CUL-2: Avoid Potential Effects on Previously Undiscovered Paleontological Resources.

To minimize the potential for destruction of or damage to potentially unique, scientifically important paleontological resources during project-related earthmoving activities, TRLIA and its construction contractor(s) will implement the following measures:

- Before the start of any project-related earthmoving activities, TRLIA shall retain a qualified paleontologist to train all construction personnel involved with earthmoving activities, including the site superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered.

- If paleontological resources are discovered during earthmoving activities, the construction crew shall notify TRLIA and shall immediately cease work in the vicinity of the find. TRLIA shall retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines (1996). The recovery plan may include but is not limited to a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by TRLIA to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Timing: During all construction phases.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure CUL-3: Avoid Potential Effects on Undiscovered Burials.

To minimize the potential for destruction of or damage to undiscovered burials during project-related earthmoving activities, TRLIA and its construction contractor(s) will implement the following measure:

In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, all ground-disturbing work potentially damaging excavation in the area of the burial and a 100-foot radius shall halt and the Yuba County Coroner shall be notified immediately. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The NAHC shall designate a Most Likely Descendant for the human remains. After the coroner's findings have been made, an archaeologist meeting the *Secretary of the Interior's Professional Standards for Archaeologists* and the NAHC-designated Most Likely Descendant shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The

responsibilities of Yuba County for acting upon notification of a discovery of Native American human remains are identified in PRC Section 5097.9.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. TRLIA shall ensure that the procedures for the treatment of Native American human remains contained in California Health and Safety Code Sections 7050.5 and 7052 and PRC Section 5097 are followed.

Timing: During all construction phases.

Responsibility: TRLIA and its construction contractor(s).

Residual Impact after Mitigation Measures

Implementation of Mitigation Measures CUL-1, CUL-2, and CUL-3 will result in a less-than-significant impact on cultural resources.

3.7 GEOLOGY, SOILS, AND GEOMORPHOLOGY

3.7.1 ENVIRONMENTAL SETTING

The project area is located in the eastern part of the Sacramento Valley on a floodplain associated with the ancestral Yuba River. This floodplain is crossed by three main southeast-draining creeks: the Leach Road Channel, the Best Slough Channel, and the Plumas Lake Channel. The topography has been modified in historic time by deposition of sediments from hydraulic mining, and by minor grading for agricultural development, excavation of local borrow pits, and placement of fill associated with roadway and levee construction (TRLIA 2014a).

As discussed in detail in the description of paleontological resources (see Section 3.6), the project area is underlain by levee and channel deposits, basin deposits, and the Modesto and Riverbank Formations (Wagner et al. 1987; Saucedo and Wagner 1992; William Lettis & Associates, Inc. 2014).

Approximately 34 soil borings to maximum depths ranging from 16.5 to 61.5 feet were obtained from the project area in 2013. The results of these borings indicate that subsurface conditions generally consist of clay near the ground surface, underlain by layers of sand and silt (TRLIA 2014a:Table 3 and Appendix B). Approximately 12 surface soil samples were also collected, which indicated a surface soil composition primarily of clay or gravel, with silt or sand depending on location (TRLIA 2014a:Table 7).

The project area is not located in a seismically active area. The closest fault classified as “active” by the California Geological Survey (CGS) is the Cleveland Hills Fault near Lake Oroville, approximately 20 miles to the north. Other known active faults are generally located in the Coast Ranges, approximately 30–40 miles west of the project area.

3.7.2 ENVIRONMENTAL CONSEQUENCES

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

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? (Refer to California Geological Survey Special Publication 42.)

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. No known faults are located within or adjacent to the project area. Therefore, the exposure to people or structures including the risk of loss, injury, or death involving the rupture of an earthquake fault under the no-action alternative would be the same as or similar to the exposure under current conditions, which is negligible. This impact would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact. The project area is not located within or adjacent to an Alquist-Priolo Earthquake Fault Zone (CGS 2012) or any other known fault. The nearest fault zoned under the Alquist-Priolo Fault Zoning Act is the northern segment of the Cleveland Hills Fault located near Lake Oroville, approximately 20 miles to the north. Because the damage from surface fault rupture is generally limited to a linear zone a few yards wide, the potential for surface fault rupture to cause damage to the proposed levee improvements is negligible. In addition, the liquefaction analysis conducted for the project area showed any seismically induced settlement of the levee would be minimal and no additional material is needed as part of the proposed levee improvements to restore the levee crown to maintain a water surface elevation for a 10-year flood event due to liquefaction-induced settlement. The design, construction, and maintenance of the proposed levee improvements have been designed to comply with the regulatory standards of the ULDC, USACE, and Central Valley Flood Protection Board (CVFPB). Therefore, the design and construction of all levee modifications would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, subsidence, and seepage. Although the proposed action would strengthen the levee over the no-action alternative and reduce the potential impact from earthquakes, a small risk from earthquake damage would remain. This impact would be less than significant.

ii) Strong seismic ground shaking?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. No known faults are located within or adjacent to the project area; therefore, under the no-action alternative, the risk of strong seismic ground shaking would be the same as or similar to the risk under existing conditions. Although the flood risk would remain, the terrain would not be subject to an increase in seismic ground shaking. There would be no impact.

PROPOSED ACTION

Less-than-Significant Impact. The project area is not located within or adjacent to a known fault zone or any faults known to be active during Holocene time. A magnitude 5.7 earthquake occurred in 1975 along the northern segment of the Cleveland Hills Fault (located approximately 20 miles north of the project area). Research conducted by DWR indicates that this earthquake most likely resulted from reservoir-induced stress (DWR 1989). CGS has classified the Cleveland Hills Fault as an active fault. Jennings (1994) indicates that the northern portion

of the Spenceville Fault near Camp Far West Reservoir (approximately 14 miles east of the project area) shows evidence of movement during the Pleistocene and potentially during Holocene time. Therefore, this fault may also be active, although it is not classified as such by CGS.

Both the Spenceville and Cleveland Hills Faults are part of the Foothills Fault System. The slip rate of the Foothills Fault System overall is extremely low (0.05 millimeter per year), which is well below the planning threshold for major earthquakes (Wills et al. 2008). With the exception of the Dunnigan Hills Fault, located in the Woodland area, the Sacramento Valley has generally not been seismically active in the last 11,700 years (Holocene time). Faults with known or estimated activity during the Holocene are generally located in the Coast Ranges, approximately 30–40 miles west of the project area.

All levee improvements would be designed based on the results of detailed geotechnical engineering studies performed previously (e.g., TRLIA 2014b) and would be required to comply with standard engineering practices for levee design. The project geotechnical report evaluated the steady-state seepage, steady-state stability, and seismic vulnerability of the WPIC levee, and provided design recommendations in accordance with the state's ULDC developed by DWR (TRLIA 2014b). The project is also subject to CVFPB standards (CCR Title 23, Division 1, Article 8, Sections 111–137). The ULDC and CVFPB standards direct that levees be designed and constructed in accordance with Engineer Manual 1110-2-1913, *Engineering Design and Construction of Levees* (USACE 2000), the primary federal standard applicable to levee improvements. In addition, engineering technical letters 1110-2-569, *Design Guidance for Levee Underseepage* (USACE 2005), and 1110-2-555, *Design Guidance on Levees* (USACE 1997), contain guidance that is applicable to the proposed levee design and reconstruction.

The design, construction, and maintenance of levee improvements have been designed to comply with the regulatory standards of the ULDC, USACE, and CVFPB. Therefore, the design and construction of all levee modifications would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, liquefaction, subsidence, and seepage. This impact related to strong seismic ground shaking would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, there would be no change to the levee. As described below, most of the WPIC levee is not subject to liquefaction. Because no construction activity would occur, the potential for seismic-related ground failure, including liquefaction, would be the same as or similar to the potential under existing conditions. Although the flood risk is increased, the terrain would still not be subject to an increase in seismic-related ground failure, including liquefaction. There would be no impact.

PROPOSED ACTION

Less-than-Significant Impact. A site-specific liquefaction analysis of the levee reaches that are included in the proposed action was performed by HDR, Inc. (TRLIA 2014b:17, 20, and 21). As discussed in the liquefaction analysis, for most of the WPIC levee, the factor of safety against liquefaction (FS_L) was found to be greater than 1.2 for the 200-year return period of seismically induced ground shaking. This result indicates that the levee would not be subject to liquefaction hazards. However, the FS_L was slightly exceeded at three locations where soil layers consisting of sandy silt, silt, and/or silty clay were encountered, at depths ranging from 17 to 69 feet.

Further analyses at these locations indicated that these soil layers are thin and discontinuous. Therefore, the WPIC levee would not be subject to liquefaction and any seismically induced settlement of the levee would be minimal.

Furthermore, the design, construction, and maintenance of levee improvements have been designed to comply with the regulatory standards of the ULDC, USACE, and CVFPB. Therefore, the design and construction of all levee modifications would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, liquefaction, subsidence, and seepage. This impact related to liquefaction would be less than significant.

iv) Landslides?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, there would be no changes to the levee. Because the project area is located in an area of nearly level terrain, and is not adjacent to any areas of steep terrain, there is no potential for a landslide. Although the flood risk is increased, the flat terrain would still not be subject to landslides. There would be no impact.

PROPOSED ACTION

No Impact. The project area is located in an area of nearly level terrain, and is not located adjacent to any areas of steep terrain where landslides would occur. Thus, no impact would occur.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding could substantially affect soil erosion and the loss of topsoil, depending on the magnitude of flooding. This would be a potentially significant impact.

PROPOSED ACTION

Erosion from Levee Seepage

Less-than-Significant Impact. Seepage beneath and through segments of the proposed levee could result in soil erosion and would pose a risk to the stability and reliability of the embankment. Underseepage occurs below the visible (aboveground) prism of a levee or embankment; it results when water pressure builds up in subsurface foundation soils during high river stages on the waterside of the embankments. This pressure can be great enough to force water through the earthen foundation layers beneath the embankment, causing the water to find a pathway of least resistance and exit at the landside ground surface. Such seepage is not uncommon; when it is excessive and uncontrolled, however, underseepage can carry fine-grained material with the water flow, potentially undermining the embankment and subsequently leading to embankment failure. Soil erosion also can occur as a result of through-seepage, which is seepage through an embankment that can occur during periods of high river stage. When through-seepage occurs, soil on the land side of the embankment may erode.

A site-specific seepage analysis of the levee reaches that are included in the proposed action was performed by HDR (TRLIA 2014b:18–19, 26–30, and Table 10). HDR determined that Reaches 1A, 1C, 2A, 2B, 2C, 4A, 4C, 4D, 4F, 5A, 5C, 6, and 7 of the WPIC levee meet the ULDC. However, Reaches 1B, 2B (with revised topography), 3, 4B, 4E, 5B, and 5D do not meet the ULDC and require remediation.

Several different types of actions to remediate levee seepage issues were modeled: conventional or deep mix method cutoff walls, relief wells, drained stability berms, undrained seepage berms, drained berms, and landside fill. For each remediation alternative, steady-state seepage and stability analyses were performed. Each cross section was analyzed for flood levels corresponding to the design water surface elevation plus 1 foot and the hydraulic top of levee. The results are provided in Appendix B to the HDR analysis (TRLIA 2014b) and were used to determine the most appropriate type of remedial measure that would be constructed at each levee reach under the proposed action (see Table 2-1 in Chapter 2, "Alternatives").

The design, construction, and maintenance of levee improvements would comply with the regulatory standards of the ULDC, USACE, and CVFPB. Therefore, the design and construction of all levee modifications would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, liquefaction, subsidence, and seepage. This impact related to erosion from levee seepage would be less than significant.

Erosion from Construction Activities

Less-than-Significant Impact with Mitigation Incorporated. Construction of the proposed action would include earthmoving activities that could result in soil erosion or loss of topsoil. The proposed action would involve constructing cutoff walls, berms, and an access road, as well as placing landside fill. These construction activities would require vegetation removal, grading, excavation, cut and fill, and stockpiling of materials over a large area. Construction activities would occur primarily during the dry season, during summer and fall in 2015 and/or spring to fall in 2016. It is anticipated that minimal work, if any, would occur during the period between December 1, 2015 and April 15, 2016, which would serve to reduce the potential for erosion and loss of topsoil. Based on a review of U.S. Natural Resources Conservation Service (NRCS) soil survey data, the project area consists of the Hollenbeck silty clay loam and San Joaquin loam soil types. These soils have a moderate wind and water erosion hazard, and fall into hydrologic soil groups C and D (indicating a moderate to high runoff rate) (NRCS 2014). Strong summer winds and water from storm events would loosen soil particles and could result in soil erosion and loss of topsoil. Therefore, this impact from construction-related erosion is considered potentially significant. Mitigation Measure HYDRO-1, described below, has been identified to address this impact.

Mitigation Measure HYDRO-1 requires preparing and implementing a storm water pollution prevention plan (SWPPP) as required by the Central Valley RWQCB. As part of the SWPPP, best management practices (BMPs) would be identified and employed to control erosion and sedimentation. Construction techniques (i.e., BMPs) that could be implemented to reduce the potential for runoff and to control erosion may include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. An erosion and sediment control plan is also required to prevent increased discharge of sediment from projects that entail grading within 50 feet of any watercourse. Thus, the SWPPP would also include an erosion and sediment control plan and BMPs that would specify the erosion and sedimentation control measures to be implemented, such as silt fences, trench plugs, terraces, water bars, and seeding and mulching (among others). Therefore, this impact from construction-related erosion would be less than significant with mitigation incorporated.

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?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. With no construction, the potential for subsidence or liquefaction under the no-action alternative would be the same as or similar to the subsidence or liquefaction potential under existing conditions. If no action were taken to repair the deficient levee reaches, the WPIC West Levee would remain noncompliant with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. High water in the WPIC could cause water to seep through pervious sandy soils, as well as under areas of impervious clay soils. Excessive seepage and slope instability could undermine the integrity of the levees and potentially lead to levee failure. This would be a potentially significant impact.

PROPOSED ACTION

Less-than-Significant Impact. The results of soil borings obtained from the project area indicate that subsurface conditions generally consist of clay near the ground surface, underlain by layers of silty and clayey sand, silt, and silty and sandy clay (TRLIA 2014a: Appendices B, G, I, K, and L). HDR performed a site-specific analysis that modeled the stability of each proposed remediation element at each levee reach. The modeling results indicate that the stability of each levee remediation reach would meet or exceed the factor-of-safety criteria (TRLIA 2014b: Table 11).

The design, construction, and maintenance of levee improvements would comply with the regulatory standards of the ULDC, USACE, and CVFPB. Therefore, the design and construction of all levee modifications would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, liquefaction, subsidence, and seepage. This impact related to construction on unstable soils is considered less than significant.

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

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Therefore, the risk to life or property under the no-action alternative would be the same as or similar to the risk under current conditions. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding could affect soils in the area. These impacts to expansive soils would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact. Expansive soils shrink and swell as a result of moisture change. Over time, these volume changes can result in damage to foundations, underground utilities, and other subsurface facilities and infrastructure, if they are not designed and constructed appropriately to resist the damage associated with changing soil conditions. Clay soils tend to be expansive. The results of soil borings obtained from the project area indicate that some of the subsurface soils contain moderate to high clay content, and therefore are expansive (TRLIA 2014a:Appendices B, G, I, K, and L). However, as described above, HDR performed a site-specific

analysis that modeled the stability of each proposed remediation element at each levee reach. The modeling results indicate that the stability of each levee remediation reach would meet or exceed the factor-of-safety criteria (TRLIA 2014b:Table 11).

The design, construction, and maintenance of levee improvements would comply with the regulatory standards of the ULDC, USACE, and CVFPB. Therefore, the design and construction of all levee modifications would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, liquefaction, subsidence, and seepage. This impact related to construction in expansive soils would be 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?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. No septic systems or alternative wastewater disposal systems exist in the project area; therefore, the no-action alternative would be the same as current conditions and no impact would occur.

PROPOSED ACTION

No Impact. The proposed action would entail construction of levee improvements and an access road. Portable (nondischarging) restroom facilities would be used temporarily during construction activities. No septic systems or alternative wastewater disposal systems would be required. Thus, no impact would occur.

3.7.3 MITIGATION

Mitigation Measure GEO-1: Implement Mitigation Measure HYDRO-1, "Prepare and Implement a Storm Water Pollution Prevention Plan and Associated Best Management Practices." This mitigation measure is described in Section 3.10, "Hydrology and Water Quality."

TRLIA and its construction contractor(s) will implement the following measures to protect water quality:

- During the development of grading permits and improvement plans, TRLIA will consult with Yuba County and the Central Valley RWQCB. The purpose of the consultation will be to acquire the regulatory approvals necessary to obtain a statewide National Pollutant Discharge Elimination System stormwater permit for general construction activity from the State Water Resources Control Board.

- TRLIA or its construction contractor shall prepare and implement the appropriate SWPPP to prevent prevent and control pollution and to minimize and control runoff and erosion. The SWPPP will identify the activities that may cause pollutant discharge (including sediment) during storms and BMPs that will be employed to control pollutant discharge. Construction techniques that will be identified and implemented to reduce the potential for runoff may include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. In addition, the SWPPP will include an erosion and sediment control plan and BMPs that specify the erosion and sedimentation control measures to be implemented, which may include silt fences, trench plugs, terraces, water bars, and seeding and mulching. The SWPPP also

will include a spill prevention, control, and countermeasure plan and applicable hazardous materials business plans, and will identify the types of materials used for equipment operation (including fuel and hydraulic fluids), and measures to prevent and materials available to clean up hazardous material and waste spills. The SWPPP will also identify emergency procedures for responding to spills.

- BMPs presented in either document shall be clearly identified and maintained in good working condition, with sufficient backup stock on-site during all site work and construction activities.
- The construction contractor will retain a copy of the approved SWPPP on the construction site and modify it as necessary to suit specific site conditions through amendments approved by the Central Valley RWQCB.

Timing: Before and during construction.

Responsibility: TRLIA and its construction contractor(s).

Residual Impact after Mitigation Measures

Implementation of Mitigation Measure GEO-1 will result in a less-than-significant impact on geology, soils, and geomorphology.

3.8 GREENHOUSE GAS EMISSIONS

3.8.1 ENVIRONMENTAL SETTING

Certain gases in the Earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. When high-frequency solar radiation (e.g., visible light) enters the Earth's atmosphere from space (i.e., the sun), a portion of the radiation is absorbed by the Earth's surface, and a smaller portion of this radiation (infrared radiation) is reflected back toward space. When infrared radiation comes into contact with GHGs in the atmosphere, a portion of that thermal energy can be absorbed by GHG molecules and/or re-radiated back toward the Earth's surface. Both outcomes result in a "trapping" of heat in the Earth's atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Without the greenhouse effect, Earth would not be able to support life as we know it.

Climate change is a global problem because GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for a long enough time to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, currently more carbon dioxide (CO_2) is emitted into the atmosphere than is sequestered. Carbon dioxide sinks, or reservoirs, including vegetation and the ocean, absorb CO_2 through photosynthesis and dissolution, respectively. These are two of the most common processes of CO_2 sequestration.

3.8.2 ENVIRONMENTAL CONSEQUENCES

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines and guidance from the FRAQMD. According to the Appendix G Checklist, the proposed action would result in a significant GHG emissions impact if implementation of the proposed action would:

- generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

In addition, because of the lack of established GHG emissions thresholds that would apply to the proposed action, other thresholds of significance applicable to the proposed action that are supported by substantial evidence and linked with the Assembly Bill (AB) 32 Scoping Plan Update (Scoping Plan) are used to provide context for the proposed action's GHG emissions. Therefore, to establish additional context in which to consider the order of magnitude of the project's construction-related and operational GHG emissions, this analysis takes into account the following considerations by other government agencies and associations about what levels of GHG emissions constitute a cumulatively considerable incremental contribution to climate change:

- Facilities (stationary, continuous sources of GHG emissions) that generate greater than 25,000 metric tons (MT) of carbon dioxide equivalent (CO_2e) per year are mandated to report their GHG emissions to the ARB pursuant to AB 32 (ARB 2011).
- Stationary sources that generate greater than 10,000 MT CO_2e per year may be required to participate in the cap-and-trade program through the Western Climate Initiative (WCI 2009).
- The BAAQMD has previously adopted 10,000 MT CO_2e per year as the significance threshold for operational GHG emissions from stationary-source projects (BAAQMD 2012).
- The Sacramento Metropolitan Air Quality Management District (SMAQMD) has previously adopted 1,100 MT CO_2e per year as a project-level GHG significance threshold for construction activities from development projects (SMAQMD 2014).

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. Cleanup actions (e.g., emergency response, reconstruction of infrastructure) in the event of a flood could generate substantial air quality emissions associated with on-road emergency vehicles and cleanup construction equipment.

A flood event could also result in damage to residences, commercial and industrial facilities, and infrastructure, and emissions associated with reconstruction could be substantial. This impact would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Construction under the proposed action would generate GHG emissions from emission sources such as heavy-duty construction equipment, haul trucks, and construction worker vehicles. Construction-related GHG emissions were modeled using the CalEEMod Version 2013.2.2 and ARB's on-road emissions inventory tool, EMFAC2011 (CAPCOA 2013; ARB 2013). Results of the modeling are provided in Appendix A. The methods described in Section 3.4, "Air Quality," for estimating air quality emissions were also used to estimate GHG emissions associated with the proposed action. Table 3.8-1 shows the proposed action's total GHG emissions and potential annual emissions. It has not yet been determined whether the proposed construction activities would occur in one or two construction seasons. Therefore, this analysis evaluates and presents both options and discusses their respective significance conclusions.

As shown in Table 3.8-1, the proposed action's total GHG emissions would be approximately 2,063 MT CO_2e, which would be the annual construction emissions if the proposed action is completed in one construction season. Therefore, under the one construction season scenario, the proposed action's GHG emissions would be considered significant. However, if the proposed action is implemented over two construction seasons (part of 2 consecutive years), the average annual emissions would be approximately 1,031 MT CO_2e per year, which would be less than the thresholds of significance for facilities and stationary sources, and less than the SMAQMD construction-specific threshold of significance. Accordingly, under the two construction season scenario, the proposed action's construction-related GHG emissions would be less than significant.

Table 3.8-1. Construction-Related Greenhouse Gas Emissions Associated with the Proposed Action

Construction Phase	Greenhouse Gas Emissions (MT CO_2e)
Phase 1—Clearing, Grubbing, and Stripping	184
Phase 2—Levee Degrade	222
Phase 3—Cutoff Wall Construction	345
Phase 4—Levee Reconstruction	1,158
Phase 5—Levee Resurfacing	90
Phase 6—Hydroseeding	22
Phase 7—Demobilization	42
Total GHG Emissions (one construction season)[1]	**2,063**
Annual GHG Emissions (two construction seasons)[2]	**1,031**

Notes: GHG = greenhouse gas; MT CO_2e = metric tons of carbon dioxide equivalent

[1] Construction emissions represent annual and total emissions if construction activities would occur in a single construction season (in 1 calendar year).

[2] Construction emissions represent average annual emissions if construction activities would occur over two construction seasons (in 2 calendar years).

Source: Data compiled by AECOM in 2015.

Nevertheless, to be conservative and evaluate a feasible worst-case scenario, this analysis uses the single-construction-season scenario to determine impacts. As shown in Table 3.8-1, the proposed action's 1-year construction emissions would be less than any of the thresholds of significance for facilities and stationary

sources, but would exceed SMAQMD's construction-specific threshold of significance. Therefore, in the absence of another more applicable threshold for construction activities, SMAQMD's construction-related GHG threshold was used to evaluate the proposed action's construction emissions.

It should also be noted that FRAQMD's Standard and Best Available Mitigation Measures listed in Section 3.4, "Air Quality," include multiple measures that would reduce GHG emissions from construction vehicles and equipment. The measures would require construction equipment to operate properly before use on the project site, which would ensure that equipment would be fuel efficient, thus minimizing fuel combustion and subsequent GHG emissions. Idling times for both equipment and vehicles would be limited to 5 minutes when not in use, which would save fuel and reduce GHG emissions. With respect to off-site construction impacts, the Standard Mitigation Measures also require that construction activities be planned to minimize impacts on traffic flow, which would reduce congestion and idling on local roadways.

Construction-related GHG emissions from construction equipment and vehicles also would be reduced through implementation of FRAQMD Standard and Best Available Mitigation Measures. Furthermore, the construction emissions would be short term and temporary and would cease following completion of the proposed action. Nevertheless, because the proposed action's potential annual construction emissions (i.e., one-construction-season emissions) would exceed the applicable, surrogate threshold of significance, the impact of the proposed action's construction emissions would be significant. Mitigation Measures GHG-1 and GHG-2, described below, have been identified to address this impact. If construction emissions are still determined to exceed the threshold with implementation of Mitigation Measures GHG-1, GHG-2, and GHG-3, implementation of Mitigation Measure GHG-4 (Purchase Carbon Offsets to Reduce Construction Emissions) would ensure the project's emissions are below the SMAQMD threshold of significance. With implementation of these mitigation measures, the proposed action's construction-related emissions would be reduced to a less-than-significant level. Therefore, this impact would be less than significant with mitigation incorporated.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. Cleanup actions (e.g., emergency response, reconstruction of infrastructure) in the event of a flood could generate substantial GHG emissions associated with on-road emergency vehicles and cleanup construction equipment. This would be inconsistent with the 2009 California Climate Adaptation Strategy (2009 CAS) regarding the need to upgrade flood risk reduction structures and reduce the risk of substantial future GHG emissions related to disaster cleanup and infrastructure repair following a flood event.

PROPOSED ACTION

Less than Significant. In addition to evaluating a project's GHG emissions, it is equally important to evaluate how a project's purpose and action is consistent with the goals of the Scoping Plan, which is the applicable GHG

reduction plan for the proposed action (ARB 2014). Projects that would be consistent with the applicable GHG reduction plan would be considered beneficial for the region and/or state to achieve its GHG reduction targets. The proposed action is not a land use development project that would generate vehicle trips and long-term operational emissions, or that would support a service population (employees or residents). Rather, the proposed action aims to upgrade and improve flood protection infrastructure to meet current standards and requirements.

The Scoping Plan includes measures that would indirectly address GHG emissions from construction activities, including the phasing-in of cleaner technology for diesel engine fleets (including construction equipment) and the development of a Low Carbon Fuel Standard. Policies formulated under the mandate of AB 32 that apply to construction-related activity, either directly or indirectly, are assumed to be implemented statewide and would affect the proposed action should those policies be implemented before construction begins. The proposed action's construction emissions would comply with any mandate or standards set forth by the Scoping Plan.

Although implementing the proposed action would cause temporary construction-related GHG emissions, the intent, purpose, and function align with the goals of the Scoping Plan to protect against the detrimental effects of climate change (i.e., flooding). The 2009 CAS is the most current plan adopted to guard against the detrimental effects of climate change (CNRA 2009). Because neither TRLIA nor any other agency with jurisdiction over the proposed action has adopted a climate change or GHG reduction plan with which the proposed action would conflict, this analysis also considers the proposed action's consistency with the 2009 CAS.

The 2009 CAS is not a GHG reduction plan, but it provides guidance on how to deal with detrimental climate change effects that would result in additional GHG emissions. Flooding events that damage or destroy homes would result in future GHG-intensive activities such as disaster cleanup, rebuilding houses, and reinstalling infrastructure. Accordingly, the 2009 CAS recommends upgrading and raising levees and other flood protection structures. Therefore, the proposed action's intent to upgrade and improve existing flood protection infrastructure would be consistent with the 2009 CAS' climate change protection goals.

Considering the information above regarding the Scoping Plan and 2009 CAS, the proposed action would be consistent with the applicable GHG reduction and climate change adaptation plans. Therefore, the proposed action would be consistent with the applicable GHG reduction (and adaptation) plan and this impact would be less than significant.

3.8.3 MITIGATION

Mitigation Measure GHG-1: Implement Mitigation Measure AQ-1, "Implement Feather River Air Quality Management District Standard Mitigation Measures." This mitigation measure is described in Section 3.4, "Air Quality."

As required for all projects located in FRAQMD's jurisdiction, TRLIA and its construction contractor(s) will implement the following Standard Mitigation Measures:

- Implement the Fugitive Dust Control Plan.
- Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40% opacity or Ringelmann 2.0).

- The contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of on-site operation.

- Limit idling time to 5 minutes—saves fuel and reduced emissions. (State idling rule: Commercial diesel vehicles—13 CCR Chapter 10, Section 2485, effective 02/01/2005; off-road diesel vehicles—13 CCR Chapter 9, Article 4.8, Section 2449, effective 05/01/2008.)

- Use existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.

- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.

Portable engines and portable engine-drive equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, may require ARB portable equipment registration with the state or local district permit. The owner/operator shall be responsible for arranging appropriate consultations with ARB or FRAQMD to determine registration and permitting requirements before equipment operation at the site.

Timing: During all construction activities.

Responsibility: TRLIA.

Mitigation Measure GHG-2: Implement Mitigation Measure AQ-2, "Implement Feather River Air Quality Management District Best Available Mitigation Measures for Construction Phase." This mitigation measure is described in Section 3.4, "Air Quality."

In accordance with FRAQMD's recommendation to implement the Best Available Mitigation Measures for Construction Phases if construction-related emissions continue to exceed FRAQMD thresholds of significance, TRLIA and its construction contractor(s) will implement the following measures:

- All grading operations on a project should be suspended when winds exceed 20 miles per hour (mph) or when winds carry dust beyond the property line despite implementation of all feasible dust control measures.

- Construction sites shall be watered as directed by the Department of Public Works or Air Quality Management District and as necessary to prevent fugitive dust violations.

- An operational water truck should be available at all times. Apply water to control dust as needed to prevent visible emissions violations and off-site dust impacts.

- On-site dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce windblown dust emissions. Incorporate the use of

approved nontoxic soil stabilizer according to manufacturer's specifications to all inactive construction areas.

- All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions.

- Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all inactive construction areas (previously graded areas that remain inactive for 96 hours), including unpaved roads and employee/equipment parking areas.

- To prevent track-out, wheel washers should be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out.

- Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the project site.

- Provide temporary traffic control as needed during all phases of construction to improve traffic flow, as deemed appropriate by the Department of Public Works and/or the California Department of Transportation and to reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 mph.

- Reduce traffic speeds on all unpaved surfaces to 15 mph or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, on-site enforcement, and signage.

- Reestablish ground cover on the construction site as soon as possible and prior to final occupancy, through seeding and watering.

- Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et al.) may be conducted at the project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials offsite for disposal by open burning.

Timing: During all construction activities.

Responsibility: TRLIA.

Mitigation Measure GHG-3: Implement Mitigation Measure AQ-3, "Use Tier 4 Equipment for All Construction Activities." This mitigation measure is described in Section 3.4, "Air Quality."

All heavy-duty construction equipment used for the proposed action shall be Tier 4 engines or achieve comparable emissions standards as those of Tier 4 engines.

Timing: During all construction activities.

Responsibility: TRLIA.

Mitigation Measure GHG-4: Purchase Carbon Offsets to Reduce Construction Emissions.

If the proposed action's annual construction-related GHG emissions would exceed the applicable, surrogate SMAQMD threshold of significance (1,100 MT CO_2e per year), TRLIA shall purchase carbon offset credits from an ARB-approved carbon registry to offset the construction-related GHG emissions to a less-than-significant level. If the proposed action is implemented over two construction seasons, construction-related GHG emissions would be less than the applicable threshold and no mitigation is required.

Timing: Before construction activities and after completion of the proposed action.

Responsibility: TRLIA.

Residual Impact after Mitigation Measures

Even with implementation of Mitigation Measure GHG-1, it is anticipated that construction-related emissions would continue to exceed the FRAQMD thresholds of significance. FRAQMD recommends that projects that implement the Standard Mitigation Measures, but continue to exceed the thresholds of significance, implement the Best Available Mitigation Measures for Construction Phases. Mitigation Measure GHG-2 addresses this impact.

Implementation of Mitigation Measures GHG-1, GHG-2, GHG-3, and GHG-4 will result in a less-than-significant impact on GHG emissions.

3.9 HAZARDS AND HAZARDOUS MATERIALS

3.9.1 ENVIRONMENTAL SETTING

Most of the area east of the WPIC West Levee is used for agricultural production. The area west of the WPIC West Levee consists of agricultural lands and developed uses include the community of Plumas Lake at the southern end of the levee and the community of Arboga near the northern end of the levee.

HAZARDOUS MATERIALS

AECOM searched several publicly available databases maintained under PRC Section 65962.5 (i.e., the "Cortese List") to determine whether any known hazardous materials are present either within or immediately adjacent to the WPIC West Levee.

The SWRCB maintains the Geotracker database, an information management system for groundwater. Data on leaking underground storage tanks and other types of soil and groundwater contamination, along with associated cleanup activities, are part of the information that SWRCB must maintain under PRC Section 65962.5. The SWRCB's GeoTracker database indicates that there are several cleanup and disposal sites west of the project area

along Feather River Road and in the city of Olivehurst; however, these sites are all 2 or more miles from the project area (SWRCB 2015).

The Hazardous Waste and Substances Site List (the "EnviroStor" database) is maintained by the California Department of Toxic Substances Control (DTSC) as part of the requirements of PRC Section 65962.5. According to DTSC, there is an ongoing evaluation at the Waterworks Certainteed Corporation, approximately 1.25 miles east of the project area along Plumas Arboga Road (DTSC 2015). Several other evaluations of schools and military facilities occurred near the project area, but evaluations concluded that no further action was required.

AIRPORTS

The nearest public airport, the Yuba County Airport, is located approximately 2.3 miles northwest of the northernmost part of the WPIC. The Van Dyke Strip Airport is the nearest private airstrip, located approximately 8 miles southeast of the southernmost part of the WPIC.

FIRE HAZARD

Wildland fires represent a substantial threat in California, particularly during the hot, dry summer months in more isolated areas where steep topography, limited access, and heavy fuel loading contribute to hazardous conditions. Wildland fires may be started by natural processes, primarily lightning, or by human activities. The California Department of Forestry and Fire Protection (CAL FIRE) has established a fire hazard severity classification system to assess the potential for wildland fires. The zones depicted on CAL FIRE maps take into account the potential fire intensity and speed, production and spread of embers, fuel loading, topography, and climate (e.g., temperature and the potential for strong winds). The classification system provides three classes of fire hazards: Moderate, High, and Very High. According to CAL FIRE (2007), the project area is located in a moderate fire hazard severity zone.

PRC Sections 4125–4137 require the designation of State Responsibility Areas (SRAs) (based on the amount and type of vegetative cover, beneficial water uses, probable erosion damage, fire risks, and hazards) where the financial responsibility of preventing and suppressing fires falls primarily on the State of California. Fire protection outside the SRAs is the responsibility of local or federal agencies. The project area is located within a Local Responsibility Area (CAL FIRE 2007). See Section 3.15, "Public Services," for detailed information about fire protection services.

3.9.2 ENVIRONMENTAL CONSEQUENCES

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

NO-ACTION ALTERNATIVE

Potentially Significant. Under the no-action alternative, TRLIA would not implement the remedial construction measures. With no construction activity, there would be no routine transport and handling of hazardous substances and no exposure of workers and the environment to hazardous materials. If no action is taken to repair the deficient levee segments, however, a levee failure and flooding could occur potentially resulting in the need for extensive flood recovery effects. Routine transport and handling of hazardous substances and exposure of workers and the environment to hazardous materials could occur. Floodwaters have the potential to entrain toxic

substances into the water, including gasoline, lubricants, insecticides, pesticides, sewage, and other petroleum-based products. Therefore, impacts associated with the potential transport and handling of hazardous substances during flood recovery efforts would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact. Construction of the proposed action would involve the routine transport and handling of hazardous substances, such as diesel fuels and lubricants. Various state agencies regulate the transport and handling of hazardous materials, including the California Environmental Protection Agency and the California Emergency Management Agency. Regulated activities would be managed by Yuba County Division of Environmental Health, the designated Certified Unified Program Agency for Yuba County, in accordance with the regulations included in the Unified Program. The California Highway Patrol and California Department of Transportation enforce regulations for transport of hazardous materials. DTSC has primary regulatory authority for enforcing hazardous-materials regulations, as outlined in CCR Title 22. The California Occupational Health and Safety Administration has developed rules and regulations regarding worker safety around hazardous and toxic substances. Because construction activities would be required to implement and comply with existing hazardous material regulations, and because each of these regulations is specifically designed to protect the public health, impacts related to the creation of significant hazards to the public through routine, transport, use, disposal, and risk of upset would be less than significant.

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

NO-ACTION ALTERNATIVE

Potentially significant. Under the no-action alternative, TRLIA would not implement the remedial construction measures. With no construction activity, there would be potential to create a hazard to the public or the environment through accidental release of hazardous materials. If no action is taken to repair the deficient levee segments, a levee failure and flooding could occur potentially resulting in the need for extensive flood recovery effects. The flood itself or flood recovery efforts could result in the release of hazardous materials into the environment. Floodwaters have the potential to entrain toxic substances into the water, including gasoline, lubricants, insecticides, pesticides, sewage, and other petroleum-based products. Therefore, impacts associated with the potential to release hazardous materials into the environment would be potentially significant.

PROPOSED ACTION

Less than Significant Impact. Construction under the proposed action would require the use and storage of hazardous materials during construction. Staging areas would be used to store construction materials, equipment, spoils, and excess material. As discussed previously in this section, various state agencies regulate the use of hazardous materials. Because construction activities would be required to implement and comply with existing hazardous material regulations, and because each of these regulations is specifically designed to protect the public health, impacts related to the accidental release of hazardous materials during construction that results in the exposure of workers and the environment to hazardous materials would be less than significant.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Therefore, no impact would occur without flood conditions. If no action is taken to repair the deficient levee segments, however, a levee failure and flooding could occur potentially resulting in the need for extensive flood recovery effects. Routine transport and handling of hazardous substances could occur within one-quarter of a mile of one of the existing schools located within 1 mile of the study area. Therefore, impacts associated with hazardous materials within one-quarter mile of an existing school would be potentially significantly.

PROPOSED ACTION

No Impact. No existing or proposed schools are located within one-quarter mile of the WPIC West Levee. Riverside Meadows Intermediate School and Cobblestone, Rio del Oro, and Arboga Elementary Schools, are located approximately 0.4 mile, 0.5 mile, 0.6 mile, and 0.7 mile, respectively, west of the project area. Therefore, construction of the proposed action would not result in emissions or handling of hazardous wastes within one-quarter mile of an existing or proposed school. No impact would occur.

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, would it create a significant hazard to the public or the environment?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Therefore, no impact would occur.

PROPOSED ACTION

No Impact. A search of publicly available databases maintained by SWRCB (2015) and DTSC (2015) indicates that there are no known active, open cases of hazardous materials contamination within or near the WPIC West Levee. Implementing the proposed action would not occur on a hazardous materials site identified in databases maintained under PRC Section 65962.5. Therefore, no impact would occur.

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, would the project result in a safety hazard for people residing or working in the project area?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Therefore, no impact would occur.

PROPOSED ACTION

No Impact. There are no public airports within 2 miles of the WPIC West Levee. The nearest public airport, the Yuba County Airport, is located approximately 2.3 miles northwest of the northernmost part of the WPIC West Levee. Implementing the proposed action would not create a hazard associated with airport operations for people residing or working in the project area. Therefore, no impact would occur.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Therefore, no impact would occur.

PROPOSED ACTION

No Impact. There are no private airstrips within 2 miles of the WPIC West Levee. The nearest private airstrip, the Van Dyke Strip Airport, is located approximately 8 miles southeast of the southernmost part of the WPIC West Levee. Implementing the proposed action would not create a safety hazard associated with airport operations for people residing or working in the project area. Therefore, no impact would occur.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, transportation systems, including SR 70, could be substantially adversely affected in the area between the WPIC West Levee and the Feather River. If a levee were to fail, roadway flooding could substantially affect the ability of local residents to evacuate the area and affect the ability of emergency responders to move through the Plumas Lake area. Therefore, this impact would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact. Commuter trips by construction workers and haul routes for imported and exported materials would be along public streets, including Feather River Boulevard, Algodon Road, Plumas-Arboga Road, and SR 70. Reaches 5B and 5D may be accessed directly from northbound SR 70, but the highway would remain open during construction. Plumas-Arboga Road crosses the levee at the southern end of Reach 4B and would remain open during construction. Maintenance of the WPIC West Levee would not entail additional commute trips on local or regional roadways, nor would it alter any designated emergency access routes. Implementing the proposed action would not impair or interfere with an emergency response plan or emergency evacuation plan. Therefore, this impact would be less than significant.

h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Therefore, no impact would occur.

PROPOSED ACTION

Less-than-Significant Impact. The WPIC West Levee is not within a high fire hazard severity zone (CAL FIRE 2007), and adequate fire protection services are available. Implementing the proposed action would not create new housing or other structures and, therefore, would not expose people or structures to a substantial increased risk associated with wildland fires. Furthermore, access to the site and surrounding residences would be maintained during construction in accordance with Yuba County fire policies and regulations. However, with any construction activities, there is the potential for wildland fires. Therefore, this impact would be less than significant.

3.9.3 MITIGATION

Mitigation Measure HAZ-1: Implement Mitigation Measure HYDRO-1, "Prepare and Implement a Storm Water Pollution Prevention Plan and Associated Best Management Practices." This mitigation measure is described in Section 3.9, "Hydrology and Water Quality."

TRLIA and its construction contractor(s) will implement the following measures to protect water quality:

- During the development of grading permits and improvement plans, TRLIA will consult with Yuba County and the Central Valley RWQCB. The purpose of the consultation will be to acquire the regulatory approvals necessary to obtain a statewide National Pollutant Discharge Elimination System stormwater permit for general construction activity from the State Water Resources Control Board.

- TRLIA or its construction contractor shall prepare and implement the appropriate SWPPP to prevent and control pollution and to minimize and control runoff and erosion. The SWPPP will identify the activities that may cause pollutant discharge (including sediment) during storms and BMPs that will be employed to control pollutant discharge. Construction techniques that will be identified and implemented to reduce the potential for runoff may include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. In addition, the SWPPP will include an erosion and sediment control plan and BMPs that specify the erosion and sedimentation control measures to be implemented, which may include silt fences, trench plugs, terraces, water bars, and seeding and mulching. The SWPPP also will include a spill prevention, control, and countermeasure plan and applicable hazardous materials business plans, and will identify the types of materials used for equipment operation (including fuel and hydraulic fluids), and measures to prevent and materials available to clean up hazardous material and waste spills. The SWPPP will also identify emergency procedures for responding to spills.

- BMPs presented in either document shall be clearly identified and maintained in good working condition, with sufficient backup stock on-site during all site work and construction activities.

- The construction contractor will retain a copy of the approved SWPPP on the construction site and modify it as necessary to suit specific site conditions through amendments approved by the Central Valley RWQCB.

Timing: Before and during construction.

Responsibility: TRLIA and its construction contractor(s).

Residual Impact after Mitigation Measures

Implementation of Mitigation Measure HAZ-1 will result in a less-than-significant impact with respect to hazards and hazardous materials.

3.10 HYDROLOGY AND WATER QUALITY

3.10.1 ENVIRONMENTAL SETTING

The project area is relatively flat, with slopes ranging from approximately 0 to 5% north to the east of the WPIC levees. The steepest slopes occur immediately next to the levees. The area is characterized by a typical Mediterranean climate with warm, dry summers and wet, cool winters. Most of the area's rainfall occurs between October and April, with an average annual precipitation of 20.96 inches recorded for nearby Marysville based on recorded data between 1897 and 2007 (Western Regional Climate Center 2015). As recorded at the nearby Marysville weather station, average monthly maximum temperatures exceed 90 degrees in the summer months, with monthly maximum temperatures in the winter closer to 55 degree. Average monthly minimum temperatures range between 38 and 61 degrees (Western Regional Climate Center 2015).

SURFACE WATER HYDROLOGY

The project area lies within the Sacramento River Basin. The WPIC drains into the Bear River and subsequently into the Feather River before converging with the Sacramento River. The Sacramento River drains to the Sacramento–San Joaquin River Delta (Delta), which subsequently empties into San Francisco Bay, and ultimately to the Pacific Ocean.

Feather River

The Feather River is an important source of water and power for the region and the basin forms the headwaters of the State Water Project. At its confluence with the Bear River in the project vicinity, the Feather River drains an area of approximately 5,500 square miles. Located approximately 2 miles west of the project alignment at its closest point, the Feather River has nearly uniform flows in different year types because of the very large storage capacity of Lake Oroville which serves to moderate downstream releases (Yuba County 2011a:4.9-24). Mean monthly flows are greatest in winter and early spring (January through March), and are at a minimum in late summer and early fall (July through October).

Bear River and WPIC

The Bear River originates in the Sierra Nevada foothills and ultimately converges with the Feather River approximately 3.5 miles south of the project's southern terminus. The lower Bear River flows downstream of Camp Far West Reservoir are primarily derived from Dry Creek and the WPIC. The WPIC converges with Bear Creek approximately 7 miles southwest of the USGS streamgage near Wheatland; Dry Creek converges with the Bear River approximately 1 mile east of the southern terminus of the project alignment. Mean monthly flows in the Bear River by Wheatland range from 16 cfs in September to 1,267 cfs in February, based on data from water years 1966-2001 (Rockwell et al., 2002:322). Annual mean flows over that same time period were 419 cfs. During the dry summer months, Bear River flows sometimes decrease to zero at the USGS streamgage near Wheatland (Rockwell et al., 2002:321). Flows in the WPIC are derived from Reeds and Hutchinson Creeks, Best Slough, and likely some agricultural runoff.

FLOODING

Flood protection on the Bear and Feather Rivers is generally provided by reservoirs and levees. Reservoirs on the Feather River can provide flood protection by capturing high flows, and releasing the water after the storm event has ended and the flood threat has diminished. Generally, reservoirs in northern California that provide flood control are operated so the maximum flood storage capacity is available from November through March. The design channel capacity for the Feather River upstream and downstream of the Bear River are 300,000 and 320,000 cfs, respectively (DWR 2014:4-3).

Unlike the Feather River, levees are the main source of flood protection along the Bear River downstream of Camp Far West Reservoir. Camp Far West Reservoir, operated by South Sutter Water District, does not provide any dedicated flood control storage and is typically full and spilling during flood events. However, the existence of the water supply facility serves to attenuate a portion of the peak flow as it passes through the surcharged reservoir (DWR 2014:2-11).

The WPIC West Levee runs north-south along most of the WPIC alignment, but runs east-west at the upstream end crossing Highway 70. As mentioned in Chapter 2, "Alternatives," portions of the WPIC West levee do not currently meet the ULDC for 200-year flood protection. TRLIA has already implemented a program of levee improvements to reduce the potential for flood damage in RD No. 784 (DWR 2014:8-24), as discussed previously. RD 784 is responsible for maintaining the Yuba River, Feather River, and Bear River, and WPIC levees that protect Linda and Olivehurst and adjoining agricultural land. Peak winter surface elevations during a 100-year flood event in the WPIC are expected to range from 59.2 to 59.3 feet. Water surface elevations in the Bear River within the project area are expected to range from 53.7 to 58.2 feet during the 100-year flood event. Normal water surface elevations in the Bear River and WPIC are typically 40 feet (TRLIA 2004:3.1-5).

The proposed action is located within the area covered in the Feather River Regional Flood Management Plan (2014). The plan establishes regional flood management priorities to facilitate future funding and implementation of flood risk reduction projects. The regional goals and objectives of the plan are to improve flood risk management in the region while advancing the supporting goals of improving operations and maintenance, promoting ecosystem functions, improving institutional support, and promoting multi-objective projects (DWR 2014:xviii).

WATER QUALITY

The project area is located within the jurisdictions of the Central Valley RWQCB, which is responsible for the preparation and implementation of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins, revised in October 2011. Beneficial uses for the Bear River include: municipal and domestic supply, irrigation, agricultural – stock watering, industrial supply, power generation, recreation (contact and noncontact), and wildlife habitat. Potential beneficial uses include warm and cold water migration and spawning habitat (Central Valley RWQCB 2011:Table II-1).

Feather River

Water quality in the Lower Feather River Watershed is heavily influenced by agricultural and municipal land and water use in the watershed (Sacramento River Watershed Program 2010:140). The SWRCB, in compliance with CWA Section 303, has prepared a list of impaired water bodies in the State of California. The list includes a priority schedule for the development of total maximum daily loads (TMDLs) for each contaminant or "stressor" impacting the water body. The 42-mile stretch of the Lower Feather River between Oroville Dam and the confluence with the Sacramento River is on the CWA Section 303(d) list of impaired water bodies for chlorpyrifos, group A pesticides, mercury, polychlorinated biphenyls (PCBs), and unknown toxicity (SWRCB 2011). The sources of these pollutants are agriculture (chlorpyrifos and group A pesticides) and resource extraction (mercury), while the source of PCBs and unknown toxicity are unknown. In 2003, the Central Valley RWQCB established TMDL regulations for diazinon in the Lower Feather River (SWRCB 2010). Monitoring conducted in 2006 and 2007 indicated diazinon loading to the Lower Feather River has been reduced significantly (Sacramento River Watershed Program 2010:140).

Bear River

Areas of the Bear River Watershed have been severely degraded by historic hydraulic mining and mercury contamination (Sacramento River Watershed Program 2010:164). The 21-mile segment of the lower Bear River below Camp Far West Reservoir, upstream of the confluence with the Feather River, is on the 303(d) list of impaired water bodies for chlorpyrifos, copper, diazinon, and mercury (SWRCB 2011). The source of chlorpyrifos and diazinon is identified as agriculture, while the source of copper is unknown and the source of mercury is identified as being from resource extraction.

WPIC

No water quality data are available for the WPIC. However, the water quality of this water body is expected to reflect the land uses within the watershed, in this case, primarily agriculture. Agricultural runoff is characterized by constituents such as fertilizers, herbicides, and pesticides, and often contains bacteria, high nutrient content, and dissolved solids.

GROUNDWATER

The project area is located in the Sacramento Valley groundwater basin, one of the groundwater basins in the Sacramento River Hydrologic Region, and it has 18 subbasins. The project area is located within the South Yuba subbasin, which has a surface area of 89,000 acres and is bounded on the north by the Yuba River, on the west by the Feather River, on the south by the Bear River, and on the east by the Sierra Nevada (DWR 2006).

Highly permeable floodplain deposits located along the Yuba River, Feather River, and Honcut Creek provide for large amounts of groundwater recharge within the subbasin (DWR 2006). Groundwater inflows include both natural recharge (approximately 67%) as well as applied water recharge (e.g., from irrigation). Outflows include urban extraction (5%), agricultural extraction (75%), and subsurface outflow (20%). Groundwater elevations in the South Yuba subbasin have recently ranged from about 150 feet in the northwest region of the basin to about 30 feet in the southwest corner near the confluence of the Feather and Bear Rivers (DWR 2006). A cone of depression beneath the South Yuba subbasin developed as early as 1960, with water levels falling to 30 feet below sea level (DWR 2006). Groundwater levels recovered by 1990 to 10 feet above sea level, and continue to increase (DWR 2006). The groundwater level increase is a result of increasing surface water irrigation supplies and reduced groundwater pumping (DWR 2006).

Yuba County Water Agency (YCWA) adopted an updated Groundwater Management Plan (GMP) in December 2010 to build on and formalize the historically successful management of the County's groundwater resource, which includes the South Yuba subbasin. The GMP Annual Measurement and Monitoring Report (2014) indicates that groundwater levels have been generally stable in areas along the Feather River since approximately 1960, which some seasonal fluctuations between spring and summer conditions, and groundwater elevations in the central parts of the South Yuba subbasin have largely recovered from historical overdraft (YCWA 2014:3-4).

Groundwater Quality

The majority of the groundwater in the South Yuba sub-basin is characterized by a calcium magnesium bicarbonate or a magnesium calcium bicarbonate type (DWR 2006). A magnesium bicarbonate type characterizes the northwest area of the subbasin. Groundwater quality in the subbasin is generally good with no documented impairments. No primary or secondary drinking water maximum contaminant levels were exceeded in the samples collected in 2013 (YCWA 2014:3-14). Total dissolved solids concentrations throughout the entire subbasin are typically below 500 milligrams per liter (mg/l), with concentrations ranging from 141 to 686 mg/l (DWR 2006).

Beneficial uses of groundwater in the basin have been designated as follows: municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply. Water quality objectives applicable to all groundwater have been set for bacteria, chemical constituents, radioactivity, tastes and odors, and toxicity (for groundwaters of the Sacramento and San Joaquin River Basins, specifically) (Central Valley RWQCB 2011).

3.10.2 ENVIRONMENTAL CONSEQUENCES

a) Violate any water quality standards or waste discharge requirements?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. If no action is taken to repair the deficient levee segments, a levee failure and flooding could occur potentially resulting in effects to the water quality of the Bear River and ultimately to the Feather River, which are both listed on the CWA 303(d) list of impaired water bodies. Floodwaters have the potential to entrain toxic substances into the water, including gasoline, lubricants, insecticides, pesticides, sewage, and other

petroleum-based products. Floodwaters could carry these substances into the Bear and Feather rivers where they would degrade water quality. Flood fighting efforts could also cause greater water quality impacts than the proposed action, especially if earthen embankments need to be constructed since they would be subject to erosion resulting in increased downstream turbidity impacts. Therefore, impacts associated with water quality standards or waste discharge requirements would be potentially significantly.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Construction of the proposed action would include ground-disturbing activities in proximity to the WPIC as well as the Bear River that could result in water quality degradation by soil or construction substances. The proposed action would include constructing cutoff walls and berms and placing landside fill. In addition, a landside access road would be constructed along the northern portion of the WPIC West Levee alignment for future operations and maintenance activities. Activities associated with these construction activities would require vegetation removal, grading, excavation, stockpiling of materials, importation of borrow material, filling, and drilling.

Construction activities have the potential to temporarily impair water quality if disturbed and eroded soil, petroleum products, or construction-related wastes (e.g., cement and solvents) are discharged into receiving waters or onto the ground where they can be carried into receiving waters. Soil and associated contaminants that enter receiving waters through stormwater runoff and erosion can increase turbidity, stimulate algae growth, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms. Accidental spills of construction-related substances such as oils and fuels can contaminate both surface water and groundwater.

Construction activities would occur primarily during the dry season, during summer and fall of 2015 and spring to fall in 2016. It is anticipated that minimal work, if any, would occur during the period between December 1, 2015 and April 15, 2016, which would reduce the potential for transport of eroded sediment or construction-related substances into receiving waters. Although all grading and fill associated with levee remediation measures would be conducted on the landside of the levee, creating a natural separation between potential contaminants and receiving waters, some levee reaches would be degraded for cutoff wall construction (Reaches 1B, 3, 4E, 5D). In these cases, the levee would be degraded by approximately one-third to one-half of its overall height and levee degrade material could be side cast along both the land and water side of the levee, which could result in sediment entering receiving waters. This could potentially result in a release of soil or construction-related materials into the WPIC, Bear River, or other receiving waters, adversely affecting water quality in these locations. If it occurs, this temporary construction-related impact would be significant.

Mitigation Measure HYDRO-1 would be implemented to prevent and control pollution and to minimize and control runoff and erosion. The SWPPP would identify the activities that may cause pollutant discharge (including sediment) during storms and the BMPs that would be employed to control pollutant discharge. Construction techniques that would be identified and implemented to reduce the potential for runoff may include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. An erosion and sediment control plan is required for preventing increased discharge of sediment for projects that involve grading within 50 feet of any watercourse. Thus, the SWPPP would include an erosion and sediment control plan and BMPs that specify the erosion and sedimentation control measures to be implemented, which may include silt fences, trench plugs, terraces, water bars, and seeding and mulching.

The SWPPP would also include a spill prevention, control, and countermeasure plan and applicable hazardous materials business plans, and would identify the types of materials used for equipment operation (including fuel and hydraulic fluids), as well as identify measures to prevent, and materials available to, clean up hazardous material and waste spills. The SWPPP would identify emergency procedures for responding to spills.

Finally, post-construction requirements as part of the SWPPP would require that the site match the pre-project hydrology though the use of structural or nonstructural Low Impact Development (LID) techniques which would serve to reduce the potential for post-construction erosion and sedimentation. With implementation of Mitigation Measure HYDRO-1, as well as obtaining a grading permit from the County in compliance with the Yuba County Grading Ordinance (i.e., submittal of grading plans, a drainage study, and where requested, a revegetation and winterization plan and geotechnical investigation report), construction-related impacts on water quality would be less than significant.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. There is currently no depletion of groundwater or interference with groundwater recharge on site associated with the WPIC West Levee. These existing conditions would not change under the no-action alternative; therefore, there would be no impact.

PROPOSED ACTION

Less-than-Significant Impact. Construction activities would not require the use of groundwater. Other water sources, such as municipal water or imported water provided via truck would be used for dust suppression, equipment cleaning, and other construction purposes, as needed.

The presence of cutoff walls could restrict the movement of groundwater in either direction away from or toward the WPIC, potentially increasing or decreasing localized near-surface groundwater levels in areas immediately adjacent to the cutoff wall. A significant drop in groundwater levels could decrease the yields of nearby wells or increase the pumping costs of those wells. The proposed cutoff walls would range from approximately 50 to 70 feet deep, depending on the reach, as measured from the levee crown. The total length of cutoff wall installed as part of the proposed action would be approximately 8,750 feet (1.66 miles); however, installation of cutoff walls would be completed in disconnected segments. Domestic wells in the South Yuba subbasin range from 40 to 650 feet deep, and municipal and irrigation wells typically range from 88 to 642 feet deep (DWR 2006). Most wells would be expected to be deeper than the proposed cutoff walls. Shallow wells near the cutoff walls, if any, could experience some disruption in radial flow; however, no substantial decrease in well yields or lowering of the local groundwater table level is expected to occur. The presence of the proposed cutoff walls should not affect the utility of existing or future supply wells.

Completion of the proposed action's components would not create new paved surfaces that could increase surface runoff and/or prevent groundwater infiltration. However, the proposed action includes construction of a new

access road which would be surfaced with crushed aggregate and may reduce groundwater infiltration. The project area has been identified as having soils with a very slow infiltration rate (Yuba County 2011b: Exhibit Natural Resources-11), which does not allow for rapid groundwater recharge. Therefore, groundwater recharge within the project area will be similar to the existing recharge and this impact would be less than significant.

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

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding could substantially affect existing drainage patterns and cause erosion and siltation, depending on the magnitude of flooding. This would be a potentially significant impact.

PROPOSED ACTION

Less-than-Significant Impact. Project elements including cutoff walls, berms, landside fill, and a permanent landside access road would result in only minor changes to drainage patterns at the project area, and the proposed action would not alter the course of a stream or river. After construction is complete, work areas would be stabilized and hydroseeded and the landside access road would be surfaced with crushed aggregate to minimize erosion and siltation. The access road would be constructed landside of the levee, thereby minimizing opportunities for sediment to enter the WPIC. This impact would be less than significant.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding could substantially affect existing drainage patterns and cause off-site flooding, depending on the magnitude of flooding. This would be a potentially significant impact.

PROPOSED ACTION

Less-than-Significant Impact. Surface runoff and drainage patterns may change slightly after construction is completed. However, the proposed action would not alter the course of the WPIC, as the project does not include the raising or geometric alteration of the WPIC levees. The installation of cutoff walls and stability berms, fill placement, construction of the landside access road, and other areas of soil compaction are not expected to result

in a substantial increase in the amount of runoff from the project area because impermeable surfaces would increase minimally. The site would be designed to match the pre-project hydrology through the use of structural or nonstructural LID techniques, as needed. Runoff generated from lands protected by the levees is addressed in the Plumas Lakes Specific Plan and would not change as a result of project implementation. The change in drainage patterns and surface runoff rate or quantity would not result in on- or off-site flooding and is considered less than significant.

e) 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?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding could create runoff that exceeds the capacity of existing or planned stormwater drainage systems in adjacent urban areas and cause substantial additional sources of polluted runoff through transportation of contaminants and sediment, depending on the magnitude of flooding. This would be a potentially significant impact.

PROPOSED ACTION

Less-than-Significant Impact. An increase in the amount of impervious surfaces (e.g., roads, compacted areas) as a result of implementation of the proposed action could result in higher rates of runoff during storm events, which could transport sediment, nutrients, or other contaminants to receiving waters. The proposed action would not result in an increase in paved impervious surface and the increase in compacted area and crushed aggregate access road is not be expected to result in a substantial increase in the amount of runoff. The proposed action would not change the existing land uses such that additional pollutant loading would occur. Seepage and slope instability remediation features such as berms and landside fill would be protected from erosion through revegetation and would not act as a source of sediment or siltation that could alter drainage features. In addition, the proposed action would not modify the capacity of any existing or planned stormwater drainage systems. As a result, overall drainage patterns would not be substantially altered and runoff water would not exceed the capacity of existing or planned drainage systems or provide substantial additional sources of polluted runoff. Therefore, this impact would be less than significant.

f) Otherwise substantially degrade water quality?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. With no construction, there would be no violation of water quality or discharge requirements. If no action is taken to repair the deficient levee segments, a levee failure and flooding could occur, potentially resulting in effects to the water quality of the Feather River. Floodwaters have the potential to entrain toxic substances into the water, including gasoline, lubricants, insecticides, pesticides, sewage, and other petroleum-based products. Floodwaters could carry these substances into the Feather River where they would

degrade water quality. Flood fighting efforts could also cause greater water quality impacts than the proposed action, especially if earthen embankments need to be constructed since they would be subject to erosion resulting in increased downstream turbidity impacts. Therefore, impacts associated with substantial degradation of water quality would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact. After construction is complete, the proposed action would not result in wastewater discharges or other point-source discharges subject to waste discharge requirements. As described previously in this section under "e)," the proposed action would not change the existing land uses in the project area such that additional pollutant loading would occur, and disturbed surfaces would be revegetated and stabilized following the completion of construction to minimize erosion and sedimentation of receiving waters. Therefore, the impact would be less than significant.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. The no-action alternative would not place housing within a 100-year flood hazard area. Therefore, no impact would occur.

PROPOSED ACTION

No Impact. The proposed action does not include construction of new housing. Therefore, no impact would occur. In addition, the proposed action would not alter the existing FEMA Flood Insurance Rate Maps and therefore would not place any new existing housing within a 100-year flood hazard area. Therefore, no impact would occur.

h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. The no-action alternative does not involve housing or commercial development and would not place housing or structures within a 100-year flood hazard area. Therefore, no impact would occur.

PROPOSED ACTION

No Impact. The proposed action would involve structural modifications to existing levees to correct seepage and slope stability deficiencies to ensure compliance with the ULDC for 200-year flood protection. Levee remediation as part of the proposed action would not alter flood protection from the 100-year event, nor would it transfer any such risk to adjacent areas. In addition, the proposed action does not involve housing or commercial development and would not place these types of new structures in a 100-year flood hazard area. Therefore, no impact would occur.

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

NO-ACTION ALTERNATIVE

Potential Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk from levee failure would remain high for an urban levee area. Therefore, this impact would be potentially significant.

PROPOSED ACTION

Beneficial Impact. Flooding impacts within or near the project area during or following construction are expected to be minimal. Constructing the proposed action would reduce the risk of flooding along the WPIC by improving the levees to minimize existing seepage and slope instability. This action would ensure the levees would safely pass the 200-year flood event. The proposed action is not expected to increase the potential for downstream flooding; it would serve to provide a beneficial effect. In addition, the proposed action would not result in the placement of new structures or houses at the project site.

According to the dam inundation maps provided in the *Yuba County 2030 General Plan*, the project area is located in the dam inundation area of New Bullards Bar Reservoir, Camp Far West Reservoir, Lake Englebright, as well as possibly other dams located outside of the county such as Bowman Lake and Scott's Flat Reservoir (Yuba County 2011b:Exhibit Public Health & Safety-2 and Exhibit Public Health & Safety-3). While highly unlikely, dam failure could result from a catastrophic event such as an earthquake. According to the 2030 General Plan, "failure of [County] dams during a catastrophic event such as a severe earthquake is considered a very unlikely event. Due to the method of construction, they have performed well and failure is not expected to occur" (Yuba County 2011a:4.6-48).

The Federal Energy Regulatory Commission has reviewed and approved comprehensive Emergency Action Plans (EAPs) for each of the dams with potential to cause massive damage in the project area as a result of failure. The EAPs are intended to minimize the threat to public safety and to minimize the response time to an impending or actual sudden release of water from local dams. In addition, the YCWA Draft Multi-Hazard Mitigation Plan includes a mitigation strategy to reduce the risk of dam failure, including requiring dam inspection on a regular basis, performing regular structural analysis of critical dam facilities, implementing projects to address dam safety weaknesses, inspecting dams after earthquake events greater than 2.5 magnitude, and maintain engineering and construction capability to make emergency repairs (YCWA 2007:325). Given dam failure is highly unlikely, no impact would be expected. The risk of flood from levee failure is substantially greater, and since the proposed action substantially reduces the risk of flooding, the overall impact of the proposed action is considered beneficial.

j) Result in inundation by seiche, tsunami, or mudflow?

NO-ACTION ALTERNATIVE

No Impact. The WPIC West Levee and the surrounding area are not as risk of a tsunami based on its inland location or mudflow since the surrounding area is nearly level and consists of overlying clay soils. The risk of a

seiche, a standing wave in an enclosed or partially enclosed body of water, would be minimal because the surrounding waterbodies are not of sufficient size that a large damaging seiche could occur. Therefore, inundation by a seiche, tsunami, or mudflow under the no-action alternative would be the same as existing conditions. No impact would occur.

PROPOSED ACTION

Less-than-Significant Impact. The project area is not at risk of tsunami based on its inland location; however, it is possible that a seiche could occur in enclosed waterbodies within the vicinity of the proposed action (Yuba County 2011a:4.6-17). Most of the waterbodies in Yuba County are not of a sufficient size that a large damaging seiche could occur as a result of an earthquake; however, the potential does exist (Yuba County 2011a:4.6-47). As described previously in this section, under "i)," EAPs intended to minimize the threat to public safety are in place for each of the dams with potential to cause massive damage in the county. In addition, the proposed action does not include the addition of any new permanent structures or housing that could be impacted by the remote possibility of a seiche. The project area is located in an area of nearly level terrain, and is not adjacent to any areas of steep terrain; therefore, there is no potential for mudflows. This impact would be less than significant.

3.10.3 MITIGATION

Mitigation Measure HYDRO-1. Prepare and Implement a Storm Water Pollution Prevention Plan and Associated Best Management Practices.

TRLIA and its construction contractor(s) will implement the following measures to protect water quality:

- During the development of grading permits and improvement plans, TRLIA will consult with Yuba County and the Central Valley RWQCB. The purpose of the consultation will be to acquire the regulatory approvals necessary to obtain a statewide National Pollutant Discharge Elimination System stormwater permit for general construction activity from the State Water Resources Control Board.

- TRLIA or its construction contractor shall prepare and implement the appropriate SWPPP to prevent and control pollution and to minimize and control runoff and erosion. The SWPPP will identify the activities that may cause pollutant discharge (including sediment) during storms and BMPs that will be employed to control pollutant discharge. Construction techniques that will be identified and implemented to reduce the potential for runoff may include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. In addition, the SWPPP will include an erosion and sediment control plan and BMPs that specify the erosion and sedimentation control measures to be implemented, which may include silt fences, trench plugs, terraces, water bars, and seeding and mulching. The SWPPP also will include a spill prevention, control, and countermeasure plan and applicable hazardous materials business plans, and will identify the types of materials used for equipment operation (including fuel and hydraulic fluids), and measures to prevent and materials available to clean up hazardous material and waste spills. The SWPPP will also identify emergency procedures for responding to spills.

- BMPs presented in either document shall be clearly identified and maintained in good working condition, with sufficient backup stock on-site during all site work and construction activities.

- The construction contractor will retain a copy of the approved SWPPP on the construction site and modify it as necessary to suit specific site conditions through amendments approved by the Central Valley RWQCB.

Timing: Before and during construction.

Responsibility: TRLIA and its construction contractor(s).

Residual Impact after Mitigation Measures

Implementation of Mitigation Measure HYDRO-1 will result in a less-than-significant impact on hydrology and water quality.

3.11 LAND USE AND PLANNING

3.11.1 ENVIRONMENTAL SETTING

The project area is located in southern Yuba County, south of the town of Olivehurst and immediately east of SR 70. The landside of the WPIC West Levee generally parallels SR 70 and an active UPRR line and forms the eastern boundary of the RD 784 service area.

The unincorporated community of Plumas Lake is located west of the WPIC West Levee and extends from the southern end of the levee north to Plumas-Arboga Road. Plumas Lake is comprised of single-family residences, neighborhood parks, and schools. Areas north of Plumas-Arboga Road and west of the WPIC West Levee generally consist of scattered rural residences, orchards and active agricultural fields, and commercial and light industrial land uses. The community of Arboga is located west of the WPIC near the northern portion of the project area. Active agricultural fields are located east of the project area.

The *Yuba County 2030 General Plan* provides a framework that guides development decisions and prioritization of the county's resources to accommodate future populations and economic growth through 2030. The following goal and policy from the Public Health and Safety Element of the 2030 General Plan (Yuba County 2011) regarding flooding and flood control apply to the proposed action:

- **Goal HS1:** Reduce flood risk for the County's people and property.
  - **Policy HS1.5:** The County will continue to collaborate with the Yuba County Water Agency, local reclamation districts, levee commissions, and U.S. Army Corps of Engineers to improve, certify, and maintain the levee system that protects developed and planned development areas in Linda and Olivehurst, including the Plumas Lake Specific Plan Area. Urban areas in Yuba County should have 200-year flood protection or greater.

Lands west of the WPIC West Levee are designated by the 2030 General Plan as Valley Neighborhood and zoned by Yuba County as SP (Specific Plan), RS (Single-Family Residential), IL (Light Industrial), and PF (Public Facilities). The Valley Neighborhood designation and SP, RS, IL, and PF zoning districts are intended to provide for urban development, including residential, commercial, retail, offices, light industrial, civic, public services and facilities, and recreational uses.

Lands west of SR 70 and the UPRR are designated by the 2030 General Plan as Natural Resources and zoned by Yuba County as AE (Exclusive Agricultural). This designation is intended to conserve and provide natural habitat, watersheds, scenic resources, cultural resources, recreational amenities, agricultural and forest resources, wetlands, woodlands, minerals, and other resources for sustainable use, enjoyment, extraction, and processing (Yuba County 2011). The 2030 General Plan identifies a variety of allowable uses within lands designated as Natural Resources including mining; agriculture; natural open space and nature preserves; public facilities and infrastructure, including levees, levee borrow areas, and related facilities; and mitigation banks, parks and recreational uses, and other natural-resource oriented uses.

The AE zoning district is intended to preserve the maximum amount of the limited supply of agricultural land necessary for the conservation of Yuba County's economic resources and vital for healthy agricultural economy of Yuba County.

3.11.2 ENVIRONMENTAL CONSEQUENCES

a) Physically divide an established community?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding would have the potential to divide nearby established communities, such as Plumas Lake and Arboga, while the surrounding area remains flooded. Therefore, this impact would be potentially significant.

PROPOSED ACTION

No Impact. Cutoff wall construction would occur within the existing WPIC West Levee footprint. Landside fill and construction of the berms and access road would occur outside of the levee footprint on vacant, undeveloped land. There are no proposed activities that would create a physical barrier within an established community. Because there are no existing established communities within or in the vicinity of the project area, implementation of the proposed action would not physically divide an established community. No impact would occur.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Existing conditions would not be modified, and no construction activities would occur, other than those potentially associated with the continuation of existing levee inspection and maintenance requirements. Therefore, the no-action alternative would not conflict with 2030 General Plan policies, land use designations, and zoning. No impact would occur.

PROPOSED ACTION

No Impact. The 2030 General Plan provides comprehensive guidance for growth and development in the unincorporated areas of the county. The proposed action would be consistent with goals, objectives, and policies contained in the 2030 General Plan, including those that address flood protection for the County's residents and property (Public Health and Safety Goal HS1). The Public Health and Safety Element Policy HS1.5 directs the County to work closely with USACE and other appropriate organizations and agencies to ensure the levee system protects developed and planned development areas in Linda and Olivehurst, including the Plumas Lake Specific Plan Area. TRLIA continues to coordinate with USACE, other federal and state agencies, and local agencies, such as Yuba County and RD 784, regarding implementation of flood control projects.

Implementing the proposed action would not change existing or future planned land uses in the project area; rather, the proposed action would ensure the WPIC West Levee is in compliance with the ULDC for 200-year flood protection and would reduce the potential for urban flooding. Therefore, implementing the proposed action would not result in inconsistencies with the Valley Neighborhood land use designation or urban zoning districts in the project area.

Landside fill and construction of the berms and access road would occur outside of the levee footprint. These areas are designated by the 2030 General Plan as Natural Resources and zoned AE (Exclusive Agricultural). The remedial measures and access road would be constructed on vacant, undeveloped land and would not result in the discontinuation of agricultural land uses in the vicinity of these areas. Flood control facilities are an allowable land uses under Natural Resources designation and in the AE zoning district. Therefore, the landside fill, berms, and access road outside the WPIC West Levee footprint would not involve other changes in the existing environment that could result in inconsistencies with the Natural Resources land use designation or AE zoning.

Consistency issues with applicable land use plans and policies would be issues related to land use regulations and not to a physical environmental consequence of project implementation. Therefore, conflicts with applicable land use plans and policies would not be considered a significant impact, in and of itself. Specific impacts associated with other resource and issue areas are addressed in each technical section of this EA/IS as appropriate. These technical sections provide a detailed analysis of other relevant physical environmental effects that could result from implementing the proposed action.

For the reasons described above, the proposed action would not conflict with 2030 General Plan policies, land use designations, or zoning. Therefore, no impact would occur.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. In addition, there is no approved HCP or NCCP applicable the project area. Therefore, no impact would occur.

PROPOSED ACTION

No Impact. Yuba and Sutter Counties are currently in the process of developing a Regional Conservation Plan that is a joint state/federal NCCP/HCP but it has not yet been approved (see Section 3.5, "Biological Resources," for further discussion). Therefore, no adopted or approved habitat conservation or natural community conservation plans are in effect that would apply to the proposed action. No impact would occur.

3.11.3 MITIGATION

There would be no significant short- or long-term effects related to land use planning in the project area because the proposed action would not physically divide an established community; conflict with 2030 General Plan policies, land use designations, or zoning; or conflict with an adopted or approved HCP or NCCP. No mitigation is required.

3.12 MINERAL RESOURCES

3.12.1 ENVIRONMENTAL SETTING

Yuba County is rich in non-fuel mineral resources, including sand and gravel, clay, stone products, silica, silver, and gold. There are several active mines in Yuba County, most of which produce sand, gravel, and/or stone. The closest active mineral producer to the project area is located approximately 5 miles to the north (Yuba County 2008). There are no active mines in the project area, and the area is not known to be located within a mineral resource recovery site.

The northernmost portion of the project area falls within Mineral Resource Zones (MRZs), described in California Department of Conservation, Division of Mines and Geology (CDMG) (now California Geological Survey) Mineral Land Classification Special Report 132 (CDMG 1988). CDMG has identified four MRZ classifications: MRZ-1, MRZ-2, MRZ-3, and MRZ-4.

The most important zone with respect to the presence of mineral resources in the project area is MRZ-2, which is defined as "areas where adequate information indicates that significant mineral (aggregate) deposits are present or where it is judged that there is a high likelihood for their presence." This zone is applied to known mineral deposits or, based on economic geologic principles and adequate data, areas where well-developed lines of reasoning demonstrate that the likelihood for occurrence of significant mineral deposits is high.

Areas classified MRZ-1 are defined as areas where adequate information indicates that no significant mineral deposits are present or it is judged that little likelihood exists for their presence. MRZ-3 areas are defined as areas containing mineral deposits, their significance of which cannot be evaluated from existing data, and MRZ-4 areas are defined as areas where available data are inadequate for placement in any other mineral resource zone.

The project area crosses areas classified as MRZ-1 and MRZ-4. Drill hole locations in the project vicinity provide data indicating little likelihood of the presence of aggregate resources (CDMG 1988).

3.12.2 ENVIRONMENTAL CONSEQUENCES

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?

NO-ACTION ALTERNATIVE

No Impact. There are no known mineral resources of value on or adjacent to the WPIC West Levee; therefore, no impact would occur.

PROPOSED ACTION

No Impact. The project area does not cross any areas that are designated MRZ-2 or areas of known mineral resources, nor is the project area located in the vicinity of an active mine or mineral resource recovery site. Therefore, the proposed action would not result in the loss of availability of a known mineral resource and no impact would occur.

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?

NO-ACTION ALTERNATIVE

No Impact. There are no locally designated mineral resources recovery sites located on or in the vicinity of the WPIC West Levee and this will not change in the near term. Therefore, no impact would occur.

PROPOSED ACTION

No Impact. No locally designated mineral resources recovery sites are located in the project area. Therefore, no impact would occur.

3.12.3 MITIGATION

There would be no significant short- or long-term effects related to mineral resources in the project area because the project area does not cross areas of known mineral resources or mineral resource recovery sites. No mitigation is required.

3.13 NOISE

3.13.1 ENVIRONMENTAL SETTING

EXISTING NOISE CONDITIONS

Sensitive Land Uses

Noise-sensitive land uses are those uses where quiet is essential to the purpose of the land use. Noise-sensitive land uses include residences and buildings where people normally sleep (such as hospitals and hotels). They also include uses such as schools, libraries, theaters, and houses of worship, where it is important to avoid interference with activities like speech, meditation, and concentration on reading material.

The closest noise-sensitive uses to the project area are rural residential properties in two locations: along Feather Ridge Drive just west of the southern end of the project area, near the intersection of Feather River Boulevard and SR 70; and the residential properties along Old Marysville Road near the intersection of Plumas-Arboga Road

with Old Marysville Road, in the mid-section of the of the project area. The closest residential structures evaluated for structural damage from vibration are approximately 100–1,700 feet from the construction area.

Existing Noise Sources

The existing noise environment near the project site is influenced primarily by vehicular traffic on the surrounding roadways: SR 70, Feather River Boulevard, Old Marysville Road, and Plumas-Arboga Road. Other sources of noise in the project vicinity include the UPPR located just west of the project site.

Ambient Noise Level Surveys

AECOM measured ambient noise levels near existing noise-sensitive uses at various locations in the project area. Table 3.13-1 summarizes the results of the ambient noise-level measurements. One long-term (24-hour) and five short-term (15-minute) measurements of ambient noise levels were conducted Tuesday, January 27 through Thursday, January 29, 2015, in the project area (Exhibit 3.13-1). The existing noise environment in the project vicinity was dominated by local and distant traffic sources, railroad noise, and natural sources (e.g., wind and birds). As shown in Table 3.13-1, measured ambient noise levels at the noise-sensitive land uses closest to the project area range from 47 to 59 A-weighted decibels (dBA) equivalent sound level (L_{eq}).

Table 3.13-1. Summary of Ambient Noise Level Survey Results in the Project Area

Receiver	Location	Date		Time	Duration	Measured Sound Level, dB				
						Daytime (7 a.m.–10 p.m.)		Nighttime (10 p.m.–7 a.m.)		L_{dn}
		From	To			L_{eq}	L_{max}	L_{eq}	L_{max}	
LT-01	Front yard of 2127 Feather Ridge Drive	Tuesday, January 27, 2015	Wednesday, January 28, 2015	14:01	24 hours	58	92	62	87	68
		Wednesday, January 28, 2015	Thursday, January 29, 2015	13:00	22 hours	59	91	63	88	69
ST-01	Behind backyard of 1740 Ventana Court	Tuesday, January 27, 2015		15:14	16:51	47	58	–	–	–
ST-02	By playground of Riverside Meadows Intermediate School, 1751 Cimarron Drive	Tuesday, January 27, 2015		15:41	22:10	49	67	–	–	–
ST-03	Cul-de-sac, 1443 and 1446 Edwards Court	Tuesday, January 27, 2015		16:13	20:02	50	64	–	–	–
ST-04	Vacant parcel next to (north of) 2514 Old Marysville Road	Tuesday, January 27, 2015		16:46	16:31	54	68	–	–	–
ST-05	Along driveway by 1992 Plumas Arboga Road	Tuesday, January 27, 2015		17:13	15:01	55	62	–	–	–

Notes: dB = decibels; L_{dn} = day-night noise level; L_{eq} = equivalent sound level (the sound energy averaged over a continuous period of 15 minutes to 1 hour); L_{max} = maximum instantaneous sound level; LT = long-term measurement (24 hours); ST = short-term measurement (15–20 minutes).

Noise-level measurements were completed using a Larson Davis Laboratories (LDL) Model 824 precision integrating sound-level meter. The meter was calibrated before the measurements using an LDL Model CAL200 acoustical calibrator. The meter was programmed to recorded A-weighted sound levels using a "slow" response. The equipment used complies with all pertinent requirements of the American National Standards Institute for Class 1 sound-level meters (ANSI S1.4).

Source: Data compiled by AECOM in 2015

Table 3.13-2. Traffic Noise—Existing Conditions

Roadway	Roadway Segment	Distance (feet)[1]	dB, L_{eq} at 50 feet
Market Street	From Flumas Street to Lynn Way	50	65.4
Market Street	From Lynn Way to Sutter Street	50	66.0
Sutter Street	From Market Street to State Route 20	200	50.2
North George Washington Blvd	From Franklin Road to State Route 20	50	63.7
State Route 20	From North George Washington Blvd to El Margarita Road	100	70.5
State Route 20	From El Margarita Road to Tharp Road	100	70.9
State Route 20	From Tharp Road to Civic Center Boulevard	1000	60.1
State Route 20	From Civic Center Boulevard to Golden State Highway	1000	60.5
State Route 20	From Golden State Highway to Clark Avenue	250	66.3
State Route 20	From Clark Avenue to Live Oak Boulevard	150	69.8
State Route 20	From Live Oak Boulevard to Plumas Street	300	66.3
State Route 20	From Plumas Street to Sutter Street	200	67.5
State Route 20	From Sutter Street to Feather River Way	1350	60.0
State Route 20	From Feather River Way to Orange Street	100	70.4
State Route 20	From Orange Street to State Route 70	150	68.8
State Route 70	From 10th Street to 9th Street	200	68.4
State Route 70	From 9th Street to 7th Street	250	67.4
State Route 70	From 7th Street to 5th Street	150	70.0
State Route 70	From 5th Street to 3rd Street	50	75.0
State Route 70	From 3rd Street to 1st Street	250	69.1
State Route 70	From 1st Street to North Beale Road	350	71.5
State Route 70	From North Beale Road to Feather River Boulevard	450	69.5
State Route 70	From Feather River Boulevard to Erle Road	500	68.9
Hammonton-Smartville Road	From Hammonton Road to Hackberry Way	150	57.7
Hammonton-Smartville Road	From Hackberry Way to Griffin Avenue	50	64.5
Hammonton-Smartville Road	From Griffin Avenue to Alberta Ave	50	62.8
Hammonton-Smartville Road	From Alberta Ave to Dunning Avenue	50	58.3
Hammonton-Smartville Road	From Dunning Avenue to Mapes Way	50	64.5
Hammonton-Smartville Road	From Mapes Way to Simpson Lane	50	59.2
Hammonton-Smartville Road	From Simpson Lane to Lindhurst	50	66.5
Lindhurst	From Hammonton-Smartville Road to Erle Road	200	60.2
State Route 70	From Erle Road to Olivehurst Avenue	150	73.5
State Route 70	From Olivehurst Avenue to State Route 65	150	72.9
State Route 70	From State Route 65 to McGowan Parkway	300	67.4
State Route 70	From McGowan Parkway to Plumas Arboga Road	250	67.1

Table 3.13-2. Traffic Noise—Existing Conditions			
Roadway	Roadway Segment	Distance (feet)[1]	dB, L_{eq} at 50 feet
State Route 70	From Plumas Arboga Road to Feather River Boulevard	200	68.7
State Route 70	From Feather River Boulevard to South of Feather River Boulevard	1200	61.1
Plumas Arboga Road	From Old Marysville Road to West of Old Marysville Road	100	55.8
Feather River Boulevard	From State Route 70 to Chalice Creek Road	950	38.3

Notes: dB = A-weighted decibels; L_{eq} = equivalent noise level.
[1] Distance from the closest noise-sensitive use along the segment.
Source: Modeling conducted by AECOM in 2015

Roadway Traffic Noise

In addition to the ambient noise measurements, existing traffic noise on the roadways in the project vicinity was estimated based on the existing traffic volumes (using the traffic counts shown in Google Earth). Table 3.13-2 summarizes the modeled traffic noise levels at the closest distance from the centerline of the roadways near the project site.[1] As shown in Table 3.13-2, existing traffic noise levels along the roadways in the project vicinity or those roadways that would be used by project haul trucks range from 38.3 to 75.0 dBA L_{eq} at the noise-sensitive uses closest to the centerlines of the modeled roadways.[2]

Railroad Noise

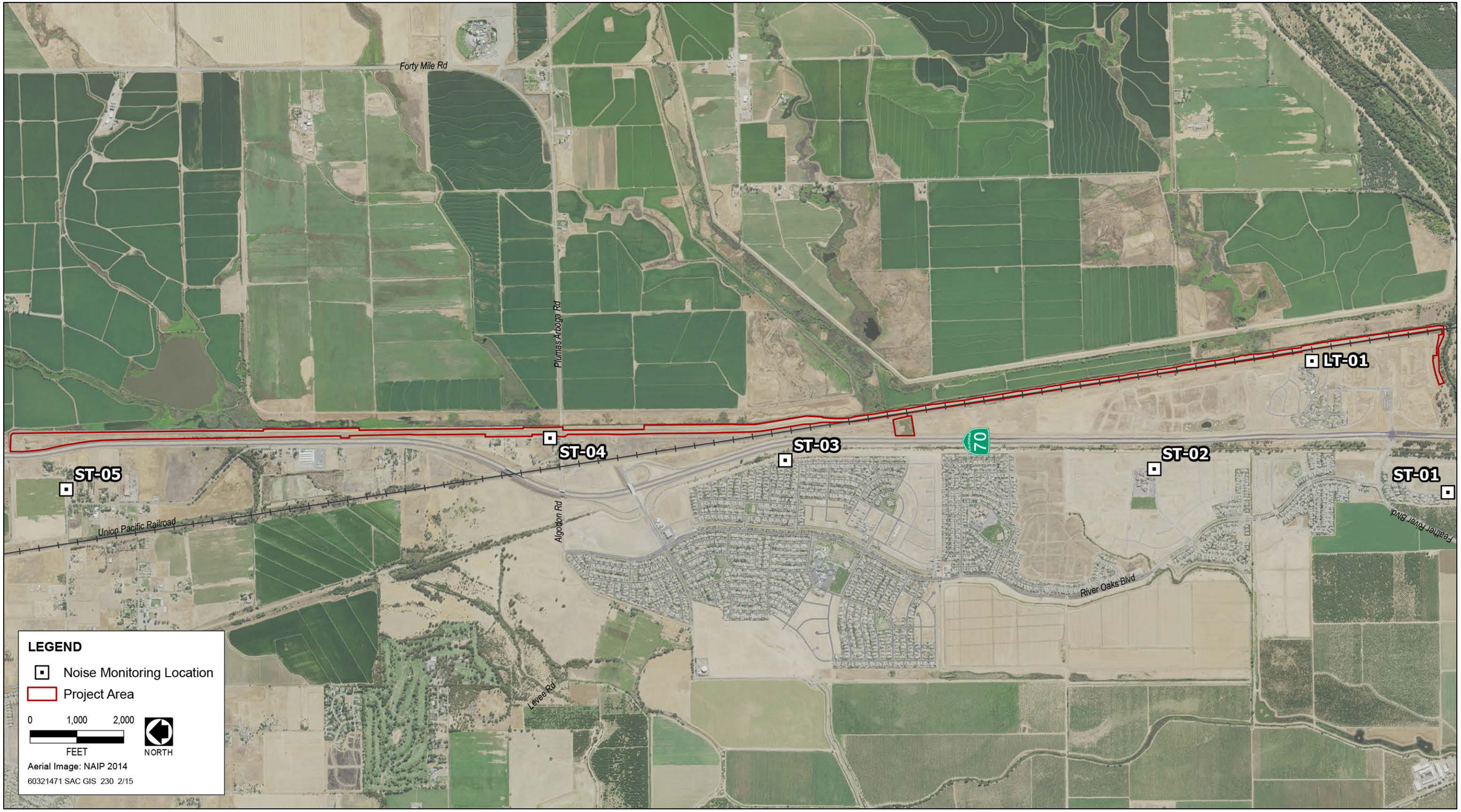
Railroad operation in the vicinity of the project site is another source of existing noise. A long-term (over 2 days) noise measurement at location LT-01 (Exhibit 3.13-1) captured the existing noise from the railroad line. The mean sound equivalent level of the events measured was calculated to evaluate the effects of noise from railroad operations on the project site. Using the mean sound equivalent level (98 dB), the number of rail operations per day (14) and a noise level of 67 dBA day-night average level (L_{dn}) at 250 feet from the center of the railroad tracks were calculated. As shown in Table 3.13-1, existing noise levels at LT-01, located at 250 feet from the center of the railroad tracks, range from 68 to 69 dBA L_{dn}. These noise levels also include other ambient noise sources, such as roadway traffic.

Existing Vibration

The existing vibration environment, like the noise environment, is dominated by transportation-related vibration. Heavy truck traffic can generate groundborne vibration, which varies considerably depending on vehicle type, weight, and pavement conditions. However, groundborne vibration levels generated from vehicular traffic are not typically perceptible outside of the road right-of-way. The primary source of existing groundborne vibration in the project vicinity would be the UPPR located just west of the project site. The closest buildings at the project site

[1] 50 feet is a representative distance from the roadway centerline to adjoining noise-sensitive uses, such as residences, based on the width of the public rights-of-way surrounding the project site (approximately 80 feet).

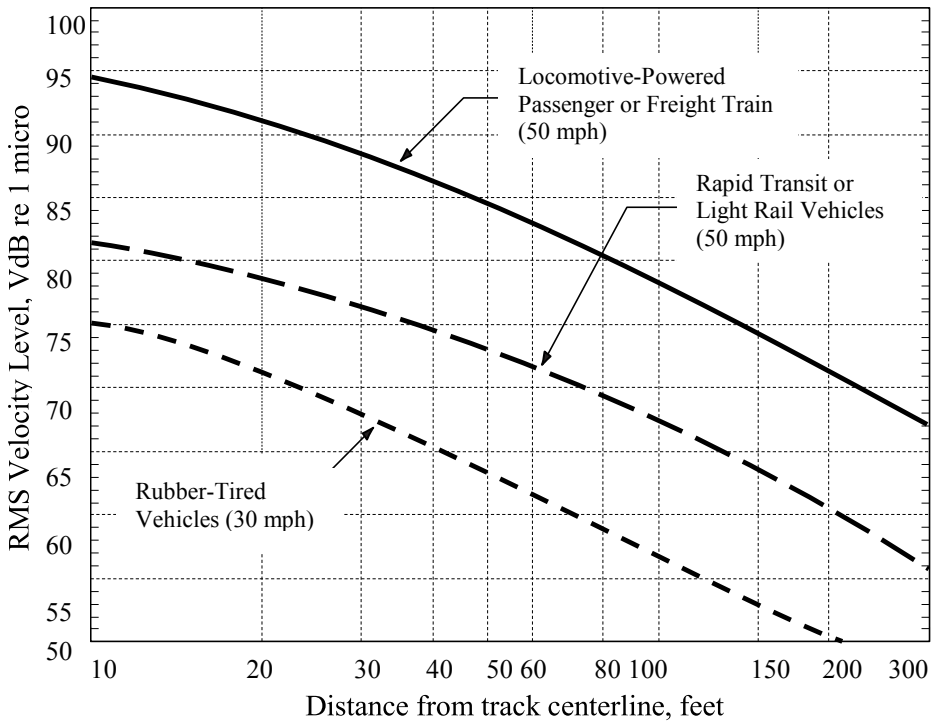
[2] The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) combined with the California Vehicle Noise (Calveno) Reference Energy Mean Emission Levels, was used to predict existing traffic noise levels in the project area. The FHWA model is the traffic noise prediction model currently preferred by FHWA, the California Department of Transportation, and county and city governments for assessing traffic noise.



Source: Adapted by AECOM in 2015

Exhibit 3.13-1. Noise Monitoring Locations

are approximately 250 feet from the existing railroad tracks (see location LT-01, Exhibit 3.13-1). Based on Federal Transit Administration (FTA) data, heavy rail vehicles operating at 50 mph would generate groundborne vibration of approximately 0.07 peak particle velocity (PPV) (85 vibration decibels [VdB]) at a distance of 50 feet (approximately 0.01 PPV [68 VdB] at a distance of 250 feet) from the track's centerline (FTA 2006:Figure 10-11, reproduced below as Exhibit 3.13-2).



Source: FTA 2006, adapted by AECOM in 2015

Exhibit 3.13-2. Ground-Surface Vibration Curves

3.13.2 ENVIRONMENTAL CONSEQUENCES

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. The noise levels associated with flood fighting likely would be less than those analyzed for the proposed action. The types of construction equipment would be similar, but the flood fighting activities would be expected to continue for a shorter time period. Therefore, this impact of the no-action alternative would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Construction noise would be generated under the proposed action during equipment operation on the project site and during the transport of construction equipment, materials, and workers to and from the site.

Construction Equipment

The Yuba County planning standards presented in the *Yuba County 2030 General Plan* (Noise Element, Table Public Health & Safety-2, Maximum Allowable Noise Exposure from Nontransportation Noise Sources at Noise-Sensitive Land Uses) were used for this analysis (Yuba County 2011). Project-related construction noise at noise-sensitive residential properties (buildings) in the project vicinity would be considered significant if it would exceed 60 dBA L_{eq} during daytime hours (7 a.m.–10 p.m.) or 45 dBA L_{eq} during nighttime hours (10 p.m.–7 a.m.). These are the most restrictive criteria established by Yuba County and provide the most conservative assessment of noise impacts at existing noise-sensitive uses in the project vicinity.

Project-related construction noise was estimated using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (FHWA 2006) and a list of expected heavy equipment (Table 3.13-3).

Table 3.13-3. Construction Phases, Equipment, and Calculated Noise Levels

Construction Phase	Anticipated Number and Type of Equipment that May Be Used by the Contractor*	Noise Level at 50 Feet (dB)	
		L_{max}	L_{eq}
Phase 1—clearing, grubbing, and stripping	(4) Scrapers	85	81
	(2) Water trucks	84	80
	(2) Front-end loaders	80	76
	(4) Pickup trucks	55	51
	Combined Noise Level	**85**	**84**
Phase 2—levee degradation for cutoff wall construction (lags behind Phase 1 by approximately 1 week or more)	(4) Excavators	85	81
	(4) Scrapers	85	81
	(4) Vibratory rollers	85	78
	(2) Water trucks	84	80
	(10) Haul trucks	84	80
	Combined Noise Level	**85**	**87**
Phase 3—cutoff wall construction (lags behind Phase 2 by approximately 1 week or more)	(2) Hydraulic excavators	85	81
	(1) Deep mix method equipment	80	77
	(4) Front-end loaders	80	76
	(1) Extended boom pallet loader	80	76
	(4) 300-kilowatt generators	82	79
	(4) Slurry pumps	77	74
	(6) Pickup trucks	55	51
	(10) Haul trucks	84	80
	(2) Water trucks	84	80

Table 3.13-3. Construction Phases, Equipment, and Calculated Noise Levels			
Construction Phase	Anticipated Number and Type of Equipment that May Be Used by the Contractor*	Noise Level at 50 Feet (dB)	
		L_{max}	L_{eq}
	Combined Noise Level	**85**	**87**
Phase 4—levee reconstruction, berm construction, and landside fill placement (lags behind Phase 3 by approximately 21 days or more)	(4) Scrapers	85	81
	(4) Motor graders	85	81
	(4) Tractors with discing equipment	84	80
	(4) Vibratory rollers	85	78
	(2) Water trucks	84	80
	Combined Noise Level	**85**	**87**
Phase 5—levee resurfacing (begins after Phase 4)	(2) Motor graders	85	81
	(2) Vibratory rollers	85	78
	(2) Haul trucks	84	80
	(1) Water truck	84	80
Phase 6—hydroseeding (concurrent with Phase 5)	(2) Hydroseeding trucks	84	80
	(2) Pickup trucks	55	51
	Combined Noise Level	**85**	**87**
Phase 7—demobilization and site cleanup (begins after Phase 6)	(1) Extended boom pallet loader	80	76
	(2) Haul trucks	84	80
	Combined Noise Level	**84**	**81**

Notes: dB = decibels; L_{eq} = equivalent sound level (the sound energy averaged over a continuous 15-minute to 1-hour period); L_{max} = maximum instantaneous sound level
Source: Data compiled by AECOM in 2015

As shown in Table 3.13-3, construction equipment noise levels would be 84 dBA L_{eq} in Phase 1, 87 dBA L_{eq} in Phases 2, 3, 4, 5, and 6, and 81 dBA L_{eq} in Phase 7. Therefore, the unmitigated noise level produced by the combinations of equipment under construction phases for the proposed action would be approximately 81–87 dBA L_{eq} at a distance of 50 feet (whether the construction occurs over one year or two years). Assuming the standard spherical spreading loss (-6 dB per doubling of distance) and the highest unmitigated construction noise level of 87 dBA L_{eq} at 50 feet, the project construction noise levels are estimated to be 54–74 dBA L_{eq} at the nearest noise-sensitive uses (Table 3.13-4). These results represent the worst-case, conservative noise exposure because they do not consider noise attenuation associated with intervening structures and atmospheric absorption. Therefore, actual construction equipment noise levels could be less. The unmitigated project-related, construction equipment noise levels could be as high as 74 dBA L_{eq} at the residential properties closest to the project site (Table 3.13-4). Because this noise level exceeds the threshold of 60 dBA L_{eq}, this impact would be potentially significant.

Table 3.13-4. Construction Equipment Noise Levels at the Nearest Noise-Sensitive Uses in the Project Area						
Receiver	Location	Shortest Distance (feet) between Noise-Sensitive Uses and Proposed Construction Areas	Noise Level, dB L_{eq}			
			Exterior		Interior	
			Ambient Noise	Project Construction Noise	Project Noise, Doors/Windows Open[1]	Project Noise, Doors/Windows Closed[2]
ST-01	1740 Ventana Court	2,500	47	54	39	29
ST-02	1751 Cimarron Drive	2,000	49	55	40	30
ST-03	446 Edwards Court	800	50	63	48	38
ST-04	2514 Old Marysville Road	250	54	74	59	49
ST-05	1992 Plumas Arboga Road	600	55	66	51	41
LT-01	2127 Feather Ridge Drive	250	59	74	59	49

Notes: dB = decibels; L_{eq} = equivalent sound level (the sound energy averaged over a continuous 15-minute to 1-hour period).
[1] 15 dB reduction for doors/windows open (EPA 1974)
[2] 25 dB reduction for doors/windows closed (EPA 1974)
Source: Data compiled by AECOM in 2015

Construction activities for the proposed action would occur consistent with Section 8.20.310, "Construction of Buildings and Projects," of the Yuba County Noise Control Ordinance. This analysis therefore assumes that noise produced by construction activities occurring between 7 a.m. and 10 p.m. would be exempt from Yuba County's noise level criteria, as defined in Chapter 8.20, Article 3 of the Yuba County Ordinance Code. Also, construction noise would be short term and temporary, and heavy-duty construction equipment would be operated only intermittently throughout the day during construction. Ambient noise levels would not increase permanently because operational activities associated with the proposed action would generate only negligible noise. As a result, the noise impact of construction-related equipment would be less than significant.

Project-related construction activities under Phase 3 (construction activities associated with cutoff walls) could extend into the nighttime hours (10 p.m.–7 a.m.) to ensure these levee repairs are completed prior to the start of the flood season. Construction noise would exceed the applicable nighttime threshold of 45 dBA L_{eq}. Therefore, TRLIA would obtain a permit from the Yuba County Planning and Building Services Department director as identified in the noise ordinance to construct cutoff walls during nighttime hours. Consequently, this impact would be less than significant, assuming approval of the exceedance of the Yuba County Noise Ordinance during cutoff wall construction is granted.

Construction Traffic

Construction activities for the proposed action would result in additional vehicle trips on the local roadway network as workers commute and equipment and materials are transported. Noise levels for project-related construction traffic were estimated for each project phase using the FHWA Roadway Construction Noise Model (FHWA 2006) as shown in Table 3.13-5.

Table 3.13-5. Traffic Noise—Existing plus Construction Conditions (dB L_{eq})

Roadway	Roadway Segment	Distance (feet)[1]	Existing Traffic	Existing Traffic Noise and Noise Increase from Construction Traffic (Haul Trucks and Workers) in each Phase											
				Phase 1	Increase[2]	Phase 2	Increase	Phase 3	Increase	Phase 4	Increase	Phases 5 & 6	Increase	Phase 7	Increase
Market Street	From Flumas Street to Lynn Way	50	65.4	65.4	0.1	65.4	0.1	65.5	0.1	66.8	1.4	65.5	0.2	65.4	0.1
Market Street	From Lynn Way to Sutter Street	50	66.0	66.0	0.0	66.0	0.0	66.0	0.0	66.7	0.7	66.1	0.1	66.0	0.0
Sutter Street	From Market Street to State Route 20	200	50.2	50.6	0.4	50.6	0.4	50.6	0.4	54.4	4.2	51.0	0.7	50.6	0.4
North George Washington Blvd	From Franklin Road to State Route 20	50	63.7	63.7	0.1	63.7	0.1	63.7	0.1	64.8	1.1	63.8	0.1	63.7	0.1
State Route 20	From North George Washington Blvd to El Margarita Road	100	70.5	70.5	0.0	70.5	0.0	70.5	0.0	71.2	0.7	70.6	0.1	70.5	0.0
State Route 20	From El Margarita Road to Tharp Road	100	70.9	71.0	0.0	71.0	0.0	71.0	0.0	71.5	0.6	71.0	0.1	71.0	0.0
State Route 20	From Tharp Road to Civic Center Boulevard	1000	60.1	60.2	0.0	60.2	0.0	60.2	0.0	60.8	0.7	60.2	0.1	60.2	0.0
State Route 20	From Civic Center Boulevard to Golden State Highway	1000	60.5	60.5	0.0	60.5	0.0	60.5	0.0	61.2	0.7	60.6	0.1	60.5	0.0
State Route 20	From Golden State Highway to Clark Avenue	250	66.3	66.3	0.0	66.3	0.0	66.3	0.0	67.0	0.7	66.4	0.1	66.3	0.0
State Route 20	From Clark Avenue to Live Oak Boulevard	150	69.8	69.8	0.0	69.8	0.0	69.8	0.0	70.3	0.5	69.9	0.1	69.8	0.0
State Route 20	From Live Oak Boulevard to Plumas Street	300	66.3	66.4	0.0	66.4	0.0	66.4	0.0	66.9	0.6	66.4	0.1	66.4	0.0
State Route 20	From Plumas Street to Sutter Street	200	67.5	67.6	0.0	67.6	0.0	67.6	0.0	68.2	0.7	67.6	0.1	67.6	0.0
State Route 20	From Sutter Street to Feather River Way	1350	60.0	60.0	0.0	60.0	0.0	60.0	0.0	60.5	0.6	60.0	0.1	60.0	0.0
State Route 20	From Feather River Way to Orange Street	100	70.4	70.4	0.0	70.4	0.0	70.4	0.0	71.1	0.7	70.5	0.1	70.4	0.0
State Route 20	From Orange Street to State Route 70	150	68.8	68.9	0.0	68.9	0.0	68.9	0.0	69.5	0.6	68.9	0.1	68.9	0.0
State Route 70	From 10th Street to 9th Street	200	68.4	68.5	0.0	68.5	0.0	68.5	0.0	69.1	0.7	68.5	0.1	68.5	0.0
State Route 70	From 9th Street to 7th Street	250	67.4	67.4	0.0	67.4	0.0	67.4	0.0	68.1	0.7	67.5	0.1	67.4	0.0
State Route 70	From 7th Street to 5th Street	150	70.0	70.0	0.0	70.0	0.0	70.0	0.0	70.6	0.7	70.0	0.1	70.0	0.0
State Route 70	From 5th Street to 3rd Street	50	75.0	75.1	0.0	75.1	0.0	75.1	0.0	75.7	0.6	75.1	0.1	75.1	0.0
State Route 70	From 3rd Street to 1st Street	250	69.1	69.1	0.0	69.1	0.0	69.1	0.0	69.6	0.5	69.2	0.1	69.1	0.0
State Route 70	From 1st Street to North Beale Road	350	71.5	71.5	0.0	71.5	0.0	71.5	0.0	72.0	0.5	71.5	0.1	71.5	0.0
State Route 70	From North Beale Road to Feather River Boulevard	450	69.5	69.5	0.0	69.5	0.0	69.5	0.0	70.1	0.6	69.6	0.1	69.5	0.0

Table 3.13-5. Traffic Noise—Existing plus Construction Conditions (dB L_{eq})

Roadway	Roadway Segment	Distance (feet)[1]	Existing Traffic	Existing Traffic Noise and Noise Increase from Construction Traffic (Haul Trucks and Workers) in each Phase											
				Phase 1	Increase[2]	Phase 2	Increase	Phase 3	Increase	Phase 4	Increase	Phases 5 & 6	Increase	Phase 7	Increase
State Route 70	From Feather River Boulevard to Erle Road	500	68.9	69.0	0.0	69.0	0.0	69.0	0.0	69.5	0.6	69.0	0.1	69.0	0.0
Hammonton-Smartville Road	From Hammonton Road to Hackberry Way	150	57.7	58.1	0.4	58.1	0.4	58.1	0.4	61.9	4.2	58.5	0.7	58.1	0.4
Hammonton-Smartville Road	From Hackberry Way to Griffin Avenue	50	64.5	64.7	0.2	64.7	0.2	64.8	0.3	67.6	3.1	65.0	0.5	64.7	0.2
Hammonton-Smartville Road	From Griffin Avenue to Alberta Avenue	50	62.8	63.1	0.4	63.1	0.3	63.1	0.4	66.8	4.0	63.5	0.7	63.1	0.3
Hammonton-Smartville Road	From Alberta Avenue to Dunning Avenue	50	58.3	59.2	0.9	59.2	0.9	59.3	1.0	65.5	7.2	60.0	1.7	59.2	0.9
Hammonton-Smartville Road	From Dunning Avenue to Mapes Way	50	64.5	64.8	0.2	64.8	0.2	64.8	0.3	67.6	3.0	65.0	0.5	64.8	0.2
Hammonton-Smartville Road	From Mapes Way to Simpson Lane	50	59.2	60.0	0.8	60.0	0.7	60.1	0.8	65.7	6.5	60.7	1.4	60.0	0.7
Hammonton-Smartville Road	From Simpson Lane to Lindhurst	50	66.5	66.6	0.2	66.6	0.1	66.6	0.2	68.6	2.2	66.8	0.3	66.6	0.1
Lindhurst	From Hammonton-Smartville Road to Erle Road	200	60.2	60.4	0.2	60.4	0.2	60.4	0.2	62.5	2.3	60.6	0.3	60.4	0.2
State Route 70	From Erle Road to Olivehurst Avenue	150	73.5	73.5	0.0	73.5	0.0	73.5	0.0	74.2	0.7	73.6	0.1	73.5	0.0
State Route 70	From Olivehurst Avenue to State Route 65	150	72.9	73.0	0.0	73.0	0.0	73.0	0.0	73.7	0.7	73.0	0.1	73.0	0.0
State Route 70	From State Route 65 to McGowan Parkway	300	67.4	67.5	0.1	67.5	0.1	67.5	0.1	68.7	1.3	67.6	0.2	67.5	0.1
State Route 70	From McGowan Parkway to Plumas Arboga Road	250	67.1	67.2	0.1	67.2	0.1	67.2	0.1	68.7	1.6	67.3	0.2	67.2	0.1
State Route 70	From Plumas Arboga Road to Feather River Boulevard	200	68.7	68.8	0.1	68.8	0.1	68.8	0.1	70.1	1.4	68.8	0.2	68.8	0.1
State Route 70	From Feather River Boulevard to South of Feather River Boulevard	1200	61.1	61.2	0.1	61.1	0.1	61.2	0.1	62.4	1.3	61.2	0.2	61.1	0.1
Plumas Arboga Road	From Old Marysville Road to west of Old Marysville Road	100	55.8	56.1	0.2	56.0	0.2	56.1	0.2	58.6	2.8	56.3	0.4	56.0	0.2
Feather River Boulevard	From State Route 70 to Chalice Creek Road	950	38.3	38.9	0.6	38.9	0.6	39.0	0.6	43.9	5.6	39.4	1.1	38.9	0.6

Notes: dB = A-weighted decibels; L_{eq} = equivalent noise level.

[1] Distance from the closest noise-sensitive use along the segment.

[2] Increased levels (dB) at each phase above existing traffic noise.

Source: Modeling conducted by AECOM in 2015

Noise-sensitive land uses, including residential properties, are located within 50–1,350 feet from the centerline of the routes designated for hauling materials to and from either Marysville City or Yuba City. The unmitigated noise levels at the nearest noise-sensitive uses produced by construction traffic for the proposed action would range from approximately 38.9 dBA (Phase 3 minimum level) to 75.7 dBA (Phase 4 maximum level) (Table 3.13-5). These results represent the worst-case, conservative noise exposure because they do not consider noise attenuation associated with intervening structures and atmospheric absorption. Therefore, actual construction traffic noise levels could be less.

The planning standards presented in the 2030 General Plan (Noise Element, Table Public Health & Safety-1, Maximum Allowable Noise Exposure from Transportation Noise Sources at Noise-Sensitive Land Uses) were used for this analysis (Yuba County 2011). Project-related construction noise at noise-sensitive residential properties (buildings) in the project vicinity would be considered significant if it would exceed 60 dBA L_{eq} during daytime hours (7 a.m.–10 p.m.) or 45 dBA L_{eq} during nighttime hours (10 p.m.–7 a.m.). These are the most restrictive criteria established by Yuba County and provide the most conservative assessment of noise impacts at existing noise-sensitive uses in the project vicinity.

As discussed above, the unmitigated project-related, construction traffic noise levels could be as high as 75.7 dBA L_{eq} at the residential properties closest to the routes used by project-related construction traffic (Table 3.13-5). However, existing traffic noise levels along most of these routes are above the threshold of 60 dBA L_{eq}. The increase in noise levels above the 60 dBA L_{eq} threshold caused by project construction traffic would occur only under Phase 4 (levee reconstruction, drained berm construction, and landside fill placement), and only along two of the studied roadway segments: Hammonton-Smartville Road from Alberta Avenue to Dunning Avenue and from Mapes Way to Simpson Lane. Existing traffic noise levels along these two segments are 58.3 and 59.2 dBA L_{eq}, respectively (Table 3.13-2), and thus are below the threshold of 60 dBA L_{eq}. Project-related construction traffic noise levels along these segments, under the worst case scenario (Phase 4), would be 65.5 and 65.7 dBA L_{eq}, respectively, and thus would exceed the daytime threshold of 60 dBA L_{eq} by 5 to 6 dB. Therefore, although construction activities would be temporary and infrequent, if the Marysville Site were used for hauling materials, noise levels along these two segments would exceed established thresholds, and this impact would be significant. Implementing Mitigation Measure Noise-1, identified below, would reduce the impact of daytime construction-related traffic noise along the two relevant roadway segments to a less-than-significant level.

Project-related construction activities under Phase 3 (construction activities associated with cutoff walls) would extend into the nighttime hours (10 p.m.–7 a.m.). However, construction-related truck traffic would not occur during the nights. Therefore, the impact of nighttime construction-related traffic noise would be less than significant.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. No exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels would result. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. Such efforts could temporarily generate groundborne vibration or groundborne noise, but the effects would likely be less than those

analyzed for the proposed action. The types of construction equipment would be similar, but the flood fighting activities would be expected to continue for a shorter time period. Therefore, this impact of the no-action alternative would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact. Construction vibration would occur under the proposed action during equipment operation on the project site and during the transport of construction equipment, materials, and workers to and from the site.

Construction Equipment

The use of heavy earthmoving equipment during construction activities would produce vibration measuring approximately 87 VdB (0.089 in/sec PPV) at a distance of 25 feet (which is the reference vibration level for operation of a large bulldozer [FTA 2006; Caltrans 2004]). The distance between proposed construction activities and the closest acoustically sensitive uses would be approximately 100–1,700 feet (Table 3.13-6). Assuming a standard reduction of 9 VdB per doubling of distance (FTA 2006), the project-related construction vibration level at the nearest receivers would be approximately 27–57 VdB. This level of vibration is below any established threshold of significance and would not likely be perceptible. Therefore, this impact would be less than significant.

According to FTA guidelines (FTA 2006, Table 12-3, Construction Vibration Damage Criteria), a vibration-damage criterion of 0.20 in/sec PPV should be considered for non-engineered timber and masonry buildings. Furthermore, structures or buildings constructed of reinforced concrete, steel, or timber have a vibration-damage criterion of 0.50 in/sec PPV. The project-related construction vibration level at the nearest receivers would be approximately 0.0001 to 0.003 PPV (Table 3.13-6). This level of vibration is below any established threshold of significance and would not likely be perceptible. Therefore, this impact would be less than significant.

Table 3.13-6. Construction Equipment Vibration Levels at the Nearest Noise-Sensitive Uses in the Project Area

Receiver	Location	Shortest Distance (feet) Between Noise-Sensitive Uses and Proposed Construction Areas	Project Vibration Levels	
			PPV	VdB
ST-01	1740 Ventana Court (residential)	2,500	0.0001	27
ST-02	1751 Cimarron Drive (school)	2,000	0.0001	30
ST-03	446 Edwards Court (residential)	800	0.0005	42
ST-04	2514 Old Marysville Road (residential)	250	0.003	57
ST-05	1992 Plumas Arboga Road (residential)	600	0.0008	46
LT-01	2127 Feather Ridge Drive (residential)	250	0.003	57

Notes: PPV = peak particle velocity; VdB = vibration decibels.
Source: Data compiled by AECOM in 2015

Construction Traffic

Construction under the proposed action would result in additional vehicle trips on the local roadway network as workers commute and equipment and materials are transported. Heavy truck traffic can generate groundborne vibration, which varies considerably depending on vehicle type, weight, and pavement conditions. However, as shown in Exhibit 3.13-2 above for rubber-tired vehicles, groundborne vibration levels generated by vehicular traffic are not typically perceptible outside of the road right-of-way. Therefore, this impact would be less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented; therefore, ambient noise levels would not change. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. The noise levels associated with flood fighting would be temporary and would not introduce permanent noise sources. Therefore, no impact would occur.

PROPOSED ACTION

No Impact. The proposed action would involve only short-term construction activities and would not introduce any permanent noise sources. In addition, the project would not alter the local environment, such as by increasing the noise production/exposure associated with existing, permanent sources of noise in the project area. Therefore, no impact would occur.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented; therefore, ambient noise levels in the project vicinity would not change. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. The temporary effects of flood fighting on ambient noise levels would likely be less than those analyzed for the proposed action. The types of construction equipment would be similar, but the flood fighting activities would be expected to continue for a shorter time period. Therefore, this impact of the no-action alternative would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Construction noise would be generated under the proposed action during equipment operation on the project site and during the transport of construction equipment, materials, and workers to and from the site.

Construction Equipment

Project-related construction noise at noise-sensitive residential properties (buildings) in the project vicinity would be considered significant if it would exceed the measured ambient noise level by 5 dB or more. Project-related construction noise levels were estimated using the FHWA Roadway Construction Noise Model (FHWA 2006) and a list of expected heavy equipment (Table 3.13-3). As shown, construction equipment noise levels would be 84 dBA L_{eq} in Phase 1, 87 dBA L_{eq} in Phases 2, 3, 4, 5, and 6, and 81 dBA L_{eq} in Phase 7. Therefore, the unmitigated noise level produced by the combinations of equipment for the proposed action's construction phases would be approximately 81–87 dBA at a distance of 50 feet (whether the construction occurs over one year or two years). Assuming standard spherical spreading loss (-6 dB per doubling of distance) and the highest unmitigated construction noise level of 87 dBA at 50 feet, the project construction noise levels were estimated to be 54–74 dBA L_{eq} at the nearest noise-sensitive uses (Table 3.13-4). These results represent the worst-case, conservative noise exposure because they do not consider noise attenuation associated with intervening structures and atmospheric absorption. Therefore, actual construction equipment noise levels could be less.

Ambient noise levels at the existing rural residential properties in the project vicinity ranged between 47 and 59 dBA L_{eq} during the daytime hours (7 a.m.–10 p.m.) (Table 3.13-3). The estimated project-related construction noise levels of 54–74 dBA L_{eq} at the residences closest to the project area (Table 3.13-4) would increase exterior ambient noise levels of 47 dBA L_{eq} and 59 dBA L_{eq} by 7–15 dB. This increase would exceed the established threshold of 5 dB above ambient noise levels. Also, this noise level exceeds the threshold of 60 dBA L_{eq}; therefore, this impact would be significant. Implementing Mitigation Measure Noise-2, identified below, would reduce the impact of daytime construction-related increases in exterior ambient noise levels to a less-than-significant level.

Project-related construction activities under Phase 3 (construction activities associated with cutoff walls) would occur during nighttime hours (10 p.m.–7 a.m.). Construction noise would exceed the applicable nighttime threshold of 45 dBA L_{eq}. Therefore, TRLIA would need to obtain a permit from the Yuba County Planning and Building Services Department director as identified in the noise ordinance to construct cutoff walls during nighttime hours. This impact would be less than significant, assuming approval of the exceedance of the Yuba County Noise Ordinance during cutoff wall construction is granted. Therefore, the impact of nighttime construction-related equipment noise would be less than significant. Nonetheless, implementation of Mitigation Measure Noise-2 would minimize nighttime noise levels during construction.

With respect to the interior noise levels, as discussed previously in this section under "a)," project-related construction noise levels with doors and windows closed would range between 29 and 49 dBA L_{eq} at the residences closest to the project area (Table 3.13-4), which would increase interior noise levels of 45 dB by 0–4 dB. This level of increase would not exceed the established threshold of 5 dB above ambient noise levels. Therefore, the impact of daytime construction-related increases in interior ambient noise levels would be less than significant.

Project construction workers would be exposed to typical noise levels from heavy construction equipment during their daily activities, which would be substantially louder than noise from aircraft operations. It is expected that project construction workers would use hearing protection while working around heavy equipment. In addition, using electrically powered equipment instead of internal combustion equipment where applicable and equipping all construction equipment with noise-reduction devices such as mufflers, as described under Mitigation Measure

Noise-2, as well as the expected on-site construction noise safety measures (beyond the scope of this document) would reduce construction workers exposure to a less-than-significant equipment operations noise.

Construction Traffic

Construction under the proposed action would result in additional vehicle trips on the local roadway network as workers commute and equipment and materials are transported.

Noise levels for project-related construction traffic were estimated for each project phase using the FHWA Roadway Construction Noise Model (FHWA 2006) and a list of expected heavy equipment (Table 3.13-5). Noise-sensitive land uses, including residential properties, are located within 50–1,350 feet from the centerline of the routes designated for hauling materials to and from either Marysville or Yuba City. The unmitigated noise levels at the nearest noise-sensitive uses produced by construction traffic for the proposed action would range from approximately 38.9 dBA (Phase 3 minimum level) to 75.7 dBA (Phase 4 maximum level) (Table 3.13-5). These results represent the worst-case, conservative noise exposure because they do not consider noise attenuation associated with intervening structures and atmospheric absorption. Therefore, actual construction traffic noise levels could be less.

The existing traffic noise levels in the project vicinity range from 47 to 59 dBA L_{eq}, as shown in Table 3.13-2, above. Project-related construction noise at noise-sensitive residential properties (buildings) in the project vicinity would be considered significant if it would exceed the existing traffic noise level by 5 dB or more As discussed above, the unmitigated project-related, construction traffic noise levels could be as high as 75.7 dBA L_{eq} at the residential properties closest to the routes used by project-related construction traffic (Table 3.13-5). However, the increase of 5 dB or more as a result of project construction traffic would occur only under Phase 4 (levee reconstruction, drained berm construction, and landside fill placement). The increase also would occur along only two of the studied roadway segments: Hammonton-Smartville Road from Alberta Avenue to Dunning Avenue and from Mapes Way to Simpson Lane. Existing traffic noise levels along these segments are 58.3 and 59.2 dBA L_{eq}, respectively. Project-related construction traffic noise levels along these segments, under worst case scenario (Phase 4), would be 65.5 and 65.7 dBA L_{eq}, respectively, and thus would exceed the existing traffic noise levels along these segments by 6.5 and 7.2 dB. Project-related construction traffic noise level along Feather River Boulevard from State Route 70 to Chalice Creek Road would be 43.9 dBA L_{eq}, and would exceed the existing traffic noise level of 38.3 dBA L_{eq} along this segment by 5.6 dB. These noise levels exceed the threshold of 5 dB or more above existing noise levels. Therefore, this impact would be significant. Implementing Mitigation Measure Noise-1, identified below, would reduce the impact of a daytime construction traffic–related noise level increase along these roadway segments to a less-than-significant level.

Project-related construction activities under Phase 3 (construction activities associated with cutoff walls) would extend into the nighttime hours (10 p.m.–7 a.m.). However, construction-related truck traffic would not occur during the nights. Therefore, the impact of nighttime construction-related traffic noise would be less than significant.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?

NO-ACTION ALTERNATIVE

No Impact. The project area is not located within an airport land use plan or within 2 miles of a public airport or public use airport. Under the no-action alternative, these conditions would remain the same, and there would be no exposure to excessive noise levels of people residing or working in the project area to excessive noise levels. No impact would occur.

PROPOSED ACTION

No Impact. The project area is not located within 2 miles of a public airport. The nearest airport, the general-aviation Yuba County Airport in Olivehurst, is located approximately 3 miles northwest of the project site. Because all project activities would be located outside of the Airport Comprehensive Land Use Plan area and the project would not involve any aircraft uses for construction or operations, the proposed action would not affect any airport operations. In addition, the project does not propose the addition of any noise-sensitive receivers and would not expose people on- or off-site to excessive aircraft noise levels. Therefore, no impact would occur.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

NO-ACTION ALTERNATIVE

No Impact. The WPIC West Levee is not located in the vicinity of a private airstrip. Under the no-action alternative, these conditions would remain the same, and there would be no exposure to excessive noise levels of people residing or working in the project area to excessive noise levels. No impact would occur.

PROPOSED ACTION

No Impact. No private airstrips are located in the vicinity (within 2 miles) of the project site, and the proposed action would not affect any airstrip operations. The nearest private airstrip, the Van Dyke Airstrip, is located approximately 8 miles south of the project site. Therefore, implementing the proposed action would not expose people on- or off-site to excessive noise levels. No impact would occur.

3.13.3 MITIGATION

To the extent feasible and practicable, the primary construction contractors will employ noise-reducing construction practices such that noise from construction complies with applicable noise-level rules, regulations, and ordinances that apply to the work, including the noise standards established for non-transportation noise sources by the applicable agencies (Yuba County), depending on the jurisdictional location of the affected receptor(s). Measures to limit noise are listed below.

Mitigation Measure Noise-1: Employ Noise-Reducing Construction Measures for Construction-Related Traffic.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential impacts related to construction-related traffic noise:

- Establish and enforce construction site and haul road speed limits.
- Route construction-related truck traffic along roadways that will cause the least disturbance to residents.
- Use high-grade engine exhaust silencers and engine-casing sound insulation.

Alternatively, potential impacts would be adequately reduced by using only the borrow sites located in Yuba City, not the Marysville borrow site.

Timing: During all construction phases.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure Noise-2: Employ Noise-Reducing Construction Measures for Stationary Construction Equipment.

TRLIA and its construction contractor(s) will implement the following measures to reduce potential impacts related to construction-related increases in exterior ambient noise levels:

- Provide written notification to the potentially affected residents before construction, identifying the type, duration, and frequency of construction activities within 1,000 feet of residences. Notification materials shall also identify a mechanism for residents to register complaints with the appropriate jurisdiction if construction noise levels are overly intrusive or construction occurs outside the permitted hours.
- Provide written notification of heavy construction activities to all noise-sensitive receptors located adjacent to the project site and heavy construction operations. Notification shall include anticipated dates and hours during which construction activities are anticipated to occur and contact information, including a daytime telephone number, for the project representative to be contacted in the event that noise levels are deemed excessive. Recommendations to assist noise-sensitive land uses in reducing interior noise levels (e.g., closing windows and doors) shall be included in the notification.
- Prohibit the start-up of machines or equipment before 7 a.m. and after 7 p.m. Monday through Saturday and before 9 a.m. and past 6 p.m. on Sunday (except during cutoff wall construction).
- Prohibit use of materials and equipment deliveries before 7 a.m. and after 7 p.m., Monday through Saturday and before 9 a.m. and past 6 p.m. on Sunday (except during cutoff wall construction).
- To the extent practicable, construction activities shall be limited to the hours of 7 a.m. to 10 p.m. when operations occur within 500 feet of a residential or other noise-sensitive land use.

- Construction equipment travel on the levee crown, the land side of the levee, landside staging areas, and public roadways shall be minimized and arranged to minimize disturbance to occupied residences (i.e., between 7 a.m. and 10 p.m.) to the extent possible. During cutoff wall construction, TRLIA shall work with the construction contractor and nearby residents to minimize disturbance to occupied residences.

- Minimize idling times of equipment either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes.

- Use electrically powered equipment instead of internal combustion equipment where practicable and feasible.

- Restrict the use of bells, whistles, alarms, and horns to safety-warning purposes.

- Equip all construction equipment with noise-reduction devices such as mufflers to minimize construction noise and operate all internal combustion engines with exhaust and intake silencers.

- To the extent feasible, the simultaneous operation of multiple construction equipment within 50 feet of residences shall be limited.

- Locate fixed construction equipment (e.g., compressors and generators), construction staging and stockpiling areas, and construction vehicle routes as far as feasible from noise-sensitive receptors.

- Use noise-attenuating buffers such as structures, truck trailers, or soil piles between noise generation sources and sensitive receptors, where feasible and particularly in locations subject to prolonged construction.

- Designate a disturbance coordinator and conspicuously post this person's number around the project sites, in adjacent public spaces, and in construction notifications. The disturbance coordinator shall be responsible for responding to any complaints about construction activities. The disturbance coordinator shall receive all public complaints about construction disturbances and be responsible for determining the cause of the complaint and implementation of feasible measures to be taken to alleviate the problem.

Timing: Before and during all construction phases.

Responsibility: TRLIA and its construction contractor(s).

Residual Impact after Mitigation Measures

Implementation of Mitigation Measure NOISE-1 and NOISE-2 will result in a less-than-significant impact with respect to noise.

3.14 POPULATION AND HOUSING

3.14.1 ENVIRONMENTAL SETTING

POPULATION

Yuba County has experienced population growth in the recent past, and this growth is forecasted to continue. The California Department of Finance (DOF) estimates that Yuba County's total population increased from 60,219 in 2000 to 72,155 in 2010, a 20% increase over the 10-year period (DOF 2012). Approximately 78% of the 2010 population resided in the unincorporated areas of the county and 22% in incorporated areas (DOF 2012). As of January 1, 2014, the population of Yuba County was 73,682 people (DOF 2014a).

The Sacramento Area Council of Governments projects a more rapid population increase for the county in the coming years as approved master-planned developments begin construction and as transportation improvements stimulate further development in Yuba County (Yuba County 2013:H-37). Yuba County's projected growth rate through 2060 is projected to be the second-highest in the state after neighboring Sutter County (Yuba County 2011a:4.10-10). DOF projects that the population in Yuba County will reach a total of 130,166 new residents by 2060 (DOF 2014b).

HOUSING

According to DOF, the total number of housing units in Yuba County increased from 22,636 in 2000 to 27,635 in 2010, which represents a housing growth rate of approximately 22% (DOF 2012). The majority of housing in 2000 and 2010 consisted of single-family homes. Approximately 67% of housing units in 2000 and 72% of housing units in 2010 were single-family homes, and the average household size was 2.88 in 2000 and 2.92 in 2010 (considered to be a relatively large household) (DOF 2012). The bulk of new housing during this time period was constructed in the unincorporated communities of Linda, Olivehurst, Arboga, and Plumas Lake (Yuba County 2011a:4.10-10). As of January 1, 2014, the number of single-family and multi-family housing units in Yuba County was 27,805 (DOF 2014a).

3.14.2 ENVIRONMENTAL CONSEQUENCES

a) Induce substantial 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)?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Existing conditions would not be modified, and no construction activities would occur, other than those potentially associated with the continuation of existing levee inspection and maintenance requirements. Because the no-action alternative would not involve constructing new homes or businesses or extending roadways or other infrastructure, it would not directly or indirectly induce population growth. No impact would occur.

PROPOSED ACTION

No Impact. Because the proposed action would not involve constructing new homes or businesses or extending roadways or other infrastructure, it would not directly induce population growth.

As discussed in Section 3.10, "Land Use Planning," local land use decisions are within the jurisdiction of Yuba County, which has adopted a general plan consistent with state law. The *Yuba County 2030 General Plan* (Yuba County 2011b) provides an overall framework for growth and development in the county. Lands west of the WPIC West Levee are located within the Valley Growth Boundary, where the 2030 General Plan calls for development within unincorporated areas to be focused over the long-term. As a part of the 2030 General Plan, the County ensured development capacity in the Valley Growth Boundary that would accommodate long-term population and employment growth. Planned development in the vicinity of the WPIC West Levee is within the County's Valley Growth Boundary and includes housing, commercial, and office development within the North Arboga area, the Plumas Lake area, and the Bear River area.

The proposed action would ensure the WPIC West Levee would be in compliance with the ULDC for 200-year flood protection and would reduce the potential for urban flooding in these areas. As stated above, growth throughout the project area has already been planned for as part of the 2030 General Plan. The proposed action would not allow additional growth to occur other than what has already been planned, nor would it change the locations where this growth is planned to occur. Consequently, implementation of the proposed action would not affect current and/or projected population growth patterns within Yuba County, as already evaluated and planned for in the 2030 General Plan, and therefore would not be growth-inducing itself. Therefore, no impact would occur.

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

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, flooding would have the potential to destroy or damage residences in rural areas of the county and residences in nearby communities, such as Plumas Lake and Arboga, resulting in temporary relocation of residents while the surrounding area remains flooded. Housing could be reconstructed in the same location; however, there is the potential that some residential relocations would be permanent. It is expected that residential relocations would assimilate into nearby communities without the need to construct many if any replacement housing elsewhere. Therefore, this impact would be less than significant.

PROPOSED ACTION

No Impact. Construction that would occur outside of the levee footprint would be on vacant, undeveloped land. There are no proposed activities that would displace existing housing. Because there are no existing residences on the project site, implementation of the proposed action would not displace existing housing or people and necessitate the construction of replacement housing elsewhere. Therefore, no impact would occur.

3.14.3 MITIGATION

There would be no significant short- or long-term effects related to population and housing in the project area because the project would not induce population growth or displace housing or people. No mitigation is required.

3.15 PUBLIC SERVICES

3.15.1 ENVIRONMENTAL SETTING

FIRE PROTECTION

The project site lies primarily within the Linda Fire Protection District (Yuba LAFCO 2009), which serves the communities of Linda, West Linda, Arboga, and Plumas Lake (Yuba County 2011). The closest fire station within the Linda Fire Protection District is Fire Station 3, located at 1765 River Oaks Boulevard in Plumas Lake (Linda Fire Protection District 2015). Fire Station 3 is located approximately 1 mile west of the westernmost point of the project site.

POLICE PROTECTION

The Yuba County Sheriff's Department and the California Highway Patrol provide law enforcement services throughout unincorporated Yuba County (Yuba County 2011). The main office of the Yuba County Sheriff's Department is located at 215 Fifth Street in Marysville. The closest sheriff's office to the project site is the Plumas Lake Field Station (Linda Fire Station), located at 1765 River Oaks Boulevard in Plumas Lake (Yuba County Sheriff's Department 2015). The Plumas Lake Field Station is located approximately 1 mile west of the westernmost point of the project site.

SCHOOLS

The community of Plumas Lake is served by the Plumas Lake Elementary School District. The district operates Cobblestone Elementary School, Rio del Oro Elementary School, and Riverside Meadows Intermediate School. However, none of these schools are located within the project study area. Riverside Meadows, located at 1751 Cimarron Drive in Plumas Lake, is the closest school to the project site (Plumas Lake Elementary School District 2015). Riverside Meadows is located approximately 0.4 mile west of the project site.

PARKS

The community of Plumas Lake is served by numerous community parks: JoAnne Aiello Memorial Park, Bear River Park, Donald Brown Memorial Park, Orchard Glen Park, River Glen Park, River Park, Rolling Hills Park, Veteran's Park, Bill Pinkerton Memorial Park, Richard Doug Donahue Park, Eufay Wood Sr. Memorial Park, and Leila Smith Memorial Park (Olivehurst Public Utility District 2015).

OTHER PUBLIC FACILITIES

There are no other public facilities at or near the project site.

3.15.2 ENVIRONMENTAL CONSEQUENCES

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:

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, transportation systems, including SR-70, could be substantially adversely affected in the area between the WPIC West Levee and the Feather River. If a levee were to fail, roadway flooding could substantially affect the ability of emergency responders to move through the Plumas Lake area in the short term, and in the long term if damaged facilities could not be repaired quickly. In addition, local schools could be substantially damaged, resulting in temporary service interruptions or requiring temporary relocation of students to facilities in neighboring school districts. Park facilities also could suffer minor damage.

PROPOSED ACTION

No Impact. Implementation of the proposed action would not increase demand for public services, nor would it result in any new or physically altered government facilities. No impact on public services would occur. No public facilities exist in the project area that would be affected by construction or operation of the proposed action. Therefore, no impact on other public facilities would occur. Furthermore, the proposed action would reduce the risk of levee failure, resulting in beneficial effects.

Implementing the proposed action would not create new housing or other structures and, therefore, would not require additional fire protection facilities. Access to the site and surrounding residences would be maintained during construction in accordance with Yuba County fire policies and regulations. Therefore, no impact would occur.

The levee improvements to reduce the flood risk would be beneficial to fire services in the vicinity of the Plumas Lake community because they would reduce the future risk of flooding in the affected areas and the associated threat to lives and infrastructure. The proposed action would have a beneficial effect on fire protection by providing adequate 200-year flood protection.

The proposed action would not result in any new housing or other structures, and therefore, would not require additional fire or police protection facilities, generate new students, or increase demand for parks or other government facilities. Therefore, no impact would occur.

Furthermore, the levee improvements to reduce the flood risk would be beneficial to public services within the Plumas Lake community because they would reduce the future risk of flooding in the affected areas and the

associated threat to lives and infrastructure. Implementation of the proposed action would have a beneficial effect on public services by providing adequate 200-year flood protection.

3.15.3 MITIGATION

Under the proposed action, there would be no significant adverse effects related to public services. No mitigation is required.

3.16 RECREATIONAL RESOURCES

3.16.1 ENVIRONMENTAL SETTING

Numerous rivers, creeks, and reservoirs are used for recreation in Yuba County. Where access is available, fishing, hunting, picnicking, rafting, tubing, and swimming are the dominant recreational uses on the Feather, Yuba, and Bear Rivers (YCWA 2003 in TRLIA 2004).

Nearly the entire project would occur along the WPIC West Levee, where no formal recreational uses occur. The haul route to Reach 2B would coincide with a proposed future Class I bike path (Yuba County 2012). However, only a portion of the path has been improved, and it does not currently provide formal recreational access. Incidental recreational use, such as walking on the levee, occurs. No publicly owned recreation sites are located along the WPIC. The project area is not located in the vicinity of the Feather River or Yuba River. The Bear River is located immediately to the south, but no construction activities would affect the Bear River.

3.16.2 ENVIRONMENTAL CONSEQUENCES

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches in need of remediation would not be in compliance with the ULDC for 200-year flood protection and would continue to be deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. There are limited recreational uses along the WPIC and this would remain unchanged. However, if no action is taken to repair the deficient levee reaches and a levee failure were to occur, any recreational uses in the flooded area would be adversely affected. Park facilities could also suffer minor damage. Because of the limited recreational use and facilities in the project area, this impact would be less than significant.

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?

PROPOSED ACTION

No Impact. Implementing the proposed action would not cause physical deterioration of existing recreational facilities. The project would not increase the population in the project vicinity by introducing new housing or employment opportunities; thus, it would not contribute to increased use of existing regional or local parks, marinas, or other recreational facilities, causing their deterioration. Therefore, no impact would occur.

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

PROPOSED ACTION

No Impact. No recreational facilities would be constructed or require expansion as a result of project activities; therefore, no adverse effects on the environment from such construction would occur. No recreation would be allowed along this section of the WPIC West Levee during construction and no formal recreational uses occur along the levee. Therefore, no impact would occur.

3.16.3 MITIGATION

There would be no significant short- or long-term effects on recreation in the project area. The project would not contribute to increased use of parks, marinas, or recreational facilities and would not require construction of recreational facilities. In addition, no formal recreational uses occur along the WPIC West Levee. No mitigation is required.

3.17 SOCIOECONOMIC EFFECTS AND ENVIRONMENTAL JUSTICE

3.17.1 ENVIRONMENTAL SETTING

This section describes the existing physical environment related to population, employment, income, and ethnicity and discusses the potential effects of the no-action alternative and the proposed action related to socioeconomics. In addition to providing general socioeconomic information, this section includes discussions of environmental justice with regard to disadvantaged populations, and of children and elderly populations. The information about population, employment, income, and ethnicity for the county and census tract is derived from the U.S. Census Bureau's 2009–2013 American Community Survey 5-year estimates.

INCOME AND EMPLOYMENT

The project area is located in Census Tract 407 in southern Yuba County, south of the town of Olivehurst and immediately east of SR 70. Approximately 72,574 persons resided in Yuba County and 11,653 persons resided in Census Tract 407 in 2013 (Table 3.17-1). Per capita and median household incomes were greater in Census Tract 407 than in Yuba County in 2013. Similarly, the percent unemployed in Census Tract 407 was 1.9% lower than in Yuba County (U.S. Census Bureau 2009–2013).

Table 3.17-1. Population, Income, and Unemployment in the Project Area, 2009–2013

	Total Population	Per Capita Income ($)	Median Household Income ($)	Percent Unemployed (% of Civilian Labor Force)
Census Tract 407	11,653	$23,374	$69,407	8.8%
Yuba County	72,574	$19,244	$50,648	10.7%

Source: U.S. Census Bureau 2009–2013

ENVIRONMENTAL JUSTICE

Disadvantaged populations are afforded particular consideration pursuant to Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Specifically, federal actions must be assessed for disproportionately high and adverse effects on low-income and minority populations. The analysis of the cultural, social, health, and environmental effects that these populations may sustain relative to the rest of society is referred to as "environmental justice."

As defined in Executive Order 12898 and subsequent agency guidance, the term "minority" includes any individual who is an American Indian or Alaskan Native, Asian or Pacific Islander (including Native Hawaiian), Black/African American (not of Hispanic origin), or Hispanic/Latino. The term "low-income" is defined by Executive Order 12898 and agency guidance as a person with household income at or below the U.S. Department of Health and Human Services' poverty guidelines. Minority and/or low-income populations are identified when the minority or low-income population of the affected area exceeds 50%, or the minority or low-income population percentage in the affected area is meaningfully greater than the minority or low-income population percentage in the general population. For this analysis, "meaningfully greater" was assumed to be more than 10 percentage points than the countywide percentages of minority or low-income populations.

Table 3.17-2 shows the percentage of ethnic and racial minorities and the population living under the poverty level in the project area in 2013. The percentage of ethnic and racial minorities in Census Tract 407 was 30.9%, which is 0.7% greater than Yuba County (U.S. Census Bureau 2009–2013). However, because the percentage of ethnic and racial minorities in Census Tract 407 did not exceed 50%, this community would not be considered an environmental justice community.

Table 3.17-2. Ethnic and Racial Minorities and Population Living under the Poverty Level in the Project Area, 2009–2013

	Total Population	Percent Minority	Percent Below Poverty Level
Census Tract 407	11,653	30.9%	7.8%
Yuba County	72,574	30.2%	21.6%

Source: U.S. Census Bureau 2009–2013

According to the U.S. Department of Health and Human Services, a household of four would be living under the poverty line if its 2013 income was $23,550 or less (HHS 2013). Table 3.17-2 shows the population living below the poverty level in Census Tract 407 and Yuba County. In Census Tract 407, 7.8% of the population was living below the poverty level, while the percentage was 21.6% in Yuba County (U.S. Census Bureau 2009–2013). Because the percentage of the population living under the poverty level in Census Tract 407 was 13.8 percentage points less than for Yuba County, this community would not be considered an environmental justice community.

CHILDREN AND ELDERLY PERSONS

Table 3.17-3 shows the percentages of children and the elderly in the project area between 2009 and 2013. Children compose 30.9% of Census Tract 407, which is 2.2 percentage points greater than the percentage of children in Yuba County. Elderly, who are persons 65 years or greater, make up 5.1% of the population in Census Tract 407, or 5.3% less than the percentage of elderly in Yuba County (U.S. Census Bureau 2009–2013).

Table 3.17-3. Children and Elderly Persons in the Project Area, 2009–2013			
	Total Population	Percent Children	Percent Elderly
Census Tract 407	11,653	30.9%	5.1%
Yuba County	72,574	28.7%	10.4%

Notes: Children are persons 17 years or younger; elderly are 65 years or older
Source: U.S. Census Bureau 2009–2013

3.17.2 Environmental Consequences

No-Action Alternative

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, residents would be temporarily and permanently displaced over a wide area. In addition, a levee breach could temporarily incapacitate the agricultural land west of the WPIC to the Feather River, which could result in short-term loss of agriculture-related jobs. This displacement of residents and loss of jobs resulting from a levee breach would be considered a significant adverse socioeconomic impact. However, this impact would occur across a wide range of incomes and ethnic classifications, ranging from low-income residents in the area south of Olivehurst to landowners to owners of single-family residences in the Plumas Lake Specific Plan area, to landowners with large agricultural landholdings. Therefore, although the no-action alternative could result in a significant adverse socioeconomic effect, this effect would not be considered a significant adverse effect on environmental justice.

No minority or low-income populations have been identified that would be adversely impacted by the no-action alternative. Therefore, in accordance with the provisions of Executive Order 12898, no further environmental justice analysis is required.

Proposed Action

No Impact. The proposed action would result in a short-term increase in construction employment, but this project would not require a significant labor pool. Thus, the local labor population is anticipated to be able to meet this need and no change in the local population base is anticipated. Therefore, implementing the proposed action would not affect income or employment in the project area.

No minority or low-income populations have been identified that would be adversely impacted by the proposed action. Therefore, in accordance with the provisions of Executive Order 12898, no further environmental justice analysis is required. The proposed action would not result in any adverse impacts; therefore, children and elderly populations would not be disproportionately affected by the project.

3.17.3 MITIGATION

The existing local labor force is expected to meet temporary construction employment needs, there are no environmental justice communities in the project area, and children and elderly populations would not be disproportionately affected by the proposed action. Therefore, there would be no significant short- or long-term effects related to socioeconomics and environmental justice in the project area. No mitigation is required.

3.18 TRANSPORTATION AND CIRCULATION

3.18.1 ENVIRONMENTAL SETTING

STATE HIGHWAYS

SR 70 is the primary state highway providing access to the project area. Two other state highways are located in or near the project vicinity: SR 65, which meets SR 70 north of the project vicinity in Olivehurst and continues northeast into Marysville City; and SR 20, which meets SR 70 in Marysville and continues northwest across the Yuba River to Yuba City. Most of Yuba County's main areas of traffic congestion are located along SR 70, SR 65, SR 20, and bridges across the Yuba and Feather Rivers (Yuba County 2011a: Community Development-56).

LOCAL ROADWAYS

Hammonton Smartville Road extends from Lindhurst Avenue near SR 70 northeast to Smartville Road, which connects to SR 20. Hammonton Smartville Road is a two lane regional collector road that connects the communities of Linda and Smartsville. Construction traffic for the proposed action would access Hammonton Smartville Road via North Beale Road.

Existing access roads to and from the project site would provide local access to the project construction area. Main access to the project area from SR 70 would be from Feather River Boulevard at the south end of the project site and Plumas-Arboga Road in the middle of the site (see Exhibits 2-1 through 2-12 in Chapter 2, "Alternatives"). The north end of the site may be accessed via project haul routes north from Plumas-Arboga Road or directly from northbound SR 70.

Feather River Boulevard and Plumas-Arboga Road are collector roads, defined in the *Yuba County 2030 General Plan* as "two-lane roadways that collect traffic from adjacent developments and deliver that traffic to freeway (SR 70)" (Yuba County 2011a). Roadway service levels are determined by comparing traffic volumes for selected roadway segments with level of service (LOS) capacity thresholds. For major (rural) collector roads such as Feather River Boulevard and Plumas-Arboga Road, the 2030 General Plan's threshold for peak-hour LOS is 120 trips for LOS A (free-flow travel) (Yuba County 2011a). Feather River Boulevard and Plumas-Arboga Road are both two-lane local roads.

Truck traffic represents a considerable amount of the total traffic on certain state highways and county roads. The local roadways in the project vicinity are commonly used for access to and from the project site, borrow areas (in either Marysville or Yuba City), and the nearby residences. For example, approximately 17% of traffic on Hammonton-Smartville Road east of Simpson Lane (thus, in the project vicinity) consists of trucks with three or more axles (Yuba County 2011b).

Table 3.18-1 and Exhibit 3.18-1 show the roadways in the project area that are likely to be affected by project-related traffic (i.e., haul truck routes). As shown, three alternatives were considered for the haul routes to the borrow sites: two potential borrow sites in Yuba City, shown as City 1 and City 2 (Alternatives 1 and 2), and one potential location in Marysville, shown as City 3 (Alternative 3). It is possible that based on roadway constraints, additional roadways may be used to access the project site.

Table 3.18-1. Project Area Roadways Proposed to Be Used by Haul Trucks

Roadway	From	To	Material Borrow Site Alternatives
Market Street	Flumas Street	Lynn Way	City 2
Market Street	Lynn Way	Sutter Street	City 2
Sutter Street	Market Street	State Route 20	City 2
North George Washington Boulevard	Franklin Road	State Route 20	City 1
State Route 20	North George Washington Blvd	El Margarita Road	City 1
State Route 20	El Margarita Road	Tharp Road	City 1
State Route 20	Tharp Road	Civic Center Boulevard	City 1
State Route 20	Civic Center Boulevard	Golden State Highway	City 1
State Route 20	Golden State Highway	Clark Avenue	City 1
State Route 20	Clark Avenue	Live Oak Boulevard	City 1
State Route 20	Live Oak Boulevard	Plumas Street	City 1
State Route 20	Plumas Street	Sutter Street	City 1
State Route 20	Sutter Street	Feather River Way	City 1 & 2
State Route 20	Feather River Way	Orange Street	City 1 & 2
State Route 20	Orange Street	State Route 70	City 1 & 2
State Route 70	10th Street	9th Street	City 1 & 2
State Route 70	9th Street	7th Street	City 1 & 2
State Route 70	7th Street	5th Street	City 1 & 2
State Route 70	5th Street	3rd Street	City 1 & 2
State Route 70	3rd Street	1st Street	City 1 & 2
State Route 70	1st Street	North Beale Road	City 1 & 2
State Route 70	North Beale Road	Feather River Boulevard	City1 & 2
State Route 70	Feather River Boulevard	Erle Road	City1 & 2
Hammonton-Smartville Road	Hammonton Road	Hackberry Way	City 3
Hammonton-Smartville Road	Hackberry Way	Griffin Avenue	City 3
Hammonton-Smartville Road	Griffin Avenue	Alberta Avenue	City 3
Hammonton-Smartville Road	Alberta Avenue	Dunning Avenue	City 3
Hammonton-Smartville Road	Dunning Avenue	Mapes Way	City 3
Hammonton-Smartville Road	Mapes Way	Simpson Lane	City 3
Hammonton-Smartville Road	Simpson Lane	Lindhurst Avenue	City 3

Table 3.18-1. Project Area Roadways Proposed to Be Used by Haul Trucks			
Roadway	From	To	Material Borrow Site Alternatives
Lindhurst Avenue	Hammonton-Smartville Road	Erle Road	City 3
State Route 70	Erle Road	Olivehurst Avenue	City 1, 2, 3
State Route 70	Olivehurst Avenue	State Route 65	City 1, 2, 3
State Route 70	State Route 65	McGowan Parkway	City 1, 2, 3
State Route 70	McGowan Parkway	Plumas Arboga Road	City 1, 2, 3
State Route 70	Plumas Arboga Road	Feather River Boulevard	City 1, 2, 3
State Route 70	Feather River Boulevard	South of Feather River Boulevard	City 1, 2, 3
Plumas Arboga Road	Old Marysville Road	West of Old Marysville Road	City 1, 2, 3
Feather River Boulevard	State Route 70	Chalice Creek Road	City 1, 2, 3
Note: City1 and City2 borrow sited alternatives are located in Yuba City. City3 alternative is located in Marysville City. Source: Data compiled by AECOM in 2015			

BICYCLE FACILITIES

The *Yuba County Bikeway Master Plan* (Yuba County 2012) calls for a future Class III bike route with multiuse shoulder along Hammonton-Smartville Road in the project vicinity. It also includes a future north-south bike path (Class I) along the UPPR between Plumas-Arboga Road and the Bear River North Levee. This path would be established along the existing access route west of the UPPR, which corresponds to the proposed haul route to Reach 2B. A portion of the bike path has been improved, but it is not yet complete and does not provide formal access between destinations. Currently, the closest bicycle facility to the project area is a bicycle lane (Class II) located along River Oaks Boulevard west of SR 70 (Yuba County 2011b). This north-south bicycle facility is located approximately 1,000 feet from the junction of Feather River Boulevard with SR 70 (1,200 feet from SR 70 at the northern end of the bicycle lane, where it intersects with Albodon Road), and is approximately 2,500 feet west of the project site.

AIRPORTS

One general-aviation airport and one small airstrip are located in the project vicinity. The project site is located approximately 3 miles south of the general-aviation Yuba County Airport, located in Olivehurst, and 8 miles north-northwest of the Van Dyke Airstrip, located in Pleasant Grove. The project is located well outside of the areas of influence for both the Yuba County Airport and the Van Dyke Airstrip.

TRANSIT

No transit facilities are located in the project area. Yuba-Sutter Transit provides public transportation within the project vicinity, offering a combination of advance-reservation and scheduled bus services from selected rural cities and communities to the Marysville/Yuba City urban area. The closest bus route to the project area is Route 3, Olivehurst to Yuba College, which provides service along McGowan Parkway (about 1.3 miles north of the project site) to farther northeast along North Beale Road in Linda City (Yuba-Sutter Transit 2013).

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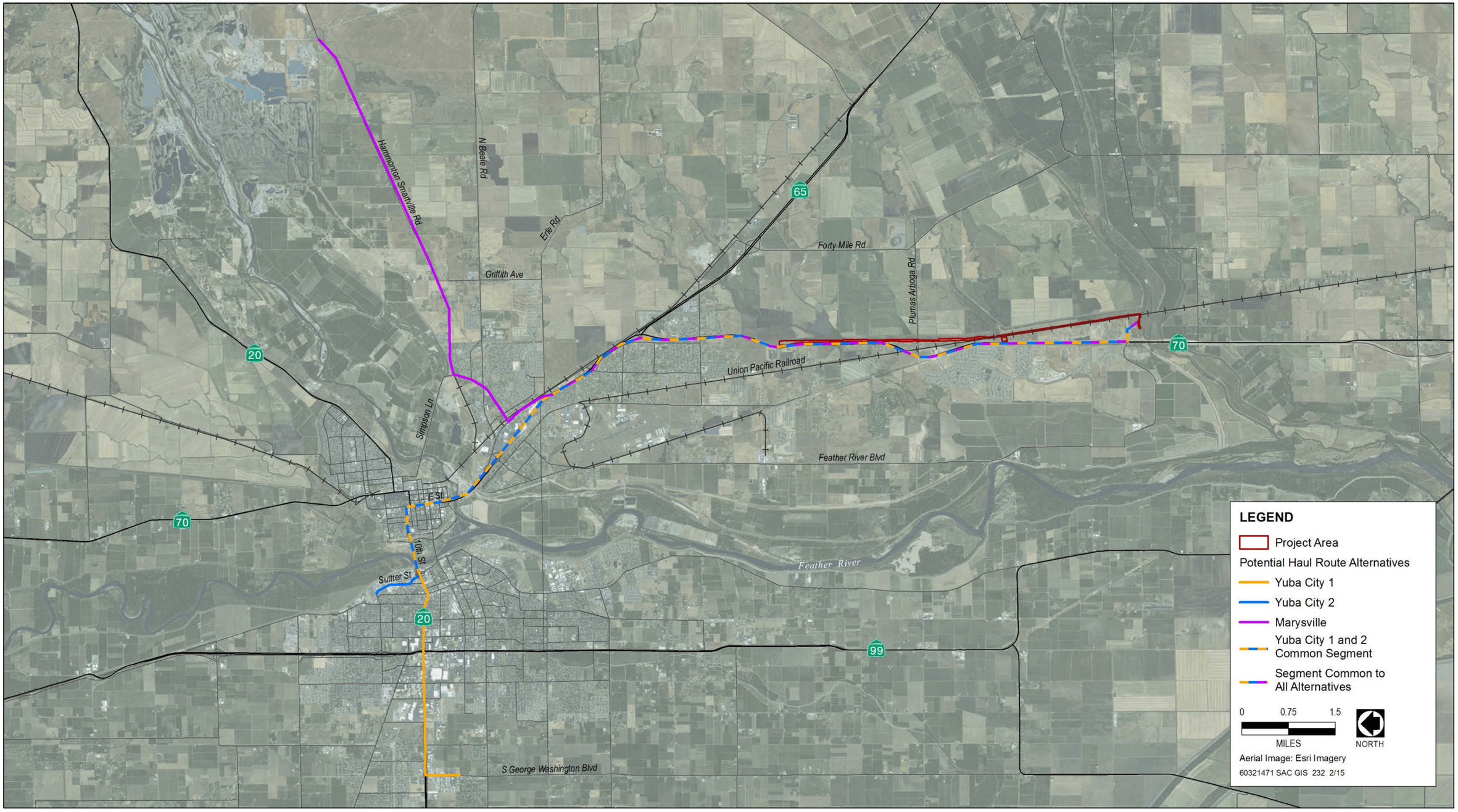

Source: Adapted by AECOM 2015

Exhibit 3.18-1. Construction Truck Haul Routes

RAILROADS

The UPRR operates two freight lines in Yuba County. One of the lines parallels SR 70; the other parallels SR 65 (and then SR 70) from Placer County into Marysville and then northwesterly into Sutter and Butte Counties (Yuba County 2011a). The railroad line parallel to SR 70 is located along the project alignment from the southern end of the project site to south of Plumas-Arboga Road, where the line diverges to the west diagonally from the project site. The railroad line is located approximately 2,000 feet from the northern end of the project site.

3.18.2 ENVIRONMENTAL CONSEQUENCES

The proposed action would not result in substantial changes in traffic during project operations as compared to existing conditions; therefore, an analysis of long term, project-related traffic impacts using LOS was not performed. LOS is used primarily for analyzing long-term project effects on traffic flow.

This analysis used the recommended screening criterion from the Institute of Transportation Engineers (ITE) (1988) for assessing the effects of construction projects that create temporary traffic increases. To account for the large percentage of heavy trucks associated with typical construction projects, ITE recommends a threshold level of 50 or more new peak-direction truck trips during the peak hour (100 or more new vehicle trips during the peak hour, assuming a passenger car equivalent value of 2.0). Therefore, a proposed action would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system, and result in a significant impact related to traffic, if it would result in 50 or more new truck trips during the a.m. or p.m. peak hour (100 or more new vehicle trips during the peak hour, assuming a passenger car equivalent value of 2.0). This is considered an "industry standard" and is the most current guidance.

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. The increase in traffic volumes associated with flood fighting likely would be less than the increase analyzed for the proposed action. The types of construction equipment would be similar, but the flood fighting activities would be expected to continue for a shorter time period. Therefore, this impact of the no-action alternative would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Implementation of the proposed action would require hauling construction equipment and materials and transporting construction workers to and from the project area along major highways and over local surface streets. Many of the construction-related trips would involve slow-moving trucks, which would further affect highway traffic. Construction-generated traffic would

temporarily increase the daily and peak-hour traffic levels along specified routes, including residential streets; however, traffic levels on haul route roads would return to normal levels once construction is completed.

As described in Chapter 2, "Alternatives," the fill material used for the proposed embankment would be taken from areas in either Yuba City or Marysville. Therefore, long hauls of material would be necessary and public roadways would be affected. Estimates of truck trips are based on the amount of material that would require removal and disposal, and the amount of new material that would be imported. According to the schedules provided, it is estimated that construction would occur in seven phases over a period of 180 days (approximately 6 months). Construction worker vehicles would use the local transportation network, including SR 70, Feather River Boulevard, and Plumas-Arboga Road. The project would require a maximum of 100 construction workers at any given time.

The daily truck volumes were estimated using the total number of haul trucks provided and number of construction activity days for each phase of the proposed action. The number of trucks may vary slightly from one hour of the day to another, depending on the access and restrictions on-site. However, this analysis assumes that construction trucks would operate throughout the day for a total of 10 hours per day, exporting and importing materials from and to the project site. Therefore, truck trips were distributed evenly throughout the day (during the 10-hour construction work window for most project activities) to obtain the hourly haul truck volumes for the assigned route segments. Construction worker commute trips were applied only to peak hours in the morning and afternoon, assuming that workers would travel to the project site once in the morning and leave once in the afternoon. Results of modeling conducted for this analysis are provided in Appendix D.

Table 3.18-2 shows vehicle movements associated with the export and import of materials to and from the work sites for levee reconstruction activities. The proposed action would cause a substantial increase in traffic in relation to the existing traffic load and capacity of the street system, and would in turn result in a significant impact related to traffic, if it would result in 50 or more new truck trips during the a.m. or p.m. peak hour or 100 or more new vehicle trips (assuming a passenger car equivalent value of 2.0) during the a.m. or p.m. peak hour.

Construction trucks and worker trips for construction activities associated with Phases 1–7 would result in approximately 603 truck trips per day in both directions (i.e., 1,206 trips per day, assuming a passenger car equivalent value of 2.0) to import or remove the required materials. Additionally, levee reconstruction activities would require 50–100 construction workers during any given day (50 workers per phase assumed for Phases 1–3 and 5–7 and 100 workers assumed for Phase 4). Thus, commuting by construction workers would add approximately 100–200 total daily trips to area roadways (assuming two trips per day by each worker—one trip inbound to the project site in the morning and one trip outbound at the end of the day), as shown in Table 3.18-1.

In total, activities associated with the proposed action may add as many as 1,206 daily two-way trips to roadways in the project area (Table 3.18-2). The project-related increase in traffic volumes along the affected roadways under all construction phases would be 50–58 vehicles per hour for all phases except Phase 4. For Phase 4, the project-related increase in traffic volumes along the roadways used as haul routes (shown in Exhibit 3.18-1) would be 212 vehicles per hour. This level of traffic activity would degrade traffic operations along the roadways used by haul trucks and would exceed the applicable threshold under Phase 4 only. Therefore, this impact would be potentially significant. Mitigation Measure TR-1, described below, has been identified to address this impact. Implementing Mitigation Measure TR-1 would reduce the potentially significant impact associated with increased traffic volumes from project-related construction to a less-than-significant level because TRLIA would provide measures to reduce traffic congestion on affected roadways near the project site, as necessary.

Table 3.18-2. Project Construction Vehicular Traffic Volumes

Phase Description	Number of One-Way Truck Trips for Import or Export of Materials	Total Phase Duration (days)	Volumes					
			Haul Truck Trips				Workers Per Peak Hour	Total Volumes per Hour
			Both Directions	Per Day	PCE per Day	PCE per Hour		
Clearing and grubbing—Phase 1	25	30	50	2	3	0	50	50
Stripping—Phase 1	4,667*							
Levee embankment degradation—Phase 2	3,333*	30	0	0	0	0	50	50
Soil-bentonite cutoff wall—Phase 3	100	40	200	5	10	1	50	51
Soil-cement-bentonite cutoff wall—Phase 3								
Levee embankment fill (Soil Type 1) from import—Phase 4	1,017*	30	16,766	559	**1,118**	**112**	**100**	**212**
Levee embankment fill (Soil Type 2) —Phase 4	5,100*							
Fill (ditch, berm, landside) from import—Phase 4	3,417*							
Borrow site excavation—Phase 4	7,258							
Unsuitable material–export—Phase 4	1,125							
Class 2 aggregate surfacing from import—Phase 5	375	20	750	38	76	8	50	58
Phase 6—hydroseeding (concurrent with Phase 5)	300*	10	0	0				
Phase 7—demobilization and site cleanup (begins after Phase 6)	300*	15	0	0	0	0	50	50
Total Project Volumes		165	17,766	603	1,206	121	350	471

Notes: PCE = passenger car equivalent.

* Volumes associated with on-site hauling, not included in volumes over paved roads.

Data presented in **bold** font indicate that a significant impact would occur.

Sources: Data provided by URS Corporation in 2014; data modeled by AECOM in 2014

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. The increase in traffic volumes associated with flood fighting likely would be less than the increase analyzed for the proposed action. The types of construction equipment would be similar, but the flood fighting activities would be expected to continue for a shorter time period. Therefore, this impact of the no-action alternative would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Unlike some other counties, Yuba County does not have a congestion management program whose circulation policies must be followed (Yuba County 2011b:4.13-2). Furthermore, the increased traffic resulting from project construction would be short term and temporary. However, the project-related increase in traffic volumes along the affected roadways under all construction phases would be 50–58 vehicles per hour for all phases except Phase 4. For Phase 4, the project-related increase in traffic volumes along the roadways used as haul routes (shown in Exhibit 3.18-1) would be 212 vehicles per hour. Also, construction truck traffic for reaches 5B and 5D may access the levee from northbound SR 70 at the northern end of the project site. This would result in increased project truck trips along SR70 from Plumas Lake Boulevard to the levee access at the northern end of the project site. This level of traffic activity would degrade traffic operations along the roadways used by haul trucks and would exceed the applicable threshold under Phase 4 only. Therefore, this impact would be significant. Mitigation Measure TR-1, described below, has been identified to address this impact.

Implementing Mitigation Measure TR-1 would reduce the potentially significant impact associated with increased traffic volumes from project-related construction to a less-than-significant level because TRLIA would provide measures to reduce traffic congestion on affected roadways near the project site, as necessary. Therefore, this impact would be less than significant with mitigation incorporated.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. The increase

in traffic volumes associated with flood fighting likely would be less than the increase analyzed for the proposed action. The types of construction equipment would be similar, but the flood fighting activities would be expected to continue for a shorter time period. Therefore, this impact of the no-action alternative would be less than significant.

PROPOSED ACTION

No Impact. The project site is located approximately 3 miles south of the general-aviation Yuba County Airport, located in Olivehurst, and 8 miles north-northwest of the Van Dyke Airstrip, located in Pleasant Grove. This is well outside of the areas of influence for both the Yuba County Airport and the Van Dyke Airstrip. Also, implementing the proposed action would not require the use of helicopters or any other equipment that would result in substantial safety risks by increasing air traffic levels or changing the location of air traffic. Therefore, no impact would occur.

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

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. The increase in traffic volumes associated with flood fighting likely would be less than the increase analyzed for the proposed action. The types of construction equipment would be similar, but the flood fighting activities would be expected to continue for a shorter time period. Therefore, this impact of the no-action alternative would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Trucks delivering materials and removing debris, along with project-related construction worker commute traffic, would enter and exit unpaved construction areas periodically and would use local roadways. The presence of slow-moving trucks exiting construction areas could pose hazards to vehicles on local roadways immediately adjacent to borrow sites, staging areas, and the levee access roads. Because similar activities would be performed during much of the levee reconstruction, the amount of daily truck traffic associated with material delivery or debris hauling is not expected to vary widely. Also, pavement sections on roadways in residential areas are usually designed to carry low traffic volumes. The presence of heavy-duty trucks during construction would accelerate wear and tear on local roadways in the project vicinity. In addition to shortening the life of pavement sections, heavy-duty truck traffic could cause road damage such as cracks and potholes.

A combination of factors would increase traffic hazards on local roadways during construction: the high volume of slow-moving heavy-duty truck traffic on SR 70 and local roadways in the project area during levee reconstruction; workers entering and existing construction sites; periodic road and lane closures associated with construction traffic; and potential damage to pavement. Construction truck traffic accessing the levee directly from northbound SR 70 at the northern end of the project site would create a dangerous intersection and would

result in safety issues along SR 70 at this location. Therefore, this impact would be significant. Mitigation Measure TR-1, described below, has been developed to address this impact.

Implementing Mitigation Measure TR-1 would reduce the potentially significant impact associated with increased hazards due to a design feature or incompatible uses to a less-than-significant level because a construction traffic control and road maintenance plan would be prepared and implemented. Therefore, this impact would be less than significant with mitigation incorporated.

e) Result in inadequate emergency access?

NO-ACTION ALTERNATIVE

Potentially Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action is taken to repair the deficient levee reaches and a levee failure were to occur, transportation systems, including emergency access, could be substantially adversely affected. Roadway flooding could substantially affect the ability of emergency responders to move through the affected area in the short term, and in the long term if damaged facilities could not be repaired quickly. Therefore, this impact of the no-action alternative would be potentially significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Emergency access to roadways in the project area could be reduced by activities associated with the proposed action. Construction-related traffic could delay or temporarily obstruct the movement of emergency vehicles. Therefore, this impact would be potentially significant. Mitigation Measures TR-1 and TR-2, described below, have been identified to address this impact.

Implementing Mitigation Measures TR-1 and TR-2 would reduce the potentially significant impact of construction activities on emergency response times and emergency access to a less-than-significant level because TRLIA would provide methods of access and detours/routes around construction activities to maintain emergency access and notify emergency personnel throughout the term of each construction season. Therefore, this impact would be less than significant with mitigation incorporated.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

NO-ACTION ALTERNATIVE

Less-than-Significant Impact. Under the no-action alternative, the remedial construction measures described for the proposed action would not be implemented. Under these conditions, the levee reaches needing remediation would not comply with the ULDC for 200-year flood protection and would remain deficient related to seepage and slope stability. The flood risk would remain high for an urban levee area. If no action were taken to repair the deficient levee segments and a levee failure were to occur, flood fighting efforts would be required. The increase in traffic volumes associated with flood fighting likely would be less than the increase analyzed for the proposed action. The types of construction equipment would be similar, but the flood fighting activities would be expected

to continue for a shorter time period. Therefore, this impact of the no-action alternative would be less than significant.

PROPOSED ACTION

Less-than-Significant Impact with Mitigation Incorporated. Although most of the construction activities would occur along the levee, temporary road closures would be needed in some areas where interference with pedestrians and cyclists along these roads would occur. Also, pedestrian trails along Plumas-Arboga Road and Feather River Boulevard would be closed during project-related activities. Pedestrian and bicycle trails adjacent to the borrow sites also may require temporary closures and/or detours. Although the proposed bike path west of the UPPR has not been completed, use of this route for hauling fill material to Reach 2B could damage the portion that has been improved. Therefore, this impact would be potentially significant. Mitigation Measure TR-3, described below, has been identified to address this impact.

Implementing Mitigation Measure TR-3 would reduce the potentially significant impact associated with decreased performance or safety of alternative modes of transportation to a less-than-significant level because TRLIA would provide public notice in advance of closures and detours and would require that detour signs be provided to indicate the location of alternate routes for bicyclists or pedestrians. Therefore, this impact would be less than significant with mitigation incorporated.

Operation of the proposed action would not result in a substantial change from existing conditions; therefore, project operation would not result in conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, and would not decrease the performance or safety of such facilities. No impact from project operation would occur.

3.18.3 MITIGATION

Mitigation Measure TR-1: Prepare and Implement a Traffic Control and Road Maintenance Plan.

Before the start of project-related construction activities, TRLIA shall prepare and implement a plan to manage expected construction-related traffic to the extent feasible, and to avoid and minimize potential traffic congestion on local roadways during construction. The traffic control plan shall outline the phasing of activities and the use of specific routes to and from the work site, staging area, and borrow site locations to minimize the daily amount of traffic on individual roadways. The items listed below shall be included as terms of the construction contracts and shall be implemented by the construction contractor(s).

- Provide a site-specific access plan specifying the roadways on which construction workers are allowed to travel to access the staging areas, work sites, and borrow areas. To the maximum extent feasible, levee roadways shall be used instead of surface streets for access to the staging areas, work sites, and borrow areas.
- Prohibit construction workers from accessing work sites, staging areas, or borrow sites from any locations other than those specified in the plan.

- Maintain two-way traffic flow on arterial roadways accessing active work areas to accommodate construction of project facilities, unless otherwise allowed by the appropriate jurisdiction.

- Schedule haul truck trips outside of peak commute periods to minimize effects of project construction on traffic congestion, to the extent feasible.

- Provide 72-hour advance notification if access to driveways or private roads shall be affected. Limit effects on driveway and private roadway access to working hours and provide uninterrupted access to driveways and private roads during non-work hours. If necessary, use steel plates, temporary backfill, or another accepted measure to provide access.

- Provide clearly marked pedestrian detours to address any sidewalk or pedestrian walkway closures.

- Provide clearly marked bicycle detours to address closures of bicycle routes or avoid otherwise compromising bicyclist safety.

- Provide crossing guards and/or flag persons as needed to avoid traffic conflicts and ensure pedestrian and bicyclist safety, particularly near schools.

- Queue trucks only in areas and at times allowed by the appropriate jurisdiction.

- Post warnings about the potential presence of slow-moving vehicles.

- Use traffic control personnel when appropriate.

- Place and maintain barriers and install traffic control devices necessary for safety, as specified in Caltrans's Manual of Traffic Controls for Construction and Maintenance Works Zones and in accordance with County requirements.

- Comply with Caltrans requirements by submitting the traffic control and road maintenance plan to Caltrans for review to cover points of access from the state highway system (SR 70 and SR 20) for haul trucks and other construction equipment. The traffic control and road maintenance plan to Caltrans shall include the point of access from SR 70 to the levee, at the north end of the project site.

- Assess and repair any damage to roadways and paved bicycle/pedestrian paths that are used during construction, and repair all project-related potholes, fractures, or other damages. In some cases, bike paths may need to be restored to pre-project conditions.

- Limit all operations or expeditiously remove the accumulation of project-generated mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. The construction contractor shall sweep the paved roadways (water sweeper with reclaimed water recommended) at the end of each day if substantial volumes of soil material have been carried onto adjacent paved, public roads from the project sites.

Timing: Before and during all construction phases.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure TR-2: Provide Pre-notification of Road Closures and Detours to Emergency Service Providers and Maintain Emergency Access.

TRLIA shall provide public notice by appropriate means, such as physical signage, Internet postings, letters, or telephone calls, to emergency service providers in the project study area at least 72 hours before road closures and detours.

- Provide clear emergency access to all existing buildings and facilities at all times.
- Maintain routes for passage of emergency response vehicles through roadways affected by construction activities.

Timing: At least 72 hours before any road closure or detour during any construction phase.

Responsibility: TRLIA and its construction contractor(s).

Mitigation Measure TR-3: Provide Advance Notice of Bicycle and Pedestrian Facility Closures and Detour Routes.

TRLIA and its construction contractor(s) will implement the following measures to improve access to and provide for the safety of pedestrian and bicycle facilities during construction.

- Coordinate with and provide notice to the appropriate county departments at least 10 days before the start of construction activities that would require closure and/or detours of pedestrian and bicycle routes.
- Provide clearly marked pedestrian detours to address any sidewalk or pedestrian walkway closures or if pedestrian safety would be otherwise compromised.
- Provide clearly marked bicycle detours to address bicycle route closure or avoid otherwise compromising bicyclist safety.
- Provide crossing guards and/or flag persons as needed to avoid traffic conflicts and ensure pedestrian and bicyclist safety.
- Locate all stationary equipment as far away as possible from areas used by vehicles, bicyclists, and pedestrians where feasible.
- Post alternative bicycle or pedestrian routes and facilities that can be used during construction activities showing when detours or route closures are required at least 10 days before the start of construction activities.
- Reconstruct pedestrian/bicycle trails and paths to pre-project conditions at the completion of project-related construction activities.

Timing: Before and during all construction phases.

Responsibility: TRLIA and its construction contractor(s).

Residual Impact after Mitigation Measures

Implementation of Mitigation Measures TR-1, TR-2, and TR-3 will result in a less-than-significant impact with respect to transportation and circulation.

3.19 UTILITIES AND SERVICE SYSTEMS

3.19.1 ENVIRONMENTAL SETTING

WATER SUPPLY AND WASTEWATER

The project site does not currently have any water demands, nor does it generate any wastewater.

STORMWATER DRAINAGE

No stormwater drainage facilities are located on the project site. Stormwater flows along natural grades and either infiltrates or ultimately drains into the lower Bear River. The project area is located within the district boundary of RD 784, which covers 29,000 acres bounded by the Yuba River to the north, the Bear River to the south, and the Feather River to the west, and extends just east of the WPIC. No stormwater facilities (e.g., pump stations, laterals, or detention ponds) are located in the project area (RD 784 n.d.). RD 784 is responsible for maintaining levees, pumps, and internal drainage within its jurisdictional boundaries.

SOLID WASTE

The project site does not currently generate any solid waste.

Solid waste collection services, including construction and demolition debris, are provided by Recology Yuba-Sutter in Yuba County. Solid waste is then sorted at the Marysville Material Recovery Facility and Transfer Station. The transfer station in Marysville has a maximum permitted throughput of 1,080 tons per day (Yuba County 2011a:4.14-8). Nonrecyclable solid waste in Yuba County is disposed of at the Recology Ostrom Road Landfill, located at 5900 Ostrom Road approximately 4 miles north of Wheatland (Yuba County 2011a:4.11-18). The landfill site, located on 261 acres, provides solid waste disposal for both commercial and municipal customers. The facility is permitted to accept agricultural, asbestos, ash, construction/demolition, contaminated soil, industrial, mixed municipal, sludge (biosolids), tires, and other designated waste types (CalRecycle 2015).

According to the California Department of Resources Recycling and Recovery (CalRecycle), the landfill has a maximum permitted throughput of 3,000 tons per day and a total maximum permitted capacity of 43,467,231 cubic yards (CalRecycle 2015). The landfill also has a limit of 170 trucks per day (Yuba County 2013). The Ostrom Road Landfill has a remaining capacity of approximately 39,223,000 cubic yards as of 2007 (90% of total capacity) and an anticipated closure date of December 31, 2066 (CalRecycle 2015).

3.19.2 ENVIRONMENTAL CONSEQUENCES

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. There is currently no need for permanent water or wastewater service on-site. These existing conditions would not change under the no-action alternative; therefore, no impact would occur.

PROPOSED ACTION

No Impact. Construction activities would require up to 50–100 employees working up to two shifts per day depending on the construction phase. The source of the construction labor force is unknown at this time, but workers would likely come from the local workforce in the Marysville, Yuba City, and Sacramento areas. The project would not result in the development of housing or otherwise increase the population of Yuba County. No new structures would be erected on the site. There would be no need for permanent water or wastewater service on-site, and temporary construction-related sanitary needs would be met using portable toilets. Therefore, existing water or wastewater facilities would not require expansion, nor would construction of new facilities be required, and wastewater treatment requirements would not be exceeded. No impact would occur.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. There is currently no need for permanent water or wastewater service on-site. Existing conditions would not change under the no-action alternative; therefore, no impact would occur.

PROPOSED ACTION

No Impact. The proposed action would not require permanent water or wastewater service. Therefore, existing water or wastewater facilities would not require expansion, nor would construction of new facilities be required, and no impact would occur.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction. No stormwater drainage facilities are located on the project site. Existing conditions would not change under the no-action alternative; therefore, no impact would occur.

PROPOSED ACTION

No Impact. No stormwater drainage facilities are located on the project site. Stormwater flows along natural grades and either infiltrates or ultimately drains into the lower Bear River. As described in Section 3.10, "Hydrology and Water Quality," implementation of the proposed action would increase flood protection in the project area by improving the WPIC West Levee to minimize existing seepage and slope instability and ensure that the levees safely pass the 1-in-200 annual exceedance probability event. The proposed action would not cause an increase in paved impervious surface. In addition, the project area has been identified as already having soils with a very slow infiltration rate (Yuba County 2011b:Exhibit Public Health & Safety-7); therefore, the increase in compacted area and crushed aggregate access road would not likely result in a substantial increase in the amount of stormwater runoff. The proposed action would not produce substantial amounts of additional runoff and no new or expanded storm drainage facilities would be required. No impact would occur.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. A public water supply is not currently needed in the project area. Existing conditions would not change under the no-action alternative; therefore, no impact would occur.

PROPOSED ACTION

No Impact. The proposed action would not involve constructing uses that would require a public water supply. Water would need to be applied for dust control during construction. However, the amount of water for dust control and other temporary construction-related water needs would be limited, and this water would be delivered by water trucks. Therefore, no new or expanded water supply entitlements would be needed, and no impact would occur.

e) Result in a determination by the wastewater treatment provider that 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?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures or. There is currently no need for wastewater treatment. These existing conditions would not change under the no-action alternative; therefore, no impact would occur.

PROPOSED ACTION

No Impact. The proposed action would not generate any wastewater. Therefore, implementing the proposed action would not exceed a wastewater treatment provider's capacity, and no impact would occur.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. The existing land use in the project area does not generate solid water or require landfill service. These existing conditions would not change under the no-action alternative; therefore, no impact would occur.

PROPOSED ACTION

Less-than-Significant Impact. Construction under the proposed action would not involve demolition or other similar activities that would generate solid waste. However, the levee and work areas would be cleared and grubbed to remove vegetation, debris, rubble, trash, and other items. This solid waste would be removed from the site and taken to commercial waste or recycling facilities in Marysville or Yuba City area as appropriate. As discussed in Chapter 2, "Alternatives," the fill material needed to construct the project would be taken either from one or more off-site borrow sources or from excess material obtained from the levee degradation operations. Although some excess material from levee degradation operations would be reused on-site, excess material that could not be reused on-site would be hauled off-site to permitted and approved disposal areas near the Marysville or Yuba City area.

The Recology Ostrom Road Landfill could receive any solid waste from the project area. Because this facility has a remaining capacity of approximately 90% and an expected closure date of 2066 (CalRecycle 2015), it is anticipated that this facility could accommodate the small amount of solid waste that could be generated during construction under the proposed action. Therefore, this impact would be less than significant.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

NO-ACTION ALTERNATIVE

No Impact. Under the no-action alternative, TRLIA would not implement the remedial construction measures. Existing land uses would not change. Therefore, the no-action alternative would be the same as existing conditions and would not require compliance with federal, state, and local statutes and regulations related to solid waste. No impact would occur.

PROPOSED ACTION

No Impact. Any solid waste generated by the proposed action could be disposed at the Recology Ostrom Road landfill. Transportation and disposal would occur in accordance with all applicable federal, state, and local statutes and regulations. Because the proposed action would comply with all federal, state, and local statutes and regulations, no impact would occur.

3.19.3 MITIGATION

There would be no significant short- or long-term effects on utilities in the project area because the project area does not require water, wastewater, or solid waste service. No mitigation is required.

3.20 MANDATORY FINDINGS OF SIGNIFICANCE

This section evaluates potential effects of the proposed action in relation to the CEQA Mandatory Findings of Significance (PRC Section 21083[b], CCR Section 15065).

a) Does the project 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, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

Based on the analysis presented in the preceding sections of this chapter, implementation of the proposed action would not have a significant impact on the environment, with incorporation of mitigation measures. Mitigation measures are provided to reduce the proposed action's potentially significant impacts on air quality; biological resources; cultural resources; geology, soils, and geomorphology; GHG emissions; hazards and hazardous materials; hydrology and water quality; noise; and transportation and circulation to a less-than-significant level. Therefore, construction of the proposed action would not substantially degrade the quality of the environment.

As discussed in Section 3.5, "Biological Resources," construction of the proposed action could have substantial adverse effects on special-status plants and animals, riparian vegetation, and waters of the United States, including wetlands. Implementation of Mitigation Measures BIO-1 through BIO-6 would largely avoid and minimize the potential effects and compensate for those that cannot be adequately avoided or minimized. Therefore, the proposed action would not 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; or reduce the number or restrict the range of an endangered, rare, or threatened species.

As discussed in Chapter 3.6, "Cultural Resources," construction of the proposed action could potentially uncover previously unidentified historic or archeological resources. Implementation of Mitigation Measure CUL-1 would reduce potential prehistory impacts to less-than-significant levels because buried or previously unidentified resources would be evaluated and any necessary treatment or investigation of the resource would be completed before project activities continue in the vicinity of the find. Therefore, the proposed action would not affect examples of California history or prehistory.

b) Does the project 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.)

The proposed action would primarily result in short-term, temporary impacts that would be limited primarily to the project area. As discussed in the preceding sections of this chapter and in Chapter 4, "Cumulative and Growth-Inducing Effects," the proposed action would result in less-than-significant impacts or no impacts on aesthetics, agriculture and forestry resources, land use and planning, mineral resources, population and housing, public services, recreation, socioeconomics and environmental justice, and utilities and service systems. Mitigation measures have been included in this EA/IS that would reduce impacts to a less-than-significant level in the following areas: air quality; biological resources; cultural resources; geology, soils, and geomorphology; hazards and hazardous materials; GHG emissions; hydrology and water quality; noise; and transportation and

circulation. All impacts would be less than significant or would be reduced to a less-than-significant level through incorporation of mitigation. Moreover, nearly all impacts are temporary during construction and would not have any long-term effects or only negligible long-term effects. Based on the analyses in this chapter and in Chapter 4, "Cumulative and Growth-Inducing Effects," the proposed action would not make a cumulatively considerable incremental contribution to any significant cumulative adverse impact.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

As discussed above, mitigation measures are provided to reduce the proposed action's potentially significant impacts to a less-than-significant level. Therefore, implementation of the proposed action would not cause substantial direct or indirect adverse effects on human beings.

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4 CUMULATIVE AND GROWTH-INDUCING EFFECTS

NEPA requires the consideration of cumulative effects of the proposed action combined with the effects of other projects. A cumulative effect is defined in NEPA as the effect on the environment which results from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non- federal) or person undertakes such other actions (40 C.F.R. §1508.7).

As stated in CEQA Section 21083(b)(2), a project may have a significant effect on the environment if "the possible effects of a project 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. Sections 15355 and 15130 of the State CEQA Guidelines further indicate that cumulative impacts are to be analyzed in the context of "closely related" projects and projects "causing related impacts."

4.1 PROJECTS

For this analysis, a list of past, present, and reasonably foreseeable (i.e., probable) future projects was developed to consider projects that: 1) are closely related to the proposed action, 2) potentially cause related impacts to the proposed action's impacts, and 3) are located sufficiently close to the proposed action that impacts could overlap. In association with the proposed action, these projects are most likely to generate significant cumulative environmental impacts. The following discussion of related projects used for this analysis includes past/existing and reasonably foreseeable future TRLIA levee improvement projects and past/existing and reasonably foreseeable future residential and urban development within the boundaries of the TRLIA assessment districts.

The list of related projects discussed below is not intended to be an all-inclusive list of projects in the region, but rather a list of larger past/existing projects, as well as projects approved or planned in the region, that meet the three criteria above and that may affect the same resources as the proposed action. Flood risk reduction projects such as the Feather River West Levee Project (Sutter Butte Flood Control Agency), Sutter Basin Feasibility Study (USACE), and projects proposed in the Feather River Regional Flood Management Plan do not overlap with the fairly localized impact area of the proposed action or are too speculative to be considered "reasonably foreseeable" or "probable." These projects are not considered further in this cumulative impact analysis.

4.1.1 TRLIA PROJECTS

As discussed in Chapter 1, "Introduction," TRLIA, in partnership with Yuba County and RD 784, has implemented a comprehensive program of levee improvements to provide protection from the 200-year flood events to properties in southwest Yuba County. Table 4.1-1 summarizes the characteristics, including the locations of the levee improvements and the completion dates, of the TRLIA levee improvements along the Yuba, Feather, and Bear Rivers and WPIC. It also identifies the environmental documents associated with those projects.

Table 4.1-1. Summary of Related TRLIA Flood Risk Reduction Projects

Project Name	Location	Improvements	Project Completion Date	Associated Environmental Documents
Yuba River Levee Repair Project	Phase 1: Upper Yuba River levee between State Route 70 and the Southern Pacific Railroad track	Construction of a 2,200-foot-long slurry cutoff wall on the left bank of the Yuba River	2004	*Initial Study for the Yuba River Levee Repair Project* (TRLIA 2004a)
	Phase 2: Upper Yuba River between the Southern Pacific Railroad and Union Pacific Railroad tracks	Construction of a 90- to 300-foot-wide seepage berm on the left bank of the Yuba River	2005	*Initial Study for the Yuba River Levee Repair Project* (TRLIA 2004a)
	Phase 4: Upper Yuba River between the Union Pacific Railroad track and Simpson Lane	Construction of a 6,850-foot-long slurry wall and installation of a seepage berm in the left bank levee of the Upper Yuba River	2006	*Yuba River Levee Repair Project (Phase 4) Initial Study* (TRLIA 2006a)
Upper Yuba Levee Improvement Project	State Route 70 to the Union Pacific Railroad track	Reshaping of 3,050 feet of levee slope	2009	*Yuba River Levee Repair Project (Phase 4) Initial Study* (TRLIA 2006a)
	Simpson Lane to the Goldfields	Construction of slurry walls and seepage berms	2011	*Final Initial Study/Mitigated Negative Declaration for the Upper Yuba Levee Improvement Project (Simpson Lane to the Goldfields)* (TRLIA 2010) *Final Environmental Assessment for the Upper Yuba Levee Improvement Project (Simpson Lane to the Goldfields)* (TRILA and USACE 2010)
Feather-Bear River Setback Levee	Confluence of the Feather and Bear Rivers	Preparation of the foundation for the setback levee, including construction of a cutoff slurry wall, placement of relief wells, and construction of two detention basins north of the setback levee alignment	2005	*Final Environmental Impact Report for the Feather-Bear Rivers Levee Setback Project* (TRLIA 2004b)
	Confluence of the Feather and Bear Rivers	Construction of the approximately 9,000-foot-long setback levee, replacement of portions of the existing Bear River and Feather River levees at the confluence of the two rivers, and removal of the old levees	2006	*Final Environmental Impact Report for the Feather-Bear Rivers Levee Setback Project* (TRLIA 2004b)
Feather River Levee Repair Project	Segment 1: Bear River to approximately Star Bend	Construction of cutoff walls, stability berms, relief wells and monitoring wells	2009	*Final Environmental Impact Report for the Feather-Bear Rivers Levee Setback Project* (TRLIA 2004b); *Final Environmental Assessment for the Feather River Levee Repair Project, California, Segments 1 and 3* (USACE 2007)

Table 4.1-1. Summary of Related TRLIA Flood Risk Reduction Projects

Project Name	Location	Improvements	Project Completion Date	Associated Environmental Documents
	Segment 2: Star Bend to approximately Shanghai Bend	Construction of the Feather River setback levee	2010	*Final Environmental Impact Report for the Feather River Levee Setback Project* (TRLIA 2006b); *Final Environmental Impact Statement: 408 Permission and 404 Permit to Three Rivers Levee Improvement Authority for the Feather River Levee Repair Project, California, Segment 2* (USACE 2008)
	Segment 3: Shanghai Bend to the Yuba River at State Route 70	Construction of cutoff walls, stability berms, relief wells, and monitoring wells	2010	*Final Environmental Impact Report for the Feather-Bear Rivers Levee Setback Project* (TRLIA 2004b); *Final Environmental Assessment for the Feather River Levee Repair Project, California Segments 1 and 3* (USACE 2007)
Feather River Erosion Site 2 Repair Project	Confluence of the Feather and Yuba Rivers from State Route 70 to Shanghai Bend in an area known as "State Cut"	Construction of a rock slope protection layer and toe trench, revegetation of the levee slope, and regrading and resurfacing of a maintenance road along the levee toe	2009	*Initial Study/Proposed Mitigated Negative Declaration for Feather River Erosion Site 2 Repair Project* (TRLIA 2009)
Bear River and Western Pacific Interceptor Canal Levee Improvement Project	Confluence of the Bear River and WPIC	Construction of one 1,000-foot slurry wall and one 500-foot slurry wall	2005	*Bear River and Western Pacific Interceptor Canal Levee Improvement Project Final Environmental Impact Report* (TRLIA 2004c)
Yuba Goldfields 100-Year Flood Protection Project	Yuba Goldfields	Construction of a 5-mile-long embankment in the Goldfields to intercept and hold breach flows to allow flood peaks to pass.	2015	*Final Initial Study/Mitigated Negative Declaration: Yuba Goldfields 100-Year Flood Protection Project*
Yuba Goldfields 200-Year Yuba Goldfields Flood Protection Project	Yuba Goldfields or south of Yuba Goldfields	Construction of a 9-mile-long embankment in the Goldfields or 3.5-mile-long levee south of the Goldfields.	2017	*EIR: Yuba Goldfields 200-Year Flood Protection Project*
Feather River Floodway Corridor Restoration Project	East Bank Feather River between ShanghaiBend and Star Bend (River Miles 17.2 – 23.4L)	Creates 500 acres of advance mitigation credits for the State Plan of Flood Control	2025	IS/MND and EA/FONSI expected in late 2015. DWR-TRLIA agreement signed in August 2014.

Notes:
Highlighted projects are reasonably foreseeable future projects
TRLIA = Three Rivers Levee Improvement Authority; USACE = U.S. Army Corps of Engineers; WPIC = Western Pacific Interceptor Canal
Source: Data compiled by AECOM in 2015

4.1.2 DEVELOPMENT PROJECTS

Implementing the proposed action would involve TRLIA constructing remedial measures to correct deficiencies related to seepage and slope stability and constructing an all-weather access road along the landside toe of the levee to be used for flood fighting and operations and maintenance. The proposed action would ensure the WPIC West Levee would be in compliance with the ULDC for 200-year flood protection and would reduce the potential for urban flooding in these areas within the vicinity of the WPIC West Levee and the whole of the TRLIA assessment districts. The following approved large-scale development projects are wholly or partially located in the assessment districts and are included in the cumulative analysis: East Linda Specific Plan, Olivehurst Avenue Specific Plan, North Arboga Study Area, Plumas Lake Specific Plan, Country Club Estates, and Bear River project. As shown in Table 4.1-2, approximately 25,350 dwelling units and 864 acres of commercial and office development are associated with these development projects. Additional dwelling units would be constructed as part of the Olivehurst Avenue Specific Plan; however, the number of dwelling units is not identified in the specific plan.

Table 4.1-2. Summary of Related Development Projects within the TRLIA Assessment Districts

Project Name	Location	Status	Total Area (acres)	Total Build-out Dwelling Units	Commercial/ Office Area (acres)
East Linda Specific Plan	South of the Linda levee, east of Linda, west of Griffith Avenue, north of Erle Road	Approved 1990; most of the southern portion of the plan area has been developed	1,760	6,000	114
Olivehurst Avenue Specific Plan	South of Third Avenue, south and southwest of SR 70, east of the Yuba County Airport, and north of Ninth Avenue	Approved 1995	55	–[1]	20
North Arboga Study Area	West of SR 70 near its intersection with SR 65, north of the Plumas Lake Specific Plan area	Approved 1992; approximately 690 dwelling units have been constructed	1,300	2,500	225
Plumas Lake Specific Plan	East of Feather River Boulevard and west of SR 70, continuing south to the Yuba-Sutter County	Approved 1992; approximately 2,500 dwelling units have been constructed	5,263	13,027	474
Country Club Estates	South of Country Club Avenue, east of the Feather River, west of SR 70, north of the Plumas Lake Canal	Approved 2008; however, no building permits have been issued, and no dwelling units have been constructed	557	1,700	NA
Bear River	Approximately one-quarter mile west of SR 70, spanning the north and south sides of Feather River Boulevard	Approved 2008; however, no building permits have been issued, and no dwelling units have been constructed	550	2,123	31
		Total	**9,430**	**25,350**	**864**

Notes: NA = not applicable; SR = State Route.

[1] The Olivehurst Avenue Specific Plan does not specify the number of dwelling units that could be constructed within the plan area. The residential portion of the specific plan area occupies 29 acres.

Sources: Yuba County 2011a, 2011b, 2013; data compiled by AECOM in 2015

4.2 CUMULATIVE EFFECTS

Construction of the proposed action would result in temporary impacts that would be primarily limited to the project area. As discussed in this EA/IS, the proposed action would result in less-than-significant impacts or no impacts on the following areas: aesthetics, agriculture and forestry resources, land use and planning, mineral resources, population and housing, public services, recreation, socioeconomics and environmental justice, and utilities and service systems. Furthermore, mitigation measures have been included in this EA/IS that would reduce impacts to a less-than-significant level in the following areas: air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, GHG emissions, hydrology and water quality, noise, and transportation and circulation. Therefore, all impacts would be less than significant or would be reduced to a less-than-significant level through incorporation of mitigation measures.

The proposed project's contribution to impacts on cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, and transportation and circulation would not result in significant cumulative impacts, because the project's impacts on these resources would be negligible and temporary, would be site-specific or result in localized impacts that would not accumulate with other related projects, or would not otherwise contribute to impacts on these resource areas.However, the proposed action could potentially result in a cumulatively considerable incremental contribution to significant cumulative adverse impacts on air quality, biological resources, GHG emissions, and noise at a regional level. Cumulative impacts related to these resource areas are discussed below.

4.2.1 AIR QUALITY

By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development within the SVAB, and this regional impact is cumulative rather than being attributable to any one source. A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and reasonably foreseeable future projects. The cumulative analysis focuses on whether a specific project would result in a cumulatively considerable incremental contribution in pollutant emissions to a significant cumulative impact related to regional air pollutant emissions. FRAQMD's thresholds are designed to identify those projects that would result in significant levels of air pollution on a project level, and to assist the region in attaining the applicable CAAQS and NAAQS. Projects that would exceed these thresholds would be considered significant on a project level and would be considered to make a cumulatively considerable incremental contribution to a significant cumulative impact related to regional air pollutant emissions.

The analysis in Section 3.4, "Air Quality," is a cumulative analysis and is summarized here. Construction-related emissions associated with the proposed action would exceed FRAQMD's thresholds of significance, which are used to determine whether a project would result in a cumulatively considerable incremental contribution to a significant cumulative impact related to attainment or maintenance of regional air quality standards. Mitigation Measures AQ-1, AQ-2, AQ-3, and AQ-4, described in Section 3.4, would reduce the proposed action's construction-related emissions to a less-than-significant level through implementation of FRAQMD's mitigation measures. Therefore, construction emissions would not exceed FRAQMD's thresholds of significance, and the proposed action would not result in a cumulatively considerable incremental contribution to a significant cumulative impact related to attainment or maintenance of regional air quality standards.

4.2.2 BIOLOGICAL RESOURCES

The project area supports sensitive habitats, including federally-protected seasonal wetlands, and provides suitable habitat for several special-status species. These resources would be adversely affected by the proposed action, potentially contributing to a cumulative effect. However, as discussed in Section 3.5, "Biological Resources," Mitigation Measures BIO-1 through BIO-4 would reduce the proposed action's effects on special-status species and habitat along the WPIC to a less-than-significant level through implementation of avoidance and minimization measures. Compensatory habitat mitigation would also be implemented to further reduce impacts on giant garter snake and vernal pool crustaceans. Mitigation Measure BIO-5 would reduce the proposed action's effect from fill of approximately 1.35 acres of federally protected wetlands to a less-than-significant level by providing compensation to ensure no net loss of wetland habitat.

Past and present projects have obviously had a significant effect on special-status species; by their very nature as special-status species, these species have been adversely affected, primarily by habitat destruction and modification. Many of the projects identified at the outset of this chapter, as well as others, have contributed to the overall significant cumulative effect to special-status species on a local and regional scale. However, the proposed project would have limited impacts to these species with the implementation of proposed mitigation measures. Therefore, the proposed action would not generate a cumulatively considerable incremental contribution to a significant cumulative impact related to special-status species and federally protected wetlands.

4.2.3 GREENHOUSE GAS EMISSIONS

Climate change as related to GHG emissions inherently would be cumulative. Though significance thresholds can be developed by air districts, state regulatory agencies, or federal regulatory agencies, these thresholds and their related goals are ultimately designed to affect change at a global level. Therefore, the analysis presented in Section 3.8, "Greenhouse Gas Emissions," includes the analysis of both the proposed action and cumulative impacts. With implementation of Mitigation Measures GHG-1 (implementation of FRAQMD's mitigation measures) and GHG-2 (purchase of carbon offsets to reduce construction emissions), and the proposed action's consistency with statewide climate change adaptation strategies, the proposed action would not generate a cumulatively considerable incremental contribution to a significant cumulative impact related to GHG emissions.

4.2.4 NOISE

Ambient noise levels in the project area are generated by local and distant traffic, distant aircraft operations, and natural sources (e.g., wind and birds). A cumulative impact may occur if construction activities associated with any of the related projects, such as construction of land uses proposed in the Plumas Lake and Arboga areas, were to occur within the immediate vicinity of the construction activities under the proposed action, and also, if the construction activities of other projects were to occur at the same time or overlap at some point during the construction activities of the proposed action.

As discussed in Section 3.13, "Noise," project-generated construction traffic and equipment noise would exceed the Yuba County noise thresholds and would result in a significant temporary and short-term construction-related impact related to noise levels experienced by construction workers and occupants of the residences closest to the sites of construction activities. Mitigation Measures NOI-1 and NOI-2 would reduce the proposed action's project-generated construction traffic and equipment noise levels to a less-than-significant level through implementation of noise-reducing construction measures for construction-related traffic and stationary construction equipment. It is not

expected that noise generated from construction of the proposed action would interact with noise generated from construction of other probable future projects identified above. There also would not be any impacts on noise from the minimal operations and maintenance activities of the proposed action. Therefore, the proposed action would not generate a cumulatively considerable incremental contribution to a significant cumulative impact related to construction-related traffic and equipment noise.

4.3 GROWTH-INDUCING EFFECTS

A project is considered growth-inducing if it directly or indirectly fosters economic or population growth or encourages other activities that cause significant environmental effects (State CEQA Guidelines 15126[d]).

Local land use decisions are within the jurisdiction of Yuba County, which has adopted a general plan consistent with state law. The *Yuba County 2030 General Plan* (Yuba County 2011b) provides an overall framework for growth and development in the county. The 2030 General Plan introduces the concept of a "Valley Growth Boundary." The intent of the Valley Growth Boundary is, among other objectives, to reduce the overall footprint of future urban development and reduce potential conflicts at the urban-rural edge as part of the County's overall strategy for agricultural and open space preservation. The Valley Growth Boundary sets the long-term spatial limits of urban development in the valley portion of the County to accommodate most development needs between present and buildout of the 2030 General Plan. Planned development within the TRILA assessment districts, which includes the project area, is located within the County's Valley Growth Boundary; therefore, the proposed action would accommodate growth anticipated in the County's General Plan. Consequently, implementation of the proposed action would not affect current and/or planned population growth patterns within Yuba County.

The completed Bear River and WPIC Levee Improvement Project provided the areas protected by the Bear River and WPIC levees with 100-year flood protection. This previous project resulted in FEMA certifying the Bear River and WPIC levees as providing 100-year flood protection. As a result of providing 100-year flood protection, the Plumas Lakes area was not mapped within a flood hazard zone, which allowed for continued residential and commercial development in the Plumas Lakes area. Construction in this area commenced in 2002 and is expected to continue through 2020. Decisions regarding residential, commercial, and other development in the area protected by the WPIC and Bear River levees have been made, and the environmental effects of these actions have been previously evaluated and disclosed. At the time the Plumas Lake Specific Plan was approved, the Plumas Lakes Specific Plan EIR (Yuba County 1993) indicated that development within the Plumas Lakes area would result in a significant impact on domestic water treatment facilities, wastewater treatment facilities, traffic, and air quality (TRLIA 2004c)

Implementation of the proposed action, which would provide 200-year flood protection, would not directly encourage or facilitate growth. The proposed remediation measures and access road construction to bring the WPIC West Levee into compliance with the ULDC would have no impact on regional population increases because repairs would not remove any obstacles to growth, as did the previous Bear River and WPIC levee improvements.

Because the proposed action would not involve construction of housing, it would not directly induce growth. The proposed action would generate short-term construction employment but would not require a significant labor pool. Therefore, the local region's labor population is anticipated to be able to meet this need and no change in the local population base would be anticipated. Therefore, the proposed action would not induce growth in or near the project area, either directly or indirectly, and would not contribute to any cumulative growth-inducing effects.

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5 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS

This chapter provides preliminary information on the major requirements for permitting, environmental review, and consultation for implementation of the proposed action. Certain federal, state, and local regulations require issuance of permits before proposed action implementation; other regulations require agency consultation but may not require issuance of any authorization or entitlements before implementation.

5.1 FEDERAL LAWS AND REGULATIONS

Clean Air Act of 1972, as amended, 42 USC 7401, et seq. *Full Compliance*. The Clean Air Act (as amended in 1990; 42 USC 7401, et seq. Section 176[c]) prohibits federal action or support of activities that do not conform to a state implementation plan. An analysis of air quality effects of the proposed action was presented in this EA/IS. The analysis of air quality effects from the proposed action determined that the estimated emissions and PM10 would not exceed Federal *de minimus* thresholds. USACE has also determined that the proposed action would have no adverse effect on the future air quality of the project area. Therefore, no conformity determination would be required.

Clean Water Act of 1972, as amended, 33 USC 1251, et seq. *Full Compliance.* Section 401 of the Clean Water Act (33 USC 1251 et seq. [1976 & SUPP II 1978]) requires that any project that will discharge a pollutant (including sediment) into a water body (e.g., wetlands riparian zones, streambeds, and lakes) acquire a permit from the RWQCB. With implemented mitigation measures, the proposed action would not result in any significant entrainment of sediment or other pollutants from the project area into storm water runoff or otherwise impair water quality in the WPIC, the Bear River, or the project area in general. The proposed action would place materials into waters of the United States, including approximately 1.35 acres of seasonal wetlands landside of the WPIC West Levee. Therefore, a Clean Water Act Section 404 individual permit, Section 404(b)(1) alternatives evaluation, and Section 401 water quality certification will be required. With implemented mitigation measures, there would be no net loss of wetlands.

Construction of the proposed action would involve earth-disturbing and construction activities that could result in the discharge of sediment or other pollutants (e.g., petroleum products) into the WPIC via runoff from the construction site. Because activities associated with project development would disturb more than one acre of land, contractors would be required to obtain and comply with the State General Construction Activity Stormwater Permit. General Permit applicants are required to prepare an SWPPP that specifies BMPs to be implemented to minimize sedimentation and release of construction-related constituents into the stream.

Endangered Species Act of 1973, as amended, 16 USC 1531, et seq. *Full Compliance.* Pursuant to the ESA, USFWS and NMFS have regulatory authority over federally listed species. Section 7 of the ESA prohibits federal agencies from authorizing, funding, or carrying out activities that are likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat. Federal agencies consult with USFWS and/or NMFS if review the proposed action indicates it could adversely affect listed species or their habitat.

A list of federally threatened and endangered species that may be affected by the project was obtained from the USFWS website on November 6, 2014 (Appendix B). USACE determined there would be no effect on Central

Valley spring-run Chinook salmon, Central Valley steelhead, North American green sturgeon, or EFH; therefore, no consultation with NMFS is required. A Biological Assessment has been prepared to address effects on species managed by USFWS. The Biological Assessment concludes that the proposed action may affect, but is unlikely to adversely affect, valley elderberry longhorn beetle and could adversely affect vernal pool fairy shrimp, vernal pool tadpole shrimp, and giant garter snake. USACE initiated Section 7 consultation with USFWS on April 23, 2015. USFWS is anticipated to concur with USACE's finding that the proposed action is not likely to adversely affect valley elderberry longhorn beetle and to issue a biological opinion and incidental take statement for the other species addressed in the Biological Assessment.

Executive Order 11988, Floodplain Management. *Full Compliance.* This order directs all federal agencies approving or implementing a project to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Guidelines for implementing the order include an eight-step process that agencies should carry out as part of their decision-making on projects that have potential impacts to or within the floodplain. The decision-making process required in Section 2(a) of the order is reflected in the eight steps that are listed below, along with information on how each step is being addressed for the proposed action.

1. Determine if a proposed action is in the base floodplain (that area which has a 1% or greater chance of flooding in any given year; i.e., the 100-year floodplain). The proposed action is not in the base (FEMA's 100-year) floodplain.

2. Conduct early public review, including public notice. Public review is being accomplished through the NEPA/CEQA process.

3. Identify and evaluate practicable alternatives to locating in the base floodplain, including alternative sites outside of the floodplain. Alternatives to the proposed action are discussed in Chapter 2, "Alternatives."

4. Identify impacts of the proposed action. This EA/IS analyzes the environmental effects potentially resulting from the project, per NEPA/CEQA requirements. Impacts of the proposed action are described in Chapter 3, "Affected Environment and Environmental Effects." Impacts are also being evaluated in compliance with ESA, CESA, CWA, and other federal and state environmental regulations.

5. Minimize threats to life and property and restore and preserve natural and beneficial floodplain values. The project would reduce flood risk to life and property by correcting deficiencies related to seepage and slope stability and ensuring the WPIC West Levee meets the ULDC for 200-year flood protection. The proposed action would not adversely affect habitat in the WPIC, preserving the existing natural values of the habitat.

6. Reevaluate alternatives. This EA/IS is part of an evaluation process to refine the alternatives through public review. The alternatives are also evaluated and may be refined through consultation with the resource agencies for compliance with CWA, ESA, and other project authorizations. Technical evaluation of the alternatives occurs through review of the design documents (i.e., plans and specifications) at several levels of design development.

7. Present the findings and a public explanation. As part of the NEPA process, the public will be able to review and comment on this EA, as well as on the FONSI that is expected to be issued for the proposed action. To conclude the CEQA process, findings will be publically issued, and a public hearing will be held to consider

TRLIA's adoption of the MMRP and MND, and approval of the proposed action (i.e., the proposed project under CEQA).

8. Implement the action. TRLIA intends to implement the proposed action by December 2016.

The proposed action would provide a 200-year level of protection from flood risks; it would not alter protection for the 100-year event nor does it transfer any such risk to other areas. Because the proposed action would not directly or indirectly support development in the base floodplain, it would comply with Executive Order 11988.

Executive Order 11990, Protection Wetlands. *Full Compliance.* With implemented mitigation measures, the proposed action would not result in fill or any significant degradation of the WPIC or Bear River. The proposed action would, however, fill approximately 1.35 acres of seasonal wetlands landside of the WPIC West Levee. With implemented mitigation measures, there will be no net loss of wetlands.

Executive Order 12989, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. *Full Compliance*. The proposed action would not adversely affect any minority or low-income populations.

Farmland Protection Policy Act, 7 USC 4201 et seq. *Full Compliance*. The Farmland Protection Policy Act (7 USC. 4201 et seq.) requires a federal agency to consider the effects of its actions and programs on the Nation's farmlands. There are no agricultural land uses within or adjacent to the existing WPIC West Levee. The proposed levee remediation is necessary to provide flood risk reduction that would preserve farmland.

Fish and Wildlife Coordination Act of 1958, as amended, 16 USC.661, et seq. *Full Compliance*. The Fish and Wildlife Coordination Act (16 USC 661 et seq.) provides the basic authority for USFWS involvement in evaluating impacts to fish and wildlife from water resource projects. USFWS has participated in and inter-agency meeting regarding the proposed action and will continue to participate in evaluating effects of the proposed action and the proposed mitigation as part of the Section 7 consultation process.

Magnuson-Stevens Fishery Conservation and Management Act. *Full Compliance*. The proposed action would have essentially no effects on species covered under the Magnuson-Stevens Fishery Conservation and Management Act. The draft EA and Biological Assessment have concluded that essential fish habitat for Chinook salmon, steelhead, and sturgeon species that potentially could occur in the WPIC during West Levee construction activities would not be adversely affected.

Migratory Bird Treaty Act of 1936, as amended, 16 USC 703 et seq. *Full Compliance*. The Federal Migratory Bird Treaty Act (16 USC 703) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. The proposed action would be scheduled to minimize disturbance of active nests or young of migratory birds that breed in the area. In addition, a biologist would survey the area prior to initiation of construction. If active nests are located, a protective buffer would be implemented, and the area would be avoided until the nests are no longer active.

National Environmental Policy Act of 1969, as amended, 42 USC 4321, et seq. *Full Compliance*. Comments received during the public review period will be considered and incorporated into a final EA. The final EA and signed FONSI, if appropriate, will be in full compliance with NEPA.

National Historic Preservation Act of 1966, as amended. *Full Compliance*. The NHPA (amended through 2000; 16 USC et seq.) requires agencies to take into account the effects of their actions on properties listed in or eligible for listed in the NRHP. The proposed action has been evaluated with respect to its effects on known historic properties, including an evaluation of the WPIC West Levee as a historic resource. The levee segment, Unit No. 145, appears to meet NRHP eligibility. The proposed action would not affect the resource's integrity of location, setting, and association and its function as a levee would not be altered. Therefore, levee Unit 145 would still convey its historical significance as a component part of a larger flood-control system. Furthermore, any unforeseen resources discovered during construction would be treated in accordance with the procedures set forth in Section 106 of the NHPA. USACE initiated consultation with the SHPO on May 12, 2015 regarding potential impacts of the proposed action on historic properties. The consultation letter concluded that the proposed action would not adversely affect cultural resources.

5.2 STATE OF CALIFORNIA LAWS AND REGULATIONS

California Environmental Quality Act. *Full Compliance*. An IS/MND has been prepared and will be circulated for a 30-day review in summer 2015. TRLIA and CVFPB will need to consider comments on the IS/MND, certify the MND, adopt the MMRP, and approve the project to meet further CEQA requirements. A Notice of Determination will be filed with the State Clearinghouse at that time.

California Endangered Species Act. *Full Compliance*. This act directs state agencies not to approve projects that would jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of a species. There is potential for the proposed action to result in take of giant garter snake and Swainson's hawk, both of which are state-listed species. Implementation of mitigation measures presented in Section 3.5 would avoid take of Swainson's hawk and minimize potential for take of giant garter snake. However, because CDFW has concluded potential take of giant garter snake cannot be completely avoided, TRLIA has submitted an application for an Incidental Take Permit (ITP), pursuant to Section 2081 (b) and (c) of the Fish and Game Code. CDFW has indicated an ITP will be issued for the proposed action soon after the proposed project is approved by TRLIA and the CEQA review process is complete.

State Water Resources Control Board, Division of Water Quality, and California Regional Water Quality Control Board, Central Valley Region. *Full Compliance.* With implemented mitigation measures, the proposed action would not result in any significant entrainment of sediment or other pollutants from the project area into storm water runoff or otherwise impair water quality in the WPIC, the Bear River, or the project area in general. However, the proposed action would result in fill of approximately 1.35 acres of seasonal wetlands landside of the WPIC West Levee. Therefore, RWQCB water quality certification will be required. With implemented mitigation measures, there would be no net loss of wetlands.

Porter-Cologne Water Quality Control Act of 1969. *Full Compliance.* The Porter-Cologne Act defines "waters of the state" as water bodies with boundaries in the state, including any surface or groundwater, whether fresh or saline. The intent of the Act is to provide a comprehensive program for the protection of water quality and beneficial uses of water through the regulation of waste discharges. Waste discharges may include such substances as wastewater effluent and discharges of fill and dredged material into waters of the State. The proposed action would not discharge waste water into waters of the State but approximately 1.35 acres of seasonal wetlands would be filled. With implemented mitigation measures, there would be no net loss of wetlands.

California Department of Fish and Wildlife, Sections 1600-1600 of the Fish and Game Code. *Full Compliance*. The proposed action would not change the natural state of any lake, river, or stream. A Streambed Alteration Agreement will be obtained, if necessary, for levee degradation and reconstruction, because CDFW jurisdiction typically extends to the waterside crown of the levee.

State Lands Commission. *Full Compliance*. The State Lands Commission has exclusive jurisdiction over all ungranted tidelands and submerged lands owned by the State of California and the beds of navigable rivers, sloughs, and lakes. An amended lease would not be required for the proposed action since work would occur outside of navigable stream channel.

Central Valley Flood Protection Board Encroachment Permit (California Water Code, Title 23). *Full Compliance*. The CVFPB regulates any encroachments within an adopted plan of flood control and sets permissible work periods for regulated streams, including the excavation, borrow, and vegetation removal activities within the channel. Once USACE issues Section 408 permission to modify the WPIC West Levee, the CVFPB encroachment would be approved. At that point, the proposed action would be in full compliance with all CVFPB regulations.

5.3 LOCAL LAWS, PROGRAMS, AND PERMITS

Yuba County 2030 General Plan. *Full Compliance.* The 2030 General Plan determines land use planning throughout the unincorporated area. It provides comprehensive and long-term policies for the physical development of the county and is often referred to as "the constitution" for local government. The proposed action would comply with the 2030 General Plan.

Feather River Air Quality Management District. *Full Compliance.* The long-term planning and regulation of air quality conditions in Yuba County is the responsibility of the FRAQMD, which has developed rules, regulations, policies, and/or goals to comply with applicable legislation. FRAQMD has also developed numeric thresholds of significance to evaluate construction emissions based on average daily emissions, which were used as the basis of analysis in this EA/IS. Mitigation measures proposed in this EA/IS include FRAQMD Standard Mitigation Measures and Best Available Mitigation Measures for Construction Phases. In addition, TRLIA proposes to make a payment to FRAQMD for off-site mitigation of air quality impacts.

5.4 CONSULTATION AND COORDINATION WITH AGENCIES

This section summarizes public and agency involvement activities undertaken by TRLIA and USACE that have been conducted to date for the proposed action, and which satisfy NEPA and CEQA requirements for agency consultation and coordination. The following list provides consultations conducted to date:

U.S. Army Corps of Engineers. On January 14, 2015, TRLIA consultants met with USACE to conduct a pre-coordination meeting to provide an initial description of the proposed action and anticipated adverse effects. TRLIA consultants continue to frequently engage the USACE regarding NEPA compliance and Section 404 and 408 permitting. The draft wetland delineation was submitted to USACE in March 2015 but verification by USACE has not been provided. An Administrative Draft EA/IS was submitted to USACE, and comments received from USACE have been addressed in this document.

U.S. Fish and Wildlife Service. On January 22, 2015, TRLIA consultants met with USFWS to provide an initial description of the proposed action and anticipated adverse effects and to discuss an approach for the Section 7 consultation and potential mitigation needs. A draft Biological Assessment was submitted to USFWS in March 2015. A final Biological Assessment was prepared in response to USFWS comments and was submitted to USFWS on April 23, 2015 when USACE initiated Section 7 consultation.

California Department of Fish and Wildlife. On January 14, 2015, TRLIA consultants and USACE met with CDFW to provide an initial description of the proposed action and anticipated adverse effects and to discuss potential need for an ITP. An Administrative Draft EA/IS was submitted to CDFW for review, and edits were made in response to comments on giant garter snake mitigation measures. TRLIA submitted an application for an ITP for giant garter snake to CDFW on April 15, 2015. In response to CDFW concerns regarding mitigation proposed in the application, TRLIA submitted a revised mitigation proposal on May 1, 2015.

6 CONCLUSION

The draft EA/IS is being circulated for 30 days to agencies, organizations, and individuals known to have an interest in the proposed action. All comments received will be considered according to NEPA and CEQA requirements and addressed according to NEPA and CEQA, as appropriate. This proposed action is being coordinated with all relevant government resource agencies including USFWS, NMFS, SHPO, CVFPB, CDFW, FRAQMD, and Yuba County.

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8 REFERENCES

CHAPTER 1, "INTRODUCTION"

Three Rivers Levee Improvement Authority. 2004 (August). *Bear River and Western Pacific Interceptor Canal Levee Improvements Project Final Environmental Impact Report*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2005 (June). *Addendum to Certified Environmental Impact Report*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2006a (March). *Addendum to Certified Environmental Impact Report*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2006b (August). *Addendum to Certified Environmental Impact Report*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2013 (February). *Addendum 4 to the Environmental Impact Report for the Bear River and Western Pacific Interceptor Canal Levee Improvements Project*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by AECOM, Sacramento, CA.

TRLIA. *See* Three Rivers Levee Improvement Authority.

CHAPTER 2, "ALTERNATIVES"

Three Rivers Levee Improvement Authority. 2013 (February). *Addendum 4 to the Environmental Impact Report for the Bear River and Western Pacific Interceptor Canal Levee Improvements Project*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2014 (May). *Geotechnical Data Report, Western Pacific Interceptor Canal West and Bear River North Levee, 200-Year Urban Levee Compliance*. Prepared by HDR, Inc. Folsom, CA.

TRLIA. *See* Three Rivers Levee Improvement Authority.

SECTION 3.2, "AESTHETICS"

California Department of Transportation. 2011. California Scenic Highway Mapping System. Available: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm. Last updated September 7, 2011. Accessed January 30, 2015.

Caltrans. *See* California Department of Transportation.

Federal Highway Administration. 2015. America's Byways—California Maps. Available: http://www.fhwa.dot.gov/byways/states/CA/maps. Accessed January 30, 2015.

FHWA. *See* Federal Highway Administration.

Three Rivers Levee Improvement Authority. 2004 (August). *Bear River and Western Pacific Interceptor Canal Levee Improvements Project Final Environmental Impact Report*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

TRLIA. *See* Three Rivers Levee Improvement Authority.

YCWA. *See* Yuba County Water Agency.

Yuba County. 2011 (June). *Yuba County 2030 General Plan*. Adopted June 7, 2011. Community Development and Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

Yuba County Water Agency. 2003 (October). *Dra ft Environmental Impact Report for the Yuba-Feather Supplemental Flood Control Project*. State Clearinghouse No. 2001072062. Marysville, CA. Prepared by EDAW, Jones & Stokes, and Flood Control Study Team. Sacramento, CA.

SECTION 3.3, "AGRICULTURE AND FORESTRY RESOURCES"

California Department of Conservation. 2015. Yuba County Important Farmland Map 2012. Available: ftp://ftp.consrv.ca.gov/pub/Dlrp/FMMP/pdf/2012/. Accessed February 2, 2015.

DOC. *See* California Department of Conservation

SECTION 3.4, "AIR QUALITY"

ARB. *See* California Air Resources Board.

California Air Pollution Control Officers Association. 2013. California Emissions Estimator Model. Available: http://www.caleemod.com/. Accessed March 2, 2015.

California Air Resources Board. 2013. Mobile Source Emission Inventory—Current Methods and Data. Available: http://www.arb.ca.gov/msei/modeling.htm. Accessed March 2, 2015.

CAPCOA. *See* California Air Pollution Control Officers Association.

OEHHA. *See* Office of Environmental Health Hazard Assessment.

Office of Environmental Health Hazard Assessment. 2003. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.* Oakland, CA.

Zhu, Y., W. C. Hinds, S. Kim, and S. Shen. 2002. Study of Ultrafine Particles Near a Major Highway with Heavy-duty Diesel Traffic. *Atmospheric Environment.* 36:4323–4335.

SECTION 3.5, "BIOLOGICAL RESOURCES"

California Department of Fish and Wildlife. 2014. Results of electronic record search of the California Natural Diversity Database for the Olivehurst, Nicolaus, Sheridan, Pleasant Grove, Sutter Causeway, Knights Landing, Verona, Browns Valley, Wheatland, Yuba City, Sutter, and Gilsizer Slough U.S. Geological

Survey 7-1/2-minute Quadrangles. Sacramento: Wildlife and Habitat Data Analysis Branch. Available: http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp. Accessed December 24, 2014.

California Native Plant Society. 2014. Inventory of Rare and Endangered Plants (online edition, v8-02). Results of electronic record search for the Olivehurst, Nicolaus, Sheridan, Pleasant Grove, Sutter Causeway, Knights Landing, Verona, Browns Valley, Wheatland, Yuba City, Sutter, and Gilsizer Slough U.S. Geological Survey 7-1/2-minute Quadrangles. Sacramento, CA. Available: http://cnps.org/cnps/rareplants/inventory/. Accessed December 29, 2014.

California Public Utilities Commission. 2010. *Palermo–East Nicolaus 115–kV Transmission Line Initial Study*. Prepared by Ecology and Environment, Inc., San Francisco, CA.

CDFW. *See* California Department of Fish and Wildlife.

CNPS. *See* California Native Plant Society.

CPUC. *See* California Public Utilities Commission.

Environmental Laboratory. 1987 (January). *Corps of Engineers Wetland Delineation Manual*. Wetlands Research Program Technical Report Y-87-1. Vicksburg, MS: U.S. Army Corps of Engineers Waterways Experiment Station.

———. 2008 (September). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Hansen, Eric. 2014. Consulting environmental biologist, Sacramento, CA. December 30, 2014—email to Anne King of AECOM regarding giant garter snake survey at Beale Air Force Base and status of giant garter snake in the region.

Myers, J. M., R. G. Kope, G. J. Bryant, D. Teel, and L. J. Lierheimer. 1998. *Status Review of Chinook Salmon from Washington, Idaho, Oregon, and California*. NOAA Technical Memorandum NMFS-NWFSC-35. Seattle, WA: National Marine Fisheries Service, Northwest Fisheries Science Center.

Pacific Gas and Electric Company. 2010 (December). *Biological Assessment for the Palermo to East Nicolaus 115 kV Transmission Line Reconstruction Project*. Chico, CA. Prepared by ICF International, Sacramento, CA.

PG&E. *See* Pacific Gas and Electric Company.

Swainson's Hawk Technical Advisory Committee. 2000 (May 31). *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley.* Available: https://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html. Accessed March 9, 2015.

Three Rivers Levee Improvement Authority. 2004. *Bear River and Western Pacific Interceptor Canal Levee Improvements Project Final Environmental Impact Report*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2005a (June). *Final Biological Assessment for the Feather-Bear-WPIC Levee Project*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2005b (June). *Final Biological Assessment/Essential Fish Habitat for the Feather-Bear-WPIC Levee Project*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2015. *Preliminary Delineation of Waters of the United States, Including Wetlands for the Western Pacific Interceptor Canal 200-Year Standard Project*. Marysville, CA. Prepared by AECOM, Sacramento, CA.

TRLIA. *See* Three Rivers Levee Improvement Authority.

USFWS. *See* U.S. Fish and Wildlife Service.

U.S. Fish and Wildlife Service. 2014. Species List Generators: Search of the General Species List Generator for the Olivehurst, Nicolaus, Sheridan, Pleasant Grove, Sutter Causeway, Knights Landing, Verona, Browns Valley, Wheatland, Yuba City, Sutter, and Gilsizer Slough U.S. Geological Survey 7-1/2-minute Quadrangles. Sacramento Fish & Wildlife Office. Available: http://www.fws.gov/sacramento/es_species/Lists/es_species_lists-overview.htm. Accessed November 6, 2014.

Yuba County. 2011a (June). *Yuba County 2030 General Plan*. Natural Resources Element. Adopted June 7, 2011. Community Development and Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2011b (May). *Final Yuba County 2030 General Plan Environmental Impact Report*. Biological Resources Section. State Clearinghouse No. 2010062054. Planning Department, Marysville, CA. Prepared by AECOM, Sacramento, CA.

SECTION 3.6, "CULTURAL RESOURCES"

Hay, O. P. 1927. *The Pleistocene of the Western Region of North American and its Vertebrated Animals.* Carnegie Institute Publication 322B, Washington, DC.

Helley, E. J., and D. S. Harwood. 1985. *Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills, California*. U.S. Geological Survey. Map MF-1790. Reston, VA.

Hilton, R. P., D. C. Dailey, and H. G. McDonald. 2000 (April). A Late Pleistocene Biota from the Arco Arena Site, Sacramento, California. *PaleoBios Abstracts* 20(1).

Jefferson, G. T. 1991a. *Technical Report No. 5: A Catalogue of Late Quaternary Vertebrates from California—Part One, Nonmarine Lower Vertebrate and Avian Taxa.* Natural History Museum of Los Angeles County. Los Angeles, CA.

———. 1991b. *Technical Report No. 7: A Catalogue of Late Quaternary Vertebrates from California—Part Two: Mammals.* Natural History Museum of Los Angeles County. Los Angeles, CA.

Jones & Stokes. 2004. *Cultural Resources Inventory and Evaluation Report for the Bear River and Western Pacific Interceptor Canal Levee Improvements Project, Yuba County, California*. Sacramento, CA. Prepared for Three Rivers Levee Improvement Authority. Marysville, CA.

Kolber, M. 2004 (July 27). Mammoth Coup: Discovery of Huge Fossil Near Elk Grove Is a Big Deal for Northern California. *Sacramento Bee.*

Marchand, D. E., and A. Allwardt. 1981. *Late Cenozoic Stratigraphic Units, Northeastern San Joaquin Valley, California*. U.S. Geological Survey Bulletin 1470. Washington, DC: U.S. Government Printing Office.

Rosenthal, J. S., G. G. White, and M. Q. Sutton. 2007. The Central Valley: A View from the Catbird's Seat. In *California Prehistory: Colonization, Culture, and Complexity*, eds. T. L. Jones and K.A. Klar, 147–164. Lanham, MD, New York, Toronto, and Plymouth, UK: Altamira Press.

Saucedo, G. J., and D. L. Wagner. 1992. *Geologic Map of the Chico Quadrangle*. California Division of Mines and Geology, Regional Geologic Map Series, Map No. 7A. Sacramento, CA.

Savage, D. E. 1951. Late Cenozoic Vertebrates of the San Francisco Bay Region. *University of California Publications, Bulletin of the Department of Geological Sciences* 28(10):215–314.

Society of Vertebrate Paleontology. 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources—Standard Guidelines. *Society of Vertebrate Paleontology News Bulletin* 163:22–27.

———. 1996. Conditions of Receivership for Paleontologic Salvage Collections [final draft]. *Society of Vertebrate Paleontology News Bulletin* 166:31–32.

SVP. *See* Society of Vertebrate Paleontology.

UCMP. *See* University of California Museum of Paleontology.

University of California Museum of Paleontology. 2015. Paleontological Collections Database. Accessed February 10, 2015.

Wagner, D. L., C. W. Jennings, T. L. Bedrossian, and E. J. Bortugno. 1987. *Geologic Map of the Sacramento Quadrangle.* California Division of Mines and Geology, Regional Geologic Map Series, Map No. 1A. Sacramento, CA.

William Lettis & Associates, Inc. 2014. Surficial Geologic Map of the RD-784 Area, in Yuba County. Appendix A in *Geotechnical Data Report, Western Pacific Interceptor Canal West and Bear River North Levee, 200-Year Urban Levee Compliance.* Walnut Creek, CA.

Yuba County. 2011 (June). *Yuba County 2030 General Plan*. Adopted June 7, 2011. Community Development and Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

SECTION 3.7, "GEOLOGY, SOILS, AND GEOMORPHOLOGY"

California Department of Water Resources. 1989 (May). *The August 1, 1975 Oroville Earthquake Investigation*. Supplement to Bulletin 203-78. Sacramento, CA.

California Geological Survey. 2012 (September). Alquist-Priolo Earthquake Fault Zone Maps. Available: http://www.quake.ca.gov/gmaps/WH/regulatorymaps.htm. Accessed January 11, 2015.

CGS. *See* California Geological Survey.

DWR. *See* California Department of Water Resources.

Jennings, C. W. 1994. *Fault Activity Map of California and Adjacent Areas.* California Division of Mines and Geology, Geologic Data Map No. 6. Sacramento, CA.

NRCS. *See* U.S. Natural Resources Conservation Service.

Saucedo, G. J., and D. L. Wagner. 1992. *Geologic Map of the Chico Quadrangle.* California Division of Mines and Geology, Regional Geologic Map Series, Map No. 7A. Sacramento, CA.

Three Rivers Levee Improvement Authority. 2014a (May). *Geotechnical Data Report, Western Pacific Interceptor Canal West and Bear River North Levee, 200-Year Urban Levee Compliance*. Prepared by HDR, Inc. Folsom, CA.

———. 2014b (December). *Draft Final Geotechnical Alternatives Analysis (for Backcheck), 200-Year Urban Levee Criteria Compliance Determination (Amendment No. 15)*. Prepared by HDR, Inc. Folsom, CA.

TRLIA. *See* Three Rivers Levee Improvement Authority.

USACE. *See* U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 1997. *Design Guidance on Levees.* ETL 110-2-555. Washington, DC.

———. 2000. *Design and Construction of Levees.* EM 1110-2-1913. Washington, DC.

———. 2005. *Design Guidance for Levee Underseepage.* ETL 1110-2-569. Washington, DC.

U.S. Natural Resources Conservation Service. 2014 (September). Web Soil Survey. Available: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed April 2015.

Wagner, D. L., C. W. Jennings, T. L. Bedrossian, and E. J. Bortugno. 1987. *Geologic Map of the Sacramento Quadrangle*. California Division of Mines and Geology, Regional Geologic Map Series, Map No. 1A. Sacramento, CA.

William Lettis & Associates, Inc. 2014. *Surficial Geologic Map of the RD-784 Area, in Yuba County.* Appendix A in *Geotechnical Data Report, Western Pacific Interceptor Canal West and Bear River North Levee, 200-Year Urban Levee Compliance*. Walnut Creek, CA.

Wills, C. J., R. J. Weldon II, and W. A. Bryant. 2008. *California Fault Parameters for the National Seismic Hazard Maps and Working Group on California Earthquake Probabilities 2007*. Appendix A in *The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2)*. U.S. Geological Survey Open-File Report 2007-1437A and California Geological Survey Special Report 203A. Reston, VA.

SECTION 3.8, "GREENHOUSE GAS EMISSIONS"

ARB. *See* California Air Resources Board.

BAAQMD. *See* Bay Area Air Quality Management District.

Bay Area Air Quality Management District. 2012 (May). *California Environmental Quality Act Air Quality Guidelines*. San Francisco, CA.

California Air Pollution Control Officers Association. 2013. California Emissions Estimator Model. Available: http://www.caleemod.com/. Accessed February 24, 2015.

California Air Resources Board. 2011. Final Regulation Order Subchapter 10. Climate Change Amendments to the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions. Available: http://www.arb.ca.gov/regact/2012/ghg2012/ghg2012mrrfro.pdf. Accessed February 24, 2015.

———. 2013. Mobile Source Emission Inventory—Current Methods and Data. Available: http://www.arb.ca.gov/msei/modeling.htm. Accessed February 24, 2015.

———. 2014 (May). *First Update to the Climate Change Scoping Plan: Building on the Framework.* Pursuant to AB 32, The California Global Warming Solutions Act of 2006. Sacramento, CA.

California Natural Resources Agency. 2009. *2009 California Climate Adaptation Strategy*. A Report to the Governor of the State of California in Response to Executive Order S-13-2008. Sacramento, CA.

CAPCOA. *See* California Air Pollution Control Officers Association.

CNRA. *See* California Natural Resources Agency.

Sacramento Metropolitan Air Quality Management District. 2014. SMAQMD Thresholds of Significance Table. Available: http://www.airquality.org/ceqa/cequguideupdate/Ch2TableThresholds.pdf. Accessed February 24, 2015.

SMAQMD. *See* Sacramento Metropolitan Air Quality Management District.

WCI. *See* Western Climate Initiative.

Western Climate Initiative. 2009 (January). *Background Document and Progress Report for Essential Requirements of Mandatory Reporting for the Western Climate Initiative,* Third Draft. Available: http://www.westernclimateinitiative.org/dmdocuments/mandatory_reporting_3rd_draft_010609.74.pdf. Accessed February 24, 2015.

SECTION 3.9, "HAZARDS AND HAZARDOUS MATERIALS"

CAL FIRE. *See* California Department of Forestry and Fire Protection.

California Department of Forestry and Fire Protection. 2007. Draft Hazard Severity Zones in LRA. Yuba County. Sacramento, CA. Available: http://www.fire.ca.gov/fire_prevention/fhsz_maps_yuba.php. Accessed February 4, 2015.

California Department of Toxic Substances Control. 2015. Hazardous Waste and Substances Site List—Site Cleanup (Cortese List). Available: http://www.envirostor.dtsc.ca.gov/public. Accessed February 4, 2015.

DTSC. See California Department of Toxic Substances Control.

State Water Resources Control Board. 2015. GeoTracker. Available: https://geotracker.waterboards.ca.gov/. Accessed February 4, 2015.

SWRCB. *See* State Water Resources Control Board.

SECTION 3.10, "HYDROLOGY AND WATER QUALITY"

California Department of Water Resources. 2006 (January 20). California's Groundwater Bulletin 118: Sacramento Valley Groundwater Basin, South Yuba Subbasin. Available: <http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/5-21.61.pdf>. Accessed January 28, 2015.

———. 2014 (July). *Draft Final Feather River Region Regional Flood Management Plan*. Developed by the Yuba County Water Agency, Three Rivers Levee Improvement Authority, Marysville Levee Commission, and Sutter Butte Flood Control Agency, in partnership with and funded by DWR. Available: http://frrfmp.com/wp-content/uploads/2013/02/FeatherRFMP-MainReportDraftFinal7-11-14-clean.pdf. Accessed January 28, 2015.

Central Valley RWQCB. *See* Central Valley Regional Water Quality Control Board.

Central Valley Regional Water Quality Control Board. 2011 (October). *Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin River Basins*. Available: http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/ . Accessed January 26, 2015.

DWR. *See* California Department of Water Resources.

Rockwell, G.L, Smithson, J.R., Friebel, M.F., and Webster, M.D. 2002. Water Resources Data, California, Water Year 2001, Volume 4. Northern Central Valley Basins and the Great Basin from Honey Lake Basin to Oregon State Line: U.S. Geological Survey Water-Data Report CA-01-4. Available: http://water.usgs.gov/pubs/wdr/WDR-CA-01-4/. Accessed January 26, 2015.

Sacramento River Watershed Program. 2010 (October). *A Roadmap to Watershed Management: Lower Feather River Watershed and Bear River Watershed*. Available:

http://www.sacriver.org/files/documents/roadmap/report/Feather_LowerFeather.pdf. Accessed January 28, 2015.

State Water Resources Control Board. 2010. Final California 2010 Integrated Report (303(d) List/305(b) Report): Supporting Information. Available: < http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/01204.shtml#4172>. Accessed January 28, 2015.

———. 2011. Clean Water Act Section 303(d) List. Available: <http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml>. Accessed January 28, 2015.

SWRCB. *See* State Water Resources Control Board.

Three Rivers Levee Improvement Authority. 2004. *Bear River and Western Pacific Interceptor Canal Levee Improvements Project Final Environmental Impact Report*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

TRLIA. *See* Three Rivers Levee Improvement Authority.

Western Regional Climate Center. 2015. Marysville, California (045385) Period of Record Monthly Climate Summary. Available: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5385. Accessed January 26, 2015.

YCWA. *See* Yuba County Water Agency.

Yuba County. 2011a (May). *Final Yuba County 2030 General Plan Environmental Impact Report*. State Clearinghouse No. 2010062054. Planning Department, Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2011b (June). *Yuba County 2030 General Plan*. Adopted June 7, 2011. Community Development and Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

Yuba County Water Agency. *Mulit-Hazard Mitigation Plan*. Marysville, CA.

———. 2014 (June). Groundwater Management Plan Annual Monitoring and Measuring Report 2013-2014. Available: < http://www.ycwa.com/documents/942>. Accessed January 28, 2015.

SECTION 3.11, "LAND USE AND PLANNING"

Yuba County. 2011 (June). *Yuba County 2030 General Plan*. Adopted June 7, 2011. Community Development and Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

SECTION 3.12, "MINERAL RESOURCES"

California Department of Conservation, Division of Mines and Geology. 1988. Mineral Plan Classification: Portland Cement Concrete-Grade Aggregate in the Yuba City-Marysville Production-Consumption Region. Special Report 132.

CDMG. See California Department of Conservation, Division of Mines and Geology.

Yuba County. 2008 (January). Geology and Soils General Plan Update Background Report. Marysville, CA.

SECTION 3.13, "NOISE"

California Department of Transportation. 2004. *Transportation and Construction-Induced Vibration Guidance Manual*. Sacramento, CA.

Caltrans. *See* California Department of Transportation.

EPA. *See* U.S. Environmental Protection Agency.

Federal Highway Administration. 2006 (January). *Roadway Construction Noise Model User's Guide*. FHWA-HEP-05-054. Washington, DC.

Federal Transit Administration. 2006 (May). *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Washington, DC: Office of Planning and Environment.

FHWA. *See* Federal Highway Administration.

FTA. *See* Federal Transit Administration.

U.S. Environmental Protection Agency, 1974 (March). *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Washington, DC.

Yuba County. 2011. *Yuba County 2030 General Plan*, Public Health & Safety Element. Adopted June 7, 2011. Community Development & Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

SECTION 3.14, "POPULATION AND HOUSING"

California Department of Finance. 2012 (November). E-4 Population Estimates for Cities, Counties, and the State, 2001-2010, with 2000 & 2010 Census Counts. Available: http://www.dof.ca.gov/research/demographic/reports/estimates/e-4/2001-10/view.php. Accessed March 4, 2015.

———. 2014a (May). Report E-5 Population and Housing Estimates for Cities, Counties, and the State, January 1, 2011-2014, with 2010 Benchmark. Available: http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2011-20/view.php. Accessed: February 4, 2015.

———. 2014b (July). Report P-1 (Total Population) State and County Population Projections, July 1, 2010-2060 (5-year increments). Available: http://www.dof.ca.gov/research/demographic/reports/projections/P-1/. Accessed: February 4, 2015.

Yuba County. 2011a (May). *Final Yuba County 2030 General Plan Environmental Impact Report*. State Clearinghouse No. 2010062054. Planning Department, Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2011b (June). *Yuba County 2030 General Plan*. Adopted June 7, 2011. Community Development and Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2013 (November). *Yuba County 2013–2021 Housing Element Update*. Adoption draft. Marysville, CA.

SECTION 3.15, "PUBLIC SERVICES"

Linda Fire Protection District. 2015. List of Stations. Available: http://lindafire.org/pages/stations.php. Accessed February 17, 2015.

Olivehurst Public Utility District. 2015. Plumas Lake Parks. Available: http://opud.net/parks. Accessed February 17, 2015.

Plumas Lake Elementary School District. 2015. School Sites. Available: http://www.plusd.org/Schools/School-Sites/index.html. Accessed February 17, 2015.

Yuba County. 2011 (May). *Final Yuba County 2030 General Plan Environmental Impact Report.* State Clearinghouse No. 2010062054. Planning Department, Marysville, CA. Prepared by AECOM, Sacramento, CA.

Yuba LAFCO. *See* Yuba Local Agency Formation Commission.

Yuba Local Agency Formation Commission. 2009. *Sphere of Influence Options: Yuba County.* Prepared by Burr Consulting, Marysville, CA.

Yuba County Sheriff's Department. 2015. Department Web site. Available: http://sheriff.co.yuba.ca.us/. Accessed February 17, 2015.

SECTION 3.16, "RECREATIONAL RESOURCES"

Three Rivers Levee Improvement Authority. 2004 (August). *Bear River and Western Pacific Interceptor Canal Levee Improvements Project Final Environmental Impact Report*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

TRLIA. *See* Three Rivers Levee Improvement Authority.

YCWA. *See* Yuba County Water Agency.

Yuba County. 2012 (December). *Yuba County Bikeway Master Plan Update.* Final. Public Works Department, Marysville, CA. Prepared by Fehr & Peers, Roseville, CA.

Yuba County Water Agency. 2003 (October). *Draft Environmental Impact Report for the Yuba-Feather Supplemental Flood Control Project*. State Clearinghouse No. 2001072062. Marysville, CA. Prepared by EDAW, Jones & Stokes, and Flood Control Study Team. Sacramento, CA.

SECTION 3.17, "SOCIOECONOMIC EFFECTS AND ENVIRONMENTAL JUSTICE"

HHS. *See* U.S. Department of Health and Human Services.

U.S. Census Bureau. 2009–2013. *5-Year American Community Survey*. Washington, DC.

U.S. Department of Health and Human Services. 2013. 2013 Poverty Guidelines. Washington, DC. Available: http://aspe.hhs.gov/poverty/13poverty.cfm. Accessed February 4, 2015.

SECTION 3.18, "TRANSPORTATION AND CIRCULATION"

Institute of Transportation Engineers. 1988. *Traffic Access and Impact Studies for Site Development.* Washington, DC: Transportation Planners Council.

ITE. *See* Institute of Transportation Engineers.

Maximus, Inc. 2004 (February 16). *County of Yuba Impact Fee Update Report.* Cost Services Division. Sacramento, CA.

Yuba County. 2011a. *Yuba County 2030 General Plan.* Community Development Element. Adopted June 7, 2011. Community Development & Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2011b (May). *Final Yuba County 2030 General Plan Environmental Impact Report.* Section 4.13, "Transportation and Traffic." State Clearinghouse No. 2010062054. Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2012 (December). *Yuba County Bikeway Master Plan Update.* Final. Public Works Department, Marysville, CA. Prepared by Fehr & Peers, Roseville, CA.

Yuba-Sutter Transit. 2013. Yuba-Sutter Transit: Wheatland Route Information brochure. Effective January 1, 2013. Available: http://www.yubasuttertransitsa.com/download/brochures/Wheatland%20Final%201-1-13.pdf. Accessed August 12, 2013.

SECTION 3.19, "UTILITIES AND SERVICE SYSTEMS"

California Department of Resources Recycling and Recovery. 2015. Facility/Site Summary Details: Recology Ostrom Road LF Inc. (58-AA-0011). Available: http://www.calrecycle.ca.gov/SWFacilities/Directory/58-AA-0011/Detail/. Accessed February 5, 2015.

CalRecycle. *See* California Department of Resources Recycling and Recovery.

RD 784. *See* Reclamation District 784.

Reclamation District 784. n.d. Facilities Map, Reclamation District Number 784, Yuba County, California. Available: http://www.rd784.org/uploads/District_Map_11x17.pdf. Accessed February 5, 2015.

Yuba County. 2011a (May). *Final Yuba County 2030 General Plan Environmental Impact Report*. State Clearinghouse No. 2010062054. Planning Department, Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2011b (June 7). *Yuba County 2030 General Plan*. Community Development & Services Agency, Marysville, CA. General Plan consultation by AECOM, Sacramento, CA.

———. 2013 (March 29). *Notice of Preparation of an Environmental Impact Report and Environmental Assessment for the Recology Ostrom Road Green Rail and Permit Amendment Project*. Planning Department, Marysville, CA. Available: http://www.co.yuba.ca.us/departments/community%20development/planning/Projects/Recology/Scoping%20Meetings/Final%20NOP%20Scoping%20Meeting%204-17-13.pdf. Accessed February 5, 2015.

CHAPTER 4, "CUMULATIVE AND GROWTH-INDUCING EFFECTS"

Three Rivers Levee Improvement Authority. 2004a. *Initial Study for the Yuba River Levee Repair Project*. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2004b (November). *Final Environmental Impact Report for the Feather-Bear Rivers Levee Setback Project, an Element of the Yuba-Feather Supplemental Flood Control Project*. State Clearinghouse No. 2004072113. Marysville, CA. Prepared by EDAW and Flood Control Study Team, Sacramento, CA.

———. 2004c (August). *Bear River and Western Pacific Interceptor Canal Levee Improvement Project Final Environmental Impact Report*. State Clearinghouse No. 2004032118. Marysville, CA. Prepared by Jones & Stokes, Sacramento, CA.

———. 2006a (July). *Yuba River Levee Repair Project (Phase 4) Initial Study*. Marysville, CA.

———. 2006b (November). *Final Environmental Impact Report for the Feather River Levee Repair Project, an Element of the Yuba-Feather Supplemental Flood Control Project*. State Clearinghouse No. 2006062071. Marysville, CA. Prepared by EDAW and Flood Control Study Team, Sacramento, CA.

———. 2009. *Initial Study/Proposed Mitigated Negative Declaration for Feather River Erosion Site 2 Repair Project*. Marysville, CA.

———. 2010 (April). *Final Initial Study/Mitigated Negative Declaration for the Upper Yuba River Levee Project (Simpson Lane to the Goldfields)*. State Clearinghouse No. 2010022039. Marysville, CA.

Three Rivers Levee Improvement Authority and U.S. Army Corps of Engineers. 2010 (September). *Final Environmental Assessment for the Upper Yuba River Levee Project (Simpson Lane to the Goldfields), Yuba County, California*.

TRLIA. *See* Three Rivers Levee Improvement Authority.

TRLIA and USACE. *See* Three Rivers Levee Improvement Authority and U.S. Army Corps of Engineers.

USACE. *See* U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2007 (June). *Final Environmental Assessment for the Feather River Levee Repair Project, California, Segments 1 and 3*. Sacramento District, Sacramento, CA.

———. 2008 (October). *Final Environmental Impact Statement: 408 Permission and 404 Permit to Three Rivers Levee Improvement Authority for the Feather River Levee Repair Project, California, Segment 2*. Sacramento District, Sacramento, CA. Technical assistance provided by EDAW, Sacramento, CA.

Yuba County. 1993. Plumas Lake Specific Plan. Yuba County Planning Department. Prepared by Richard Floch & Associates, Omni•means, Inc., Economic & Planning Systems. Adopted: August 1993.

———. 2011a (May). *Final Yuba County 2030 General Plan Environmental Impact Report*. State Clearinghouse No. 2010062054. Planning Department, Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2011b (June). *Yuba County 2030 General Plan*. Adopted June 7, 2011. Community Development and Services Agency, Marysville, CA. Prepared by AECOM, Sacramento, CA.

———. 2013 (November). *Yuba County 2013–2021 Housing Element Update*. Adoption draft. Marysville, CA.

APPENDIX A

Air Quality and Greenhouse Gas Emissions Modeling Results

TRLIA WPIC Construction

Yuba County, Summer

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	3			**Operational Year**	2016
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - PD construction schedule

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Construction Off-road Equipment Mitigation - Potential mitigation

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	0.00	30.00
tblConstructionPhase	NumDays	0.00	30.00
tblConstructionPhase	NumDays	0.00	40.00
tblConstructionPhase	NumDays	0.00	30.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	10/29/2015	5/7/2016
tblConstructionPhase	PhaseStartDate	7/5/2015	7/6/2015
tblConstructionPhase	PhaseStartDate	8/9/2015	8/10/2015
tblConstructionPhase	PhaseStartDate	9/25/2015	4/4/2016
tblConstructionPhase	PhaseStartDate	5/8/2016	5/9/2016
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	162.00	157.00
tblOffRoadEquipment	HorsePower	162.00	157.00
tblOffRoadEquipment	HorsePower	84.00	402.00
tblOffRoadEquipment	HorsePower	174.00	162.00
tblOffRoadEquipment	HorsePower	174.00	162.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	167.00	196.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	80.00	84.00

tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	LoadFactor	0.74	0.50
tblOffRoadEquipment	LoadFactor	0.74	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	10.8097	129.4711	77.9760	0.1428	0.0000	5.8297	5.8297	0.0000	5.3633	5.3633	0.0000	15,425.9636	15,425.9636	3.6171	0.0000	15,501.9235
2016	13.5096	151.8779	87.3721	0.1277	0.0000	7.4870	7.4870	0.0000	6.8880	6.8880	0.0000	13,271.9602	13,271.9602	4.0033	0.0000	13,356.0294
Total	**24.3193**	**281.3489**	**165.3480**	**0.2705**	**0.0000**	**13.3166**	**13.3166**	**0.0000**	**12.2513**	**12.2513**	**0.0000**	**28,697.9238**	**28,697.9238**	**7.6204**	**0.0000**	**28,857.9528**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.6911	7.3280	73.2776	0.1428	0.0000	0.2255	0.2255	0.0000	0.2255	0.2255	0.0000	15,425.9636	15,425.9636	3.6171	0.0000	15,501.9234
2016	1.5635	6.7750	70.6698	0.1277	0.0000	0.2085	0.2085	0.0000	0.2085	0.2085	0.0000	13,271.9602	13,271.9602	4.0033	0.0000	13,356.0294
Total	**3.2545**	**14.1029**	**143.9474**	**0.2705**	**0.0000**	**0.4339**	**0.4339**	**0.0000**	**0.4339**	**0.4339**	**0.0000**	**28,697.9237**	**28,697.9237**	**7.6204**	**0.0000**	**28,857.9528**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**86.62**	**94.99**	**12.94**	**0.00**	**0.00**	**96.74**	**96.74**	**0.00**	**96.46**	**96.46**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase 1 - Clear/Grub/Strip	Building Construction	6/1/2015	7/4/2015	6	30	
2	Phase 2 - Levee Degrade	Building Construction	7/6/2015	8/8/2015	6	30	
3	Phase 3 - Cutoff Wall	Building Construction	8/10/2015	9/24/2015	6	40	
4	Phase 4 - Levee Reconst	Building Construction	4/4/2016	5/7/2016	6	30	
5	Phase 5 - Levee Resurface	Building Construction	5/9/2016	5/31/2016	6	20	
6	Phase 6 - Hydroseed	Building Construction	6/1/2016	6/6/2016	6	5	
7	Phase 7 -Demob	Building Construction	6/7/2016	6/23/2016	6	15	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Phase 1 - Clear/Grub/Strip	Off-Highway Trucks	2	4.00	381	0.38
Phase 1 - Clear/Grub/Strip	Scrapers	4	8.00	356	0.48
Phase 1 - Clear/Grub/Strip	Tractors/Loaders/Backhoes	2	8.00	75	0.37
Phase 2 - Levee Degrade	Excavators	4	8.00	157	0.38
Phase 2 - Levee Degrade	Off-Highway Trucks	2	8.00	381	0.38
Phase 2 - Levee Degrade	Rollers	4	8.00	84	0.38
Phase 2 - Levee Degrade	Scrapers	4	8.00	356	0.48
Phase 3 - Cutoff Wall	Excavators	2	8.00	157	0.38
Phase 3 - Cutoff Wall	Generator Sets	4	8.00	402	0.50
Phase 3 - Cutoff Wall	Off-Highway Trucks	2	8.00	381	0.38
Phase 3 - Cutoff Wall	Other Material Handling Equipment	1	8.00	196	0.40
Phase 3 - Cutoff Wall	Pumps	4	8.00	84	0.50
Phase 3 - Cutoff Wall	Tractors/Loaders/Backhoes	5	8.00	75	0.37
Phase 4 - Levee Reconst	Graders	4	8.00	162	0.41
Phase 4 - Levee Reconst	Off-Highway Trucks	2	8.00	381	0.38
Phase 4 - Levee Reconst	Rollers	4	8.00	84	0.38
Phase 4 - Levee Reconst	Scrapers	4	8.00	356	0.48
Phase 4 - Levee Reconst	Tractors/Loaders/Backhoes	4	8.00	75	0.37
Phase 5 - Levee Resurface	Graders	2	8.00	162	0.41
Phase 5 - Levee Resurface	Off-Highway Trucks	1	8.00	381	0.38
Phase 5 - Levee Resurface	Rollers	2	8.00	84	0.38
Phase 6 - Hydroseed	Off-Highway Trucks	2	8.00	381	0.38
Phase 7 -Demob	Tractors/Loaders/Backhoes	1	8.00	75	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Phase 1 - Clear/Grub/Strip	8	0.00		0.00	16.80	6.60				
Phase 2 - Levee Degrade	14	0.00		0.00	16.80	6.60				
Phase 3 - Cutoff Wall	18	0.00		0.00	16.80	6.60				
Phase 4 - Levee Reconst	18	0.00		0.00	16.80	6.60				
Phase 5 - Levee Resurface	5	0.00		0.00	16.80	6.60				
Phase 6 - Hydroseed	2	0.00		0.00	16.80	6.60				
Phase 7 -Demob	1	0.00		0.00	16.80	6.60				

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

3.2 Phase 1 - Clear/Grub/Strip - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.2316	90.2348	54.6168	0.0761		3.8201	3.8201		3.5145	3.5145		7,995.2572	7,995.2572	2.3869		8,045.3825
Total	**7.2316**	**90.2348**	**54.6168**	**0.0761**		**3.8201**	**3.8201**		**3.5145**	**3.5145**		**7,995.2572**	**7,995.2572**	**2.3869**		**8,045.3825**

3.2 Phase 1 - Clear/Grub/Strip - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9353	4.0528	35.7609	0.0761		0.1247	0.1247		0.1247	0.1247	0.0000	7,995.2572	7,995.2572	2.3869		8,045.3825
Total	**0.9353**	**4.0528**	**35.7609**	**0.0761**		**0.1247**	**0.1247**		**0.1247**	**0.1247**	**0.0000**	**7,995.2572**	**7,995.2572**	**2.3869**		**8,045.3825**

3.2 Phase 1 - Clear/Grub/Strip - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.3 Phase 2 - Levee Degrade - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	10.8097	129.4711	77.9760	0.1154		5.8297	5.8297		5.3633	5.3633		12,116.0164	12,116.0164	3.6171		12,191.9762
Total	**10.8097**	**129.4711**	**77.9760**	**0.1154**		**5.8297**	**5.8297**		**5.3633**	**5.3633**		**12,116.0164**	**12,116.0164**	**3.6171**		**12,191.9762**

3.3 Phase 2 - Levee Degrade - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4174	6.1420	61.6617	0.1154		0.1890	0.1890		0.1890	0.1890	0.0000	12,116.0164	12,116.0164	3.6171		12,191.9762
Total	**1.4174**	**6.1420**	**61.6617**	**0.1154**		**0.1890**	**0.1890**		**0.1890**	**0.1890**	**0.0000**	**12,116.0164**	**12,116.0164**	**3.6171**		**12,191.9762**

3.3 Phase 2 - Levee Degrade - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.4 Phase 3 - Cutoff Wall - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	10.4199	113.6347	55.1813	0.1428		5.0850	5.0850		4.8711	4.8711		15,425.9636	15,425.9636	2.2037		15,472.2404
Total	**10.4199**	**113.6347**	**55.1813**	**0.1428**		**5.0850**	**5.0850**		**4.8711**	**4.8711**		**15,425.9636**	**15,425.9636**	**2.2037**		**15,472.2404**

3.4 Phase 3 - Cutoff Wall - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6911	7.3280	73.2776	0.1428		0.2255	0.2255		0.2255	0.2255	0.0000	15,425.9636	15,425.9636	2.2037		15,472.2404
Total	**1.6911**	**7.3280**	**73.2776**	**0.1428**		**0.2255**	**0.2255**		**0.2255**	**0.2255**	**0.0000**	**15,425.9636**	**15,425.9636**	**2.2037**		**15,472.2404**

3.4 Phase 3 - Cutoff Wall - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.5 Phase 4 - Levee Reconst - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	13.5096	151.8779	87.3721	0.1277		7.4870	7.4870		6.8880	6.8880		13,271.9602	13,271.9602	4.0033		13,356.0294
Total	**13.5096**	**151.8779**	**87.3721**	**0.1277**		**7.4870**	**7.4870**		**6.8880**	**6.8880**		**13,271.9602**	**13,271.9602**	**4.0033**		**13,356.0294**

3.5 Phase 4 - Levee Reconst - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5635	6.7750	70.6698	0.1277		0.2085	0.2085		0.2085	0.2085	0.0000	13,271.9602	13,271.9602	4.0033		13,356.0294
Total	**1.5635**	**6.7750**	**70.6698**	**0.1277**		**0.2085**	**0.2085**		**0.2085**	**0.2085**	**0.0000**	**13,271.9602**	**13,271.9602**	**4.0033**		**13,356.0294**

3.5 Phase 4 - Levee Reconst - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.6 Phase 5 - Levee Resurface - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5015	36.2014	18.2176	0.0297		1.9571	1.9571		1.8006	1.8006		3,083.3636	3,083.3636	0.9301		3,102.8947
Total	**3.5015**	**36.2014**	**18.2176**	**0.0297**		**1.9571**	**1.9571**		**1.8006**	**1.8006**		**3,083.3636**	**3,083.3636**	**0.9301**		**3,102.8947**

3.6 Phase 5 - Levee Resurface - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3613	1.5658	18.4524	0.0297		0.0482	0.0482		0.0482	0.0482	0.0000	3,083.3636	3,083.3636	0.9301		3,102.8947
Total	**0.3613**	**1.5658**	**18.4524**	**0.0297**		**0.0482**	**0.0482**		**0.0482**	**0.0482**	**0.0000**	**3,083.3636**	**3,083.3636**	**0.9301**		**3,102.8947**

3.6 Phase 5 - Levee Resurface - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.7 Phase 6 - Hydroseed - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7944	20.6729	9.6278	0.0251		0.7799	0.7799		0.7175	0.7175		2,603.8388	2,603.8388	0.7854		2,620.3324
Total	**1.7944**	**20.6729**	**9.6278**	**0.0251**		**0.7799**	**0.7799**		**0.7175**	**0.7175**		**2,603.8388**	**2,603.8388**	**0.7854**		**2,620.3324**

3.7 Phase 6 - Hydroseed - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3064	1.3278	11.2353	0.0251		0.0409	0.0409		0.0409	0.0409	0.0000	2,603.8388	2,603.8388	0.7854		2,620.3324
Total	**0.3064**	**1.3278**	**11.2353**	**0.0251**		**0.0409**	**0.0409**		**0.0409**	**0.0409**	**0.0000**	**2,603.8388**	**2,603.8388**	**0.7854**		**2,620.3324**

3.7 Phase 6 - Hydroseed - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.8 Phase 7 -Demob - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2633	2.5168	1.8654	2.4100e-003		0.1938	0.1938		0.1783	0.1783		250.2659	250.2659	0.0755		251.8512
Total	**0.2633**	**2.5168**	**1.8654**	**2.4100e-003**		**0.1938**	**0.1938**		**0.1783**	**0.1783**		**250.2659**	**250.2659**	**0.0755**		**251.8512**

3.8 Phase 7 -Demob - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0294	0.1273	1.8109	2.4100e-003		3.9200e-003	3.9200e-003		3.9200e-003	3.9200e-003	0.0000	250.2659	250.2659	0.0755		251.8512
Total	**0.0294**	**0.1273**	**1.8109**	**2.4100e-003**		**3.9200e-003**	**3.9200e-003**		**3.9200e-003**	**3.9200e-003**	**0.0000**	**250.2659**	**250.2659**	**0.0755**		**251.8512**

3.8 Phase 7 -Demob - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.437503	0.048903	0.229570	0.168524	0.073101	0.008351	0.010919	0.009240	0.001556	0.001398	0.007311	0.000716	0.002906

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

5.0 Energy Detail

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

TRLIA WPIC Construction

Yuba County, Winter

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	3			**Operational Year**	2016
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - PD construction schedule

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Construction Off-road Equipment Mitigation - Potential mitigation

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	0.00	30.00
tblConstructionPhase	NumDays	0.00	30.00
tblConstructionPhase	NumDays	0.00	40.00
tblConstructionPhase	NumDays	0.00	30.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	10/29/2015	5/7/2016
tblConstructionPhase	PhaseStartDate	7/5/2015	7/6/2015
tblConstructionPhase	PhaseStartDate	8/9/2015	8/10/2015
tblConstructionPhase	PhaseStartDate	9/25/2015	4/4/2016
tblConstructionPhase	PhaseStartDate	5/8/2016	5/9/2016
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	162.00	157.00
tblOffRoadEquipment	HorsePower	162.00	157.00
tblOffRoadEquipment	HorsePower	84.00	402.00
tblOffRoadEquipment	HorsePower	174.00	162.00
tblOffRoadEquipment	HorsePower	174.00	162.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	167.00	196.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	80.00	84.00

tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	LoadFactor	0.74	0.50
tblOffRoadEquipment	LoadFactor	0.74	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	10.8097	129.4711	77.9760	0.1428	0.0000	5.8297	5.8297	0.0000	5.3633	5.3633	0.0000	15,425.9636	15,425.9636	3.6171	0.0000	15,501.9235
2016	13.5096	151.8779	87.3721	0.1277	0.0000	7.4870	7.4870	0.0000	6.8880	6.8880	0.0000	13,271.9602	13,271.9602	4.0033	0.0000	13,356.0294
Total	**24.3193**	**281.3489**	**165.3480**	**0.2705**	**0.0000**	**13.3166**	**13.3166**	**0.0000**	**12.2513**	**12.2513**	**0.0000**	**28,697.9238**	**28,697.9238**	**7.6204**	**0.0000**	**28,857.9528**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.6911	7.3280	73.2776	0.1428	0.0000	0.2255	0.2255	0.0000	0.2255	0.2255	0.0000	15,425.9636	15,425.9636	3.6171	0.0000	15,501.9234
2016	1.5635	6.7750	70.6698	0.1277	0.0000	0.2085	0.2085	0.0000	0.2085	0.2085	0.0000	13,271.9602	13,271.9602	4.0033	0.0000	13,356.0294
Total	**3.2545**	**14.1029**	**143.9474**	**0.2705**	**0.0000**	**0.4339**	**0.4339**	**0.0000**	**0.4339**	**0.4339**	**0.0000**	**28,697.9237**	**28,697.9237**	**7.6204**	**0.0000**	**28,857.9528**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**86.62**	**94.99**	**12.94**	**0.00**	**0.00**	**96.74**	**96.74**	**0.00**	**96.46**	**96.46**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase 1 - Clear/Grub/Strip	Building Construction	6/1/2015	7/4/2015	6	30	
2	Phase 2 - Levee Degrade	Building Construction	7/6/2015	8/8/2015	6	30	
3	Phase 3 - Cutoff Wall	Building Construction	8/10/2015	9/24/2015	6	40	
4	Phase 4 - Levee Reconst	Building Construction	4/4/2016	5/7/2016	6	30	
5	Phase 5 - Levee Resurface	Building Construction	5/9/2016	5/31/2016	6	20	
6	Phase 6 - Hydroseed	Building Construction	6/1/2016	6/6/2016	6	5	
7	Phase 7 -Demob	Building Construction	6/7/2016	6/23/2016	6	15	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Phase 1 - Clear/Grub/Strip	Off-Highway Trucks	2	4.00	381	0.38
Phase 1 - Clear/Grub/Strip	Scrapers	4	8.00	356	0.48
Phase 1 - Clear/Grub/Strip	Tractors/Loaders/Backhoes	2	8.00	75	0.37
Phase 2 - Levee Degrade	Excavators	4	8.00	157	0.38
Phase 2 - Levee Degrade	Off-Highway Trucks	2	8.00	381	0.38
Phase 2 - Levee Degrade	Rollers	4	8.00	84	0.38
Phase 2 - Levee Degrade	Scrapers	4	8.00	356	0.48
Phase 3 - Cutoff Wall	Excavators	2	8.00	157	0.38
Phase 3 - Cutoff Wall	Generator Sets	4	8.00	402	0.50
Phase 3 - Cutoff Wall	Off-Highway Trucks	2	8.00	381	0.38
Phase 3 - Cutoff Wall	Other Material Handling Equipment	1	8.00	196	0.40
Phase 3 - Cutoff Wall	Pumps	4	8.00	84	0.50
Phase 3 - Cutoff Wall	Tractors/Loaders/Backhoes	5	8.00	75	0.37
Phase 4 - Levee Reconst	Graders	4	8.00	162	0.41
Phase 4 - Levee Reconst	Off-Highway Trucks	2	8.00	381	0.38
Phase 4 - Levee Reconst	Rollers	4	8.00	84	0.38
Phase 4 - Levee Reconst	Scrapers	4	8.00	356	0.48
Phase 4 - Levee Reconst	Tractors/Loaders/Backhoes	4	8.00	75	0.37
Phase 5 - Levee Resurface	Graders	2	8.00	162	0.41
Phase 5 - Levee Resurface	Off-Highway Trucks	1	8.00	381	0.38
Phase 5 - Levee Resurface	Rollers	2	8.00	84	0.38
Phase 6 - Hydroseed	Off-Highway Trucks	2	8.00	381	0.38
Phase 7 -Demob	Tractors/Loaders/Backhoes	1	8.00	75	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Phase 1 - Clear/Grub/Strip	8	0.00		0.00	16.80	6.60				
Phase 2 - Levee Degrade	14	0.00		0.00	16.80	6.60				
Phase 3 - Cutoff Wall	18	0.00		0.00	16.80	6.60				
Phase 4 - Levee Reconst	18	0.00		0.00	16.80	6.60				
Phase 5 - Levee Resurface	5	0.00		0.00	16.80	6.60				
Phase 6 - Hydroseed	2	0.00		0.00	16.80	6.60				
Phase 7 -Demob	1	0.00		0.00	16.80	6.60				

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

3.2 Phase 1 - Clear/Grub/Strip - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.2316	90.2348	54.6168	0.0761		3.8201	3.8201		3.5145	3.5145		7,995.2572	7,995.2572	2.3869		8,045.3825
Total	**7.2316**	**90.2348**	**54.6168**	**0.0761**		**3.8201**	**3.8201**		**3.5145**	**3.5145**		**7,995.2572**	**7,995.2572**	**2.3869**		**8,045.3825**

3.2 Phase 1 - Clear/Grub/Strip - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9353	4.0528	35.7609	0.0761		0.1247	0.1247		0.1247	0.1247	0.0000	7,995.2572	7,995.2572	2.3869		8,045.3825
Total	**0.9353**	**4.0528**	**35.7609**	**0.0761**		**0.1247**	**0.1247**		**0.1247**	**0.1247**	**0.0000**	**7,995.2572**	**7,995.2572**	**2.3869**		**8,045.3825**

3.2 Phase 1 - Clear/Grub/Strip - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.3 Phase 2 - Levee Degrade - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	10.8097	129.4711	77.9760	0.1154		5.8297	5.8297		5.3633	5.3633		12,116.0164	12,116.0164	3.6171		12,191.9762
Total	**10.8097**	**129.4711**	**77.9760**	**0.1154**		**5.8297**	**5.8297**		**5.3633**	**5.3633**		**12,116.0164**	**12,116.0164**	**3.6171**		**12,191.9762**

3.3 Phase 2 - Levee Degrade - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4174	6.1420	61.6617	0.1154		0.1890	0.1890		0.1890	0.1890	0.0000	12,116.0164	12,116.0164	3.6171		12,191.9762
Total	**1.4174**	**6.1420**	**61.6617**	**0.1154**		**0.1890**	**0.1890**		**0.1890**	**0.1890**	**0.0000**	**12,116.0164**	**12,116.0164**	**3.6171**		**12,191.9762**

3.3 Phase 2 - Levee Degrade - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.4 Phase 3 - Cutoff Wall - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	10.4199	113.6347	55.1813	0.1428		5.0850	5.0850		4.8711	4.8711		15,425.9636	15,425.9636	2.2037		15,472.2404
Total	**10.4199**	**113.6347**	**55.1813**	**0.1428**		**5.0850**	**5.0850**		**4.8711**	**4.8711**		**15,425.9636**	**15,425.9636**	**2.2037**		**15,472.2404**

3.4 Phase 3 - Cutoff Wall - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6911	7.3280	73.2776	0.1428		0.2255	0.2255		0.2255	0.2255	0.0000	15,425.9636	15,425.9636	2.2037		15,472.2404
Total	**1.6911**	**7.3280**	**73.2776**	**0.1428**		**0.2255**	**0.2255**		**0.2255**	**0.2255**	**0.0000**	**15,425.9636**	**15,425.9636**	**2.2037**		**15,472.2404**

3.4 Phase 3 - Cutoff Wall - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.5 Phase 4 - Levee Reconst - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	13.5096	151.8779	87.3721	0.1277		7.4870	7.4870		6.8880	6.8880		13,271.9602	13,271.9602	4.0033		13,356.0294
Total	**13.5096**	**151.8779**	**87.3721**	**0.1277**		**7.4870**	**7.4870**		**6.8880**	**6.8880**		**13,271.9602**	**13,271.9602**	**4.0033**		**13,356.0294**

3.5 Phase 4 - Levee Reconst - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5635	6.7750	70.6698	0.1277		0.2085	0.2085		0.2085	0.2085	0.0000	13,271.9602	13,271.9602	4.0033		13,356.0294
Total	**1.5635**	**6.7750**	**70.6698**	**0.1277**		**0.2085**	**0.2085**		**0.2085**	**0.2085**	**0.0000**	**13,271.9602**	**13,271.9602**	**4.0033**		**13,356.0294**

3.5 Phase 4 - Levee Reconst - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.6 Phase 5 - Levee Resurface - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5015	36.2014	18.2176	0.0297		1.9571	1.9571		1.8006	1.8006		3,083.3636	3,083.3636	0.9301		3,102.8947
Total	**3.5015**	**36.2014**	**18.2176**	**0.0297**		**1.9571**	**1.9571**		**1.8006**	**1.8006**		**3,083.3636**	**3,083.3636**	**0.9301**		**3,102.8947**

3.6 Phase 5 - Levee Resurface - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3613	1.5658	18.4524	0.0297		0.0482	0.0482		0.0482	0.0482	0.0000	3,083.3636	3,083.3636	0.9301		3,102.8947
Total	**0.3613**	**1.5658**	**18.4524**	**0.0297**		**0.0482**	**0.0482**		**0.0482**	**0.0482**	**0.0000**	**3,083.3636**	**3,083.3636**	**0.9301**		**3,102.8947**

3.6 Phase 5 - Levee Resurface - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.7 Phase 6 - Hydroseed - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7944	20.6729	9.6278	0.0251		0.7799	0.7799		0.7175	0.7175		2,603.8388	2,603.8388	0.7854		2,620.3324
Total	**1.7944**	**20.6729**	**9.6278**	**0.0251**		**0.7799**	**0.7799**		**0.7175**	**0.7175**		**2,603.8388**	**2,603.8388**	**0.7854**		**2,620.3324**

3.7 Phase 6 - Hydroseed - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3064	1.3278	11.2353	0.0251		0.0409	0.0409		0.0409	0.0409	0.0000	2,603.8388	2,603.8388	0.7854		2,620.3324
Total	**0.3064**	**1.3278**	**11.2353**	**0.0251**		**0.0409**	**0.0409**		**0.0409**	**0.0409**	**0.0000**	**2,603.8388**	**2,603.8388**	**0.7854**		**2,620.3324**

3.7 Phase 6 - Hydroseed - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.8 Phase 7 -Demob - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2633	2.5168	1.8654	2.4100e-003		0.1938	0.1938		0.1783	0.1783		250.2659	250.2659	0.0755		251.8512
Total	**0.2633**	**2.5168**	**1.8654**	**2.4100e-003**		**0.1938**	**0.1938**		**0.1783**	**0.1783**		**250.2659**	**250.2659**	**0.0755**		**251.8512**

3.8 Phase 7 -Demob - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0294	0.1273	1.8109	2.4100e-003		3.9200e-003	3.9200e-003		3.9200e-003	3.9200e-003	0.0000	250.2659	250.2659	0.0755		251.8512
Total	**0.0294**	**0.1273**	**1.8109**	**2.4100e-003**		**3.9200e-003**	**3.9200e-003**		**3.9200e-003**	**3.9200e-003**	**0.0000**	**250.2659**	**250.2659**	**0.0755**		**251.8512**

3.8 Phase 7 -Demob - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.437503	0.048903	0.229570	0.168524	0.073101	0.008351	0.010919	0.009240	0.001556	0.001398	0.007311	0.000716	0.002906

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

5.0 Energy Detail

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

TRLIA WPIC Construction

Yuba County, Annual

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	3			**Operational Year**	2016
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - PD construction schedule

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Construction Off-road Equipment Mitigation - Potential mitigation

Table Name	Column Name	Default Value	New Value
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	0.00	30.00
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tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	10/29/2015	5/7/2016
tblConstructionPhase	PhaseStartDate	7/5/2015	7/6/2015
tblConstructionPhase	PhaseStartDate	8/9/2015	8/10/2015
tblConstructionPhase	PhaseStartDate	9/25/2015	4/4/2016
tblConstructionPhase	PhaseStartDate	5/8/2016	5/9/2016
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	162.00	157.00
tblOffRoadEquipment	HorsePower	162.00	157.00
tblOffRoadEquipment	HorsePower	84.00	402.00
tblOffRoadEquipment	HorsePower	174.00	162.00
tblOffRoadEquipment	HorsePower	174.00	162.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	400.00	381.00
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tblOffRoadEquipment	HorsePower	400.00	381.00
tblOffRoadEquipment	HorsePower	167.00	196.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	80.00	84.00

tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	HorsePower	361.00	356.00
tblOffRoadEquipment	LoadFactor	0.74	0.50
tblOffRoadEquipment	LoadFactor	0.74	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.4790	5.5683	3.0925	5.7300e-003	0.0000	0.2465	0.2465	0.0000	0.2306	0.2306	0.0000	553.5536	553.5536	0.1217	0.0000	556.1090
2016	0.2441	2.7107	1.5308	2.2900e-003	0.0000	0.1353	0.1353	0.0000	0.1245	0.1245	0.0000	216.1818	216.1818	0.0652	0.0000	217.5512
Total	**0.7231**	**8.2790**	**4.6233**	**8.0200e-003**	**0.0000**	**0.3817**	**0.3817**	**0.0000**	**0.3551**	**0.3551**	**0.0000**	**769.7354**	**769.7354**	**0.1869**	**0.0000**	**773.6601**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0691	0.2995	2.9269	5.7300e-003	0.0000	9.2100e-003	9.2100e-003	0.0000	9.2100e-003	9.2100e-003	0.0000	553.5529	553.5529	0.1217	0.0000	556.1083
2016	0.0281	0.1216	1.2862	2.2900e-003	0.0000	3.7400e-003	3.7400e-003	0.0000	3.7400e-003	3.7400e-003	0.0000	216.1815	216.1815	0.0652	0.0000	217.5509
Total	**0.0972**	**0.4210**	**4.2131**	**8.0200e-003**	**0.0000**	**0.0130**	**0.0130**	**0.0000**	**0.0130**	**0.0130**	**0.0000**	**769.7345**	**769.7345**	**0.1869**	**0.0000**	**773.6592**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**86.56**	**94.91**	**8.87**	**0.00**	**0.00**	**96.61**	**96.61**	**0.00**	**96.35**	**96.35**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase 1 - Clear/Grub/Strip	Building Construction	6/1/2015	7/4/2015	6	30	
2	Phase 2 - Levee Degrade	Building Construction	7/6/2015	8/8/2015	6	30	
3	Phase 3 - Cutoff Wall	Building Construction	8/10/2015	9/24/2015	6	40	
4	Phase 4 - Levee Reconst	Building Construction	4/4/2016	5/7/2016	6	30	
5	Phase 5 - Levee Resurface	Building Construction	5/9/2016	5/31/2016	6	20	
6	Phase 6 - Hydroseed	Building Construction	6/1/2016	6/6/2016	6	5	
7	Phase 7 -Demob	Building Construction	6/7/2016	6/23/2016	6	15	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Phase 1 - Clear/Grub/Strip	Off-Highway Trucks	2	4.00	381	0.38
Phase 1 - Clear/Grub/Strip	Scrapers	4	8.00	356	0.48
Phase 1 - Clear/Grub/Strip	Tractors/Loaders/Backhoes	2	8.00	75	0.37
Phase 2 - Levee Degrade	Excavators	4	8.00	157	0.38
Phase 2 - Levee Degrade	Off-Highway Trucks	2	8.00	381	0.38
Phase 2 - Levee Degrade	Rollers	4	8.00	84	0.38
Phase 2 - Levee Degrade	Scrapers	4	8.00	356	0.48
Phase 3 - Cutoff Wall	Excavators	2	8.00	157	0.38
Phase 3 - Cutoff Wall	Generator Sets	4	8.00	402	0.50
Phase 3 - Cutoff Wall	Off-Highway Trucks	2	8.00	381	0.38
Phase 3 - Cutoff Wall	Other Material Handling Equipment	1	8.00	196	0.40
Phase 3 - Cutoff Wall	Pumps	4	8.00	84	0.50
Phase 3 - Cutoff Wall	Tractors/Loaders/Backhoes	5	8.00	75	0.37
Phase 4 - Levee Reconst	Graders	4	8.00	162	0.41
Phase 4 - Levee Reconst	Off-Highway Trucks	2	8.00	381	0.38
Phase 4 - Levee Reconst	Rollers	4	8.00	84	0.38
Phase 4 - Levee Reconst	Scrapers	4	8.00	356	0.48
Phase 4 - Levee Reconst	Tractors/Loaders/Backhoes	4	8.00	75	0.37
Phase 5 - Levee Resurface	Graders	2	8.00	162	0.41
Phase 5 - Levee Resurface	Off-Highway Trucks	1	8.00	381	0.38
Phase 5 - Levee Resurface	Rollers	2	8.00	84	0.38
Phase 6 - Hydroseed	Off-Highway Trucks	2	8.00	381	0.38
Phase 7 -Demob	Tractors/Loaders/Backhoes	1	8.00	75	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Phase 1 - Clear/Grub/Strip	8	0.00		0.00	16.80	6.60				
Phase 2 - Levee Degrade	14	0.00		0.00	16.80	6.60				
Phase 3 - Cutoff Wall	18	0.00		0.00	16.80	6.60				
Phase 4 - Levee Reconst	18	0.00		0.00	16.80	6.60				
Phase 5 - Levee Resurface	5	0.00		0.00	16.80	6.60				
Phase 6 - Hydroseed	2	0.00		0.00	16.80	6.60				
Phase 7 -Demob	1	0.00		0.00	16.80	6.60				

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

3.2 Phase 1 - Clear/Grub/Strip - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1085	1.3535	0.8193	1.1400e-003		0.0573	0.0573		0.0527	0.0527	0.0000	108.7976	108.7976	0.0325	0.0000	109.4797
Total	**0.1085**	**1.3535**	**0.8193**	**1.1400e-003**		**0.0573**	**0.0573**		**0.0527**	**0.0527**	**0.0000**	**108.7976**	**108.7976**	**0.0325**	**0.0000**	**109.4797**

3.2 Phase 1 - Clear/Grub/Strip - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0140	0.0608	0.5364	1.1400e-003		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003	0.0000	108.7975	108.7975	0.0325	0.0000	109.4796
Total	**0.0140**	**0.0608**	**0.5364**	**1.1400e-003**		**1.8700e-003**	**1.8700e-003**		**1.8700e-003**	**1.8700e-003**	**0.0000**	**108.7975**	**108.7975**	**0.0325**	**0.0000**	**109.4796**

3.2 Phase 1 - Clear/Grub/Strip - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Phase 2 - Levee Degrade - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1622	1.9421	1.1696	1.7300e-003		0.0874	0.0874		0.0805	0.0805	0.0000	164.8720	164.8720	0.0492	0.0000	165.9056
Total	**0.1622**	**1.9421**	**1.1696**	**1.7300e-003**		**0.0874**	**0.0874**		**0.0805**	**0.0805**	**0.0000**	**164.8720**	**164.8720**	**0.0492**	**0.0000**	**165.9056**

3.3 Phase 2 - Levee Degrade - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0213	0.0921	0.9249	1.7300e-003		2.8300e-003	2.8300e-003		2.8300e-003	2.8300e-003	0.0000	164.8718	164.8718	0.0492	0.0000	165.9054
Total	**0.0213**	**0.0921**	**0.9249**	**1.7300e-003**		**2.8300e-003**	**2.8300e-003**		**2.8300e-003**	**2.8300e-003**	**0.0000**	**164.8718**	**164.8718**	**0.0492**	**0.0000**	**165.9054**

3.3 Phase 2 - Levee Degrade - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Phase 3 - Cutoff Wall - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2084	2.2727	1.1036	2.8600e-003		0.1017	0.1017		0.0974	0.0974	0.0000	279.8840	279.8840	0.0400	0.0000	280.7236
Total	**0.2084**	**2.2727**	**1.1036**	**2.8600e-003**		**0.1017**	**0.1017**		**0.0974**	**0.0974**	**0.0000**	**279.8840**	**279.8840**	**0.0400**	**0.0000**	**280.7236**

3.4 Phase 3 - Cutoff Wall - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0338	0.1466	1.4656	2.8600e-003		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003	0.0000	279.8836	279.8836	0.0400	0.0000	280.7233
Total	**0.0338**	**0.1466**	**1.4656**	**2.8600e-003**		**4.5100e-003**	**4.5100e-003**		**4.5100e-003**	**4.5100e-003**	**0.0000**	**279.8836**	**279.8836**	**0.0400**	**0.0000**	**280.7233**

3.4 Phase 3 - Cutoff Wall - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Phase 4 - Levee Reconst - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2026	2.2782	1.3106	1.9200e-003		0.1123	0.1123		0.1033	0.1033	0.0000	180.6018	180.6018	0.0545	0.0000	181.7458
Total	**0.2026**	**2.2782**	**1.3106**	**1.9200e-003**		**0.1123**	**0.1123**		**0.1033**	**0.1033**	**0.0000**	**180.6018**	**180.6018**	**0.0545**	**0.0000**	**181.7458**

3.5 Phase 4 - Levee Reconst - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0235	0.1016	1.0601	1.9200e-003		3.1300e-003	3.1300e-003		3.1300e-003	3.1300e-003	0.0000	180.6016	180.6016	0.0545	0.0000	181.7456
Total	**0.0235**	**0.1016**	**1.0601**	**1.9200e-003**		**3.1300e-003**	**3.1300e-003**		**3.1300e-003**	**3.1300e-003**	**0.0000**	**180.6016**	**180.6016**	**0.0545**	**0.0000**	**181.7456**

3.5 Phase 4 - Levee Reconst - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Phase 5 - Levee Resurface - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0350	0.3620	0.1822	3.0000e-004		0.0196	0.0196		0.0180	0.0180	0.0000	27.9718	27.9718	8.4400e-003	0.0000	28.1490
Total	**0.0350**	**0.3620**	**0.1822**	**3.0000e-004**		**0.0196**	**0.0196**		**0.0180**	**0.0180**	**0.0000**	**27.9718**	**27.9718**	**8.4400e-003**	**0.0000**	**28.1490**

3.6 Phase 5 - Levee Resurface - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6100e-003	0.0157	0.1845	3.0000e-004		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004	0.0000	27.9718	27.9718	8.4400e-003	0.0000	28.1490
Total	**3.6100e-003**	**0.0157**	**0.1845**	**3.0000e-004**		**4.8000e-004**	**4.8000e-004**		**4.8000e-004**	**4.8000e-004**	**0.0000**	**27.9718**	**27.9718**	**8.4400e-003**	**0.0000**	**28.1490**

3.6 Phase 5 - Levee Resurface - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Phase 6 - Hydroseed - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.4900e-003	0.0517	0.0241	6.0000e-005		1.9500e-003	1.9500e-003		1.7900e-003	1.7900e-003	0.0000	5.9054	5.9054	1.7800e-003	0.0000	5.9428
Total	**4.4900e-003**	**0.0517**	**0.0241**	**6.0000e-005**		**1.9500e-003**	**1.9500e-003**		**1.7900e-003**	**1.7900e-003**	**0.0000**	**5.9054**	**5.9054**	**1.7800e-003**	**0.0000**	**5.9428**

3.7 Phase 6 - Hydroseed - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.7000e-004	3.3200e-003	0.0281	6.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	5.9054	5.9054	1.7800e-003	0.0000	5.9428
Total	**7.7000e-004**	**3.3200e-003**	**0.0281**	**6.0000e-005**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**	**0.0000**	**5.9054**	**5.9054**	**1.7800e-003**	**0.0000**	**5.9428**

3.7 Phase 6 - Hydroseed - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 Phase 7 -Demob - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9700e-003	0.0189	0.0140	2.0000e-005		1.4500e-003	1.4500e-003		1.3400e-003	1.3400e-003	0.0000	1.7028	1.7028	5.1000e-004	0.0000	1.7136
Total	**1.9700e-003**	**0.0189**	**0.0140**	**2.0000e-005**		**1.4500e-003**	**1.4500e-003**		**1.3400e-003**	**1.3400e-003**	**0.0000**	**1.7028**	**1.7028**	**5.1000e-004**	**0.0000**	**1.7136**

3.8 Phase 7 -Demob - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2000e-004	9.5000e-004	0.0136	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.7028	1.7028	5.1000e-004	0.0000	1.7136
Total	**2.2000e-004**	**9.5000e-004**	**0.0136**	**2.0000e-005**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**1.7028**	**1.7028**	**5.1000e-004**	**0.0000**	**1.7136**

3.8 Phase 7 -Demob - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.437503	0.048903	0.229570	0.168524	0.073101	0.008351	0.010919	0.009240	0.001556	0.001398	0.007311	0.000716	0.002906

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

TRLIA WPIC
Construction Emissions Summary

Phase/Emission Source	Daily Emissions (lbs/day)					Annual Emissions (tons/yr)					MT
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	CO_2e
Year 2015											
Phase 1 - Clearing, Grubbing, and Stripping	***8.02***	***109.51***	***63.83***	***490.78***	***77.66***	**0.12**	**1.61**	**0.95**	**7.36**	**1.16**	**184**
Off-Road Equipment	7.23	90.24	54.62	3.82	3.51	0.11	1.35	0.82	0.06	0.05	109.48
On-Road Vehicles	0.79	19.27	9.21	0.85	0.54	0.01	0.26	0.13	0.01	0.01	74.29
Fugitive Dust (Material Movement)				486.12	73.61				7.29	1.10	
Fugitive Dust (Unpaved Roads)				27.39	5.70				0.41	0.09	
Phase 2 - Levee Degrade	***11.33***	***141.43***	***84.70***	***353.67***	***58.33***	**0.17**	**2.12**	**1.27**	**5.30**	**0.88**	**222**
Off-Road Equipment	10.81	129.47	77.98	5.83	5.36	0.16	1.94	1.17	0.09	0.08	165.91
On-Road Vehicles	0.52	11.96	6.72	0.61	0.39	0.01	0.18	0.10	0.01	0.01	56.01
Fugitive Dust (Material Movement)				347.23	52.58				5.21	0.79	
Fugitive Dust (Unpaved Roads)				14.98	3.12				0.22	0.05	
Phase 3 - Cutoff Wall Construction	***10.91***	***120.16***	***63.75***	***14.13***	***6.50***	**0.22**	**2.40**	**1.27**	**0.28**	**0.13**	**345**
Off-Road Equipment	10.42	113.63	55.18	5.09	4.87	0.21	2.27	1.10	0.10	0.10	280.72
On-Road Vehicles	0.49	6.53	8.57	0.57	0.35	0.01	0.13	0.17	0.01	0.01	64.68
Fugitive Dust (Material Movement)				8.46	1.28				0.17	0.03	
Fugitive Dust (Unpaved Roads)				9.61	2.00				0.19	0.04	
Phase 4 - Levee Reconstruction	***23.11***	***513.55***	***134.26***	***1236.89***	***197.71***	**0.35**	**7.70**	**2.01**	**18.55**	**2.97**	**1,158**
Off-Road Equipment	13.51	151.88	87.37	7.49	6.89	0.20	2.28	1.31	0.11	0.10	181.75
On-Road Vehicles	9.60	361.67	46.89	8.90	6.00	0.14	5.43	0.70	0.13	0.09	976.27
Fugitive Dust (Material Movement)				1220.50	184.82				18.31	2.77	
Fugitive Dust (Unpaved Roads)				14.98	3.12				0.22	0.05	
Phase 5 - Levee Resurfacing	***4.39***	***62.36***	***26.57***	***61.50***	***11.29***	**0.04**	**0.62**	**0.27**	**0.62**	**0.11**	**90**
Off-Road Equipment	3.5	36.2	18.22	1.96	1.8	0.04	0.36	0.18	0.02	0.02	28.15
On-Road Vehicles	0.89	26.16	8.35	0.95	0.62	0.01	0.26	0.08	0.01	0.01	62.25
Fugitive Dust (Material Movement)				58.59	8.87				0.59	0.09	
Fugitive Dust (Unpaved Roads)				0.00	0.00				0.00	0.00	
Phase 6 - Hydroseeding	***2.11***	***23.60***	***16.13***	***1.21***	***0.98***	**0.01**	**0.07**	**0.07**	**0.00**	**0.00**	**22**
Off-Road Equipment	1.79	20.67	9.63	0.78	0.72	0.00	0.05	0.02	0.00	0.00	5.94
On-Road Vehicles	0.32	2.93	6.50	0.43	0.26	0.00	0.02	0.04	0.00	0.00	15.72
Fugitive Dust (Material Movement)				0.00	0.00				0.00	0.00	
Fugitive Dust (Unpaved Roads)				3.20	0.67				0.02	0.00	
Phase 7 - Demob	***1.02***	***23.57***	***9.63***	***1.02***	***0.71***	**0.01**	**0.18**	**0.07**	**0.01**	**0.01**	**42**
Off-Road Equipment	0.26	2.52	1.87	0.19	0.18	0.00	0.02	0.01	0.00	0.00	1.71
On-Road Vehicles	0.76	21.05	7.76	0.83	0.53	0.01	0.16	0.06	0.01	0.00	39.96
Fugitive Dust (Material Movement)				-	-				0	0	
Fugitive Dust (Unpaved Roads)				-	-				0	0	

TRLIA WPIC
Construction (Mitigated) Emissions Summary

	Daily Emissions (lbs/day)						Annual Emissions (tons/yr)					MT
Phase/Emission Source	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**		**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**
Year 2015												
Phase 1 - Clearing, Grubbing, and Stripping	**1.72**	**23.32**	**44.97**	**129.35**	**20.49**		**0.02**	**0.32**	**0.67**	**1.94**	**0.31**	**184**
Off-Road Equipment	0.9353	4.0528	35.7609	0.12	0.12		0.01	0.06	0.54	0.00	0.00	109.48
On-Road Vehicles	0.79	19.27	9.21	0.85	0.54		0.01	0.26	0.13	0.01	0.01	74.29
Fugitive Dust (Material Movement)				121.53	18.40					1.82	0.28	
Fugitive Dust (Unpaved Roads)				6.85	1.42					0.10	0.02	
Phase 2 - Levee Degrade	**1.94**	**18.11**	**68.38**	**91.35**	**14.50**		**0.03**	**0.27**	**1.03**	**1.37**	**0.22**	**222**
Off-Road Equipment	1.4174	6.142	61.6617	0.19	0.19		0.02	0.09	0.92	0.00	0.00	165.91
On-Road Vehicles	0.52	11.96	6.72	0.61	0.39		0.01	0.18	0.10	0.01	0.01	56.01
Fugitive Dust (Material Movement)				86.81	13.14					1.30	0.20	
Fugitive Dust (Unpaved Roads)				3.75	0.78					0.06	0.01	
Phase 3 - Cutoff Wall Construction	**2.18**	**13.85**	**81.84**	**5.32**	**1.40**		**0.04**	**0.28**	**1.64**	**0.11**	**0.03**	**345**
Off-Road Equipment	1.6911	7.328	73.2776	0.23	0.23		0.03	0.15	1.47	0.00	0.00	280.72
On-Road Vehicles	0.49	6.53	8.57	0.57	0.35		0.01	0.13	0.17	0.01	0.01	64.68
Fugitive Dust (Material Movement)				2.12	0.32					0.04	0.01	
Fugitive Dust (Unpaved Roads)				2.40	0.50					0.05	0.01	
Phase 4 - Levee Reconstruction	**11.16**	**368.45**	**117.56**	**317.98**	**53.20**		**0.17**	**5.53**	**1.76**	**4.77**	**0.80**	**1,158**
Off-Road Equipment	1.5635	6.775	70.6698	0.21	0.21		0.02	0.10	1.06	0.00	0.00	181.75
On-Road Vehicles	9.60	361.67	46.89	8.90	6.00		0.14	5.43	0.70	0.13	0.09	976.27
Fugitive Dust (Material Movement)				305.12	46.20					4.58	0.69	
Fugitive Dust (Unpaved Roads)				3.75	0.78					0.06	0.01	
Phase 5 - Levee Resurfacing	**1.25**	**27.73**	**26.80**	**15.65**	**2.88**		**0.01**	**0.28**	**0.27**	**0.16**	**0.03**	**90**
Off-Road Equipment	0.3613	1.5658	18.4524	0.05	0.05		0.00	0.02	0.18	0.00	0.00	28.15
On-Road Vehicles	0.89	26.16	8.35	0.95	0.62		0.01	0.26	0.08	0.01	0.01	62.25
Fugitive Dust (Material Movement)				14.65	2.22					0.15	0.02	
Fugitive Dust (Unpaved Roads)				0.00	0.00					0.00	0.00	
Phase 6 - Hydroseeding	**0.63**	**4.26**	**17.74**	**0.47**	**0.30**		**0.00**	**0.02**	**0.07**	**0.00**	**0.00**	**22**
Off-Road Equipment	0.3064	1.3278	11.2353	0.04	0.04		0.00	0.00	0.03	0.00	0.00	5.94
On-Road Vehicles	0.32	2.93	6.50	0.43	0.26		0.00	0.02	0.04	0.00	0.00	15.72
Fugitive Dust (Material Movement)				0.00	0.00					0.00	0.00	
Fugitive Dust (Unpaved Roads)				0.00	0.00	0				0.00	0.00	
Phase 7 - Demob	**0.78**	**21.18**	**9.57**	**1.63**	**0.71**		**0.01**	**0.16**	**0.07**	**0.01**	**0.01**	**42**
Off-Road Equipment	0.0294	0.1273	1.8109	0.00	0.00		0.00	0.00	0.01	0.00	0.00	1.71
On-Road Vehicles	0.76	21.05	7.76	0.83	0.53		0.01	0.16	0.06	0.01	0.00	39.96
Fugitive Dust (Material Movement)				0.00	0.00					0.00	0.00	
Fugitive Dust (Unpaved Roads)				0.80	0.17					0.01	0.00	

TRLIA WPIC
On-Road Emissions

								Daily Pollutants (lbs/day)					Annual Pollutants (tons)					Annual
Construction Phase and Source Type	**Duration (days)**	**Number**	**Hours/Day**	**Avg Speed (mph)**	**Avg Trip Distance (mi)**	**VMT/day**	**Total VMT**	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**MT CO2e/yr**
Phase 1 - Clearing, Grubbing, and Stripping	30							***0.79***	***19.27***	***9.21***	***0.85***	***0.54***	***0.01***	***0.26***	***0.13***	***0.01***	***0.01***	***74.29***
Scraper (4)		4	8															
Water Trucks (2)		2	8															
Front-End Loader (2)		2	8															
Pick-up Truck (4)		4	8	15		480	14,400	0.09	0.47	1.70	0.07	0.04	0.00	0.01	0.03	0.00	0.00	5.77
Construction Workers		75			20	3,000	90,000	0.28	2.69	5.65	0.39	0.24	0.00	0.04	0.08	0.01	0.00	31.62
Haul Trucks (stripping)	30	9334	trips		2	622	18,668	0.34	12.98	1.49	0.31	0.21	0.01	0.19	0.02	0.00	0.00	34.16
Haul Trucks (clearing and grubbing)	10	50	trips		30	150	1,500	0.08	3.13	0.36	0.07	0.05	0.00	0.02	0.00	0.00	0.00	2.74
Phase 2 - Levee Degrade	30							***0.52***	***11.96***	***6.72***	***0.61***	***0.39***	***0.01***	***0.18***	***0.10***	***0.01***	***0.01***	***56.01***
Excavator (4)		4	8															
Scraper (4)		4	8															
Vibratory Rollers (4)		4	8															
Water Trucks (2)		2	8															
Haul Trucks (from Material Movement)		6666	trips		2	444	13,332	0.24	9.27	1.06	0.22	0.15	0.00	0.14	0.02	0.00	0.00	24.39
Construction Workers		75			20	3,000	90,000	0.28	2.69	5.65	0.39	0.24	0.00	0.04	0.08	0.01	0.00	31.62
Phase 3 - Cutoff Wall Construction	40							***0.49***	***6.53***	***8.57***	***0.57***	***0.35***	***0.01***	***0.13***	***0.17***	***0.01***	***0.01***	***64.68***
Hydraulic Excavator (2)		2	8															
DMM Equipment (1)		1	8															
Front-End Loader (4)		4	8															
Extended Boom Pallet Loader (1)		1	8															
300 kW Generators (4)		4	8															
Slurry Pumps (4)		4	8															
Pick-up Trucks (6)		6	8	15		720	28,800	0.13	0.70	2.55	0.11	0.06	0.00	0.01	0.05	0.00	0.00	11.54
Haul Trucks (from Material Movement)		200	trips		30	150	6,000	0.08	3.13	0.36	0.07	0.05	0.00	0.06	0.01	0.00	0.00	10.98
Water Trucks (2)		2	8															
Construction Workers		75			20	3,000	120,000	0.28	2.69	5.65	0.39	0.24	0.01	0.05	0.11	0.01	0.00	42.16
Phase 4 - Levee Reconstruction	30							***9.60***	***361.67***	***46.89***	***8.90***	***6.00***	***0.14***	***5.43***	***0.70***	***0.13***	***0.09***	***976.27***
Scraper (4)		4	8															
Motor Graders (4)		4	8															
Tractors with Discing Equipment (4)		4	8															
Vibratory Rollers (4)		4	8															
Water Trucks (2)		2	8															
Construction Workers		75			20	3,000	90,000	0.28	2.69	5.65	0.39	0.24	0.00	0.04	0.08	0.01	0.00	31.62
Haul Trucks (Levee Degrade Material)	30	6,666	trips		2	444	13,332	0.24	9.27	1.06	0.22	0.15	0.00	0.14	0.02	0.00	0.00	24.39
Haul Trucks (Import)	30	14,516	trips		30	14,516	435,480	7.86	302.78	34.78	7.18	4.86	0.12	4.54	0.52	0.11	0.07	796.76
Haul Trucks (Export)	30	2,250	trips		30	2,250	67,500	1.22	46.93	5.39	1.11	0.75	0.02	0.70	0.08	0.02	0.01	123.50
Phase 5 - Levee Resurfacing	20							***0.89***	***26.16***	***8.35***	***0.95***	***0.62***	***0.01***	***0.26***	***0.08***	***0.01***	***0.01***	***62.25***
Motor Graders (2)		2	8															
Vibratory Rollers (2)		2	8															
Haul Trucks (from Material Movement)		750	trips		30	1,125	22,500	0.61	23.47	2.70	0.56	0.38	0.01	0.23	0.03	0.01	0.00	41.17
Water Trucks (1)		1	8															
Construction Workers		75			20	3,000	60,000	0.28	2.69	5.65	0.39	0.24	0.00	0.03	0.06	0.00	0.00	21.08
Phase 6 - Hydroseeding	14							***0.32***	***2.93***	***6.50***	***0.43***	***0.26***	***0.00***	***0.02***	***0.04***	***0.00***	***0.00***	***15.72***
Hydroseeding Trucks (2)	5	2	8															
Pickup Trucks (2)	10	2	8	15		240	2,400	0.04	0.23	0.85	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.96
Construction Workers		75			20	3,000	42,000	0.28	2.69	5.65	0.39	0.24	0.00	0.02	0.04	0.00	0.00	14.76
Phase 7 - Demob	15							***0.76***	***21.05***	***7.76***	***0.83***	***0.53***	***0.01***	***0.16***	***0.06***	***0.01***	***0.00***	***39.96***
Extended Boom Pallet Loader (1)		1	8															
Haul Trucks (2)		2	8	55		880	13,200	0.48	18.36	2.11	0.44	0.29	0.00	0.14	0.02	0.00	0.00	24.15
Construction Workers		75			20	3,000	45,000	0.28	2.69	5.65	0.39	0.24	0.00	0.02	0.04	0.00	0.00	15.81
	179																	

	Emission Factors (g/mi) - EMFAC2011 Yuba County (2015)					
Vehicle Type	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Construction Worker	0.04	0.41	0.85	0.06	0.04	333.78
Pick-up Truck	0.08	0.44	1.61	0.07	0.04	380.57
Haul Trucks	0.25	9.46	1.09	0.22	0.15	1738.13

TRLIA WPIC
Fugitive Dust Emissions

Truck Loading Fugitive Dust Emission Factors

$EF_D = k \times (0.0032) \times ((U/5)^{1.3})/((M/2)^{1.4})$

Variable	Amount	Units	Source
EF (PM_{10})	0.103	lb/ton	CalEEMod Appendix A
EF ($PM_{2.5}$)	0.016	lb/ton	CalEEMod Appendix A
k (PM_{10})	0.35	factor	CalEEMod Appendix A
k ($PM_{2.5}$)	0.053	factor	CalEEMod Appendix A
U (mean wind speed)	7.83	miles/hr	CalEEMod Appendix A
M (moisture content)	12%	percent	CalEEMod Appendix A
Soil density	1.26	tons/cy	CalEEMod Appendix A

E (lbs) = EF (lb/ton) x TP (tons)

					Unmitigated		Mitigated	
	Work Days	Total Materials Moved (cy)	Total Materials Moved (tons)	Daily Materials Moved (tons/day)	Daily PM_{10} (lbs/day)	Daily $PM_{2.5}$ (lbs/day)	Daily PM_{10} (lbs/day)	Daily $PM_{2.5}$ (lbs/day)
Phase 1								
Stripping	30	56,000	70,793	2,360	486.12	73.61	121.53	18.40
Phase 2								
Degrade Levee	30	40,000	50,567	1,686	347.23	52.58	86.81	13.14
Phase 3								
Cutoff Wall Materials	40	1,300	1,643	41	8.46	1.28	2.12	0.32
Phase 4								
Degrade Levee Material	30	40,000	50,567	1,686	347.23	52.58	86.81	13.14
Import	30	87,100	110,109	3,670	756.08	114.49	189.02	28.62
Export	30	13,500	17,066	569	117.19	17.75	29.30	4.44
Phase 5								
Aggregate	20	4,500	5,689	284	58.59	8.87	14.65	2.22

Basic Construction Measure	0.54	percent reduction
Enhanced Mitigation	0.75	percent reduction

TRLIA WPIC
Unpaved Roads Fugitive Dust Emissions

Construction Parameter	Units	Parameters	Phase 1 (Stripping)		Phase 2 (Levee Degrade)		Phase 3 (Cutoff Wall)		Phase 4 (Levee Construction)		Phase 6 (Hydroseeding)	
Work Days	days		30		30		40		30		14	
Daily Haul Truck VMT	VMT/day		622		444		0		444		0	
Total Haul Truck VMT	VMT		18,668		13,332		0		13,332		0	
Daily Pick Up VMT	VMT/day		480		0		720		0		240	
Total Pick Up VMT	VMT		14,400		0		28,800		0		2,400	
Emission Factors	**Value**	**Units**	**Emissions PM_{10} (lbs/day)**	**Emissions $PM_{2.5}$ (lbs/day)**	**Emissions PM_{10} (lbs/day)**	**Emissions $PM_{2.5}$ (lbs/day)**	**Emissions PM_{10} (lbs/day)**	**Emissions $PM_{2.5}$ (lbs/day)**	**Emissions PM_{10} (lbs/day)**	**Emissions $PM_{2.5}$ (lbs/day)**	**Emissions PM_{10} (lbs/day)**	**Emissions $PM_{2.5}$ (lbs/day)**
Pickup Trucks			6.40	1.33	0.00	0.00	9.61	2.00	0.00	0.00	3.20	0.67
Haul Trucks			20.98	4.36	14.98	3.12	0.00	0.00	14.98	3.12	0.00	0.00
		Total Unmitigated	27.39	5.70	14.98	3.12	9.61	2.00	14.98	3.12	3.20	0.67
		Full Mitigation	6.85	1.42	3.75	0.78	2.40	0.50	3.75	0.78	0.80	0.17

Unpaved Road Fugitive Dust

$E = k(s/12)^a(W/3)^b$	AP-42 Chapter 13.2.2-4 (Equation 1a)	
E = lb/VMT	0.013	lbs/VMT (Pickup Trucks)
E = lb/VMT	0.034	lbs/VMT (Haul Trucks)
s = surface material silt content %	0.085	
W = mean vehicle weight (tons)	2	Pickup Trucks
W = mean vehicle weight (tons)	13	Haul Trucks
k (PM10)	1.5	Industrial road
a (PM10)	0.9	Industrial road
b (PM10)	0.45	Industrial road

APPENDIX B

U.S. Fish and Wildlife Service Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE

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

November 6, 2014

Document Number: 141106100923

Anne King
AECOM
2020 L Street Suite 400
Sacramento, CA 95811

Subject: Species List for Western Pacific Interceptor Canal West Levee Improvements Project

Dear: Ms. King

We are sending this official species list in response to your November 6, 2014 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

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

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

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be February 04, 2015.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found http://www.fws.gov/sacramento/es/Branch-Contacts/es_branch-contacts.htm.

Endangered Species Division

TAKE PRIDE IN AMERICA

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

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

Document Number: 141106100923

Current as of: November 6, 2014

Quad Lists

Listed Species

Invertebrates

Branchinecta conservatio
- Conservancy fairy shrimp (E)

Branchinecta lynchi
- Critical habitat, vernal pool fairy shrimp (X)
- vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
- valley elderberry longhorn beetle (T)

Lepidurus packardi
- Critical habitat, vernal pool tadpole shrimp (X)
- vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
- green sturgeon (T) (NMFS)

Hypomesus transpacificus
- delta smelt (T)

Oncorhynchus mykiss
- Central Valley steelhead (T) (NMFS)
- Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
- Central Valley spring-run chinook salmon (T) (NMFS)
- Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
- Critical habitat, winter-run chinook salmon (X) (NMFS)
- winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
- California tiger salamander, central population (T)

Rana draytonii
- California red-legged frog (T)

Reptiles

Thamnophis gigas
- giant garter snake (T)

Plants

Pseudobahia bahiifolia
- Hartweg's golden sunburst (E)

Candidate Species

Birds

Coccyzus americanus occidentalis
- Western yellow-billed cuckoo (C)

Quads Containing Listed, Proposed or Candidate Species:

SHERIDAN (528B)
PLEASANT GROVE (528C)
NICOLAUS (529A)
SUTTER CAUSEWAY (529B)
KNIGHTS LANDING (529C)
VERONA (529D)
BROWNS VALLEY (543B)
WHEATLAND (543C)
YUBA CITY (544A)
SUTTER (544B)
GILSIZER SLOUGH (544C)
OLIVEHURST (544D)

County Lists

Yuba County

Listed Species

Invertebrates

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Lepidurus packardi
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Thamnophis gigas
giant garter snake (T)

Plants

Pseudobahia bahiifolia
Hartweg's golden sunburst (E)

Senecio layneae
Layne's butterweed (=ragwort) (T)

Candidate Species

Amphibians

Rana muscosa
mountain yellow-legged frog (C)

Birds

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (C)

Mammals

Martes pennanti
fisher (C)

Key:

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

Important Information About Your Species List

How We Make Species Lists

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

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

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

Plants

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

Surveying

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

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

Your Responsibilities Under the Endangered Species Act

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

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

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

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

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.
- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

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

Critical Habitat

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

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

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

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

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

Wetlands

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

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be February 04, 2015.

APPENDIX C

Cultural Resources Consultation Letters

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

REPLY TO
ATTENTION OF

Environmental Resources Branch

Carol Roland-Nawi, PhD
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Dear Dr. Roland-Nawi:

The U.S. Army Corps of Engineers, Sacramento District (Corps) is writing to consult on a project being undertaken by the Three Rivers Levee Improvement Authority (TRLIA), which is requesting a permit from the Corps under Section 14 of the Rivers and Harbors Act of 1899 (33 USC 408). This project consists of Reaches 1 through 5D of the Western Pacific Interceptor Canal West Levee (project). The project consists of a slurry cut-off wall, berms, landside fill, and landside access roads which are proposed to reduce potential seepage through or under the levee and improve access and response time over 6.1 miles of levee. The Area of Potential Effects (APE) for this phase of the project is shown in the Cultural Resources Tech Report, Enclosure 1, which was prepared by AECOM, consultants for TRLIA.

A slurry cut-off wall, berms, landside fill, and landside access roads are proposed to reduce potential seepage through and under the levee and improve access and response time over 6.1 miles of levee. The Area of Potential Effects (APE) for this phase of the project is described on page 9 and shown in Appendix 1A of the Enclosure.

AECOM archaeologists conducted intensive pedestrian surveys of the APE, as documented in the attached report, a record search, and Native American Heritage Commission (NAHC) file search in an attempt to locate any prehistoric archaeological sites that might be visible on the surface. Tribal consultation is ongoing. No prehistoric archaeological sites were identified within the project APE.

The APE includes one historic resource, segments of the Western Pacific Interceptor Canal West Levee. Though the levee may be eligible, the project will not adversely affect the elements or features that contribute to its eligibility. Therefore, no cultural resources will be adversely affected by the project. Detailed considerations of these resources are presented in the Cultural Resources Technical Report and Finding of Effect; Western Pacific Interceptor Canal 200 Year Standard Project (attached).

Concurrent with your review, the Corps is consulting on these findings with the United Auburn Indian Community, Enterprise Rancheria, Strawberry Valley Rancheria, and Mooretown Rancheria, all of whom have been identified as potentially interested in being involved with the project.

We request that you provide us with either comments or your concurrence with our determinations of National Register of Historic Places (NRHP) eligibility and finding of no adverse effects (36 CFR 800.5[d][1]). Comments and questions may be sent to Mr. William A. Welsh, Archaeologist, U.S. Army Corps of Engineers, Sacramento District, 1325 J St. Sacramento CA, 95814-2922, or by phone at (916) 557-5218 and by email at william.a.welsh@usace.army.mil. Please contact Ms. Liz Holland, Project Manager at (916) 557-6763 with specific project questions.

Sincerely,

for Alicia E. Kirchner
Chief, Planning Division

Enclosures

NT OF THE ARMY
ER DISTRICT, SACRAMENTO
OF ENGINEERS
5 J STREET
CALIFORNIA 95814-2922

IAL BUSINESS
PK - PD - RC

7012 2210 0000 1333 1149

Carol Roland-Nawi, PhD
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

February 20, 2015

Jesse Martinez
AECOM
2020 L Street, Suite 400
Sacramento, CA 95811

Sent by Fax: (916) 414-5850
Number of Pages: 2

Re: TRLIA Western Pacific Interceptor Canal, Yuba and Sutter Counties.

Dear Mr. Martinez,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

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

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez
Associate Government Program Analyst

Native American Contacts
Yuba and Sutter Counties
February 19, 2015

Mooretown Rancheria of Maidu Indians
Gary Archuleta, Chairperson
#1 Alverda Drive
Oroville , CA 95966
frontdesk@mooretown.org
(530) 533-3625

(530) 533-3680 Fax

Maidu
KonKow / Concow

Enterprise Rancheria of Maidu Indians
Art Angle, Vice Chairperson
2133 Monte Vista Avenue
Oroville , CA 95966
info@enterpriserancheria.
(530) 532-9214
(530) 532-1768 Fax

Maidu

United Auburn Indian Community of the Auburn Rancheria
Gene Whitehouse, Chairperson
10720 Indian Hill Road
Auburn , CA 95603
(530) 883-2390 Office

(530) 883-2380 Fax

Maidu
Miwok

Enterprise Rancheria of Maidu Indians
Glenda Nelson, Chairperson
2133 Monte Vista Avenue
Oroville , CA 95966
info@enterpriserancheria.
(530) 532-9214
(530) 532-1768 Fax

Maidu

Strawberry Valley Rancheria
Cathy Bishop, Chairperson
P.O. Box 667
Marysville , CA 95901
catfrmsac2@yahoo.com
(916) 501-2482

Maidu
Miwok

United Auburn Indian Community of the Auburn Rancheria
Marcos Guerrero, Tribal Preservation Committee
10720 Indian Hill Road
Auburn , CA 95603
mguerrero@auburnrancheria.com
(530) 883-2364 Office
(530) 883-2320 Fax

Maidu
Miwok

Mooretown Rancheria of Maidu Indians
James Sanders, Tribal Administrator
#1 Alverda Drive
Oroville , CA 95966
(530) 533-3625
(530) 533-3680 Fax

Maidu
KonKow/Concow

United Auburn Indian Community of the Auburn Rancheria
Jason Camp, THPO
10720 Indian Hill Road
Auburn , CA 95603
jcamp@auburnrancheria.com
(916) 316-3772 Cell
(530) 883-2390
(530) 888-5476 - Fax

Maidu
Miwok

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed TRLLA Western Pacific Interceptor Canal, Yuba and Sutter Counties.

APPENDIX D

Noise Modeling Results

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

AECOM

Project: TRLIA WPIC

Date: **Tuesday, January 27, 2015** **Wednesday, January 28, 2015**

Site: Front Yard of 2127 Feather Ridge Drive

Hour	Leq	Lmax	L50	L90
14:01	58.4	91.5	39.7	36.8
15:00	50.7	70.2	38.9	35.6
16:00	49.9	69.5	46.6	40.0
17:00	66.0	88.5	44.6	41.0
18:00	63.7	83.5	42.1	39.2
19:00	41.5	60.5	39.5	37.1
20:00	43.1	61.6	40.6	37.1
21:00	63.9	84.7	38.8	35.0
22:00	38.6	48.7	37.6	33.3
23:00	64.3	86.8	36.6	31.7
0:00	63.7	84.8	33.6	29.8
1:00	52.1	78.8	34.2	30.2
2:00	67.4	87.4	43.6	32.9
3:00	36.7	46.7	35.9	32.4
4:00	64.2	83.4	38.7	35.2
5:00	42.1	49.3	41.6	38.6
6:00	46.0	57.1	45.2	42.7
7:00	47.5	61.0	45.6	43.6
8:00	47.7	69.2	45.0	41.7
9:00	45.7	66.4	40.7	38.0
10:00	44.5	67.3	40.2	37.0
11:00	45.9	65.5	41.7	37.4
12:00	48.6	71.0	39.7	35.8
13:00	42.9	60.7	40.0	36.2

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	58.3	71.4	41.6	38.1
Nighttime (10 p.m. - 7 a.m.)	61.7	69.2	38.6	34.1

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	66.0	91.5	46.6	43.6
Nighttime (10 p.m. - 7 a.m.)	67.4	87.4	45.2	42.7

Percentage of Energy

Daytime	43%
Nighttime	57%

Calculated L_{dn}, dBA

67.8

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

AECOM

Project: TRLIA WPIC

Date: **Wednesday, January 28, 2015** **Thursday, January 29, 2015**

Site: Front Yard of 2127 Feather Ridge Drive

Hour	Leq	Lmax	L50	L90
13:00	42.9	60.7	40.0	36.2
14:00	50.1	71.9	40.5	36.1
15:00	65.1	89.7	42.7	39.4
16:00	68.6	91.0	43.2	40.1
17:00	46.8	59.5	46.0	43.0
18:00	48.1	64.5	46.6	42.7
19:00	47.3	64.1	46.0	41.7
20:00	46.4	58.2	45.1	39.7
21:00	45.7	56.1	44.2	37.2
22:00	68.7	88.2	42.2	35.6
23:00	62.3	83.8	40.2	32.6
0:00	54.6	78.8	37.0	31.8
1:00	65.9	85.9	34.9	30.2
2:00	38.7	55.9	35.8	30.3
3:00	64.8	85.6	43.1	35.7
4:00	53.8	79.3	42.0	37.0
5:00	62.9	84.2	42.6	39.2
6:00	46.1	55.6	45.7	43.1
7:00	49.0	63.5	47.8	45.3
8:00	47.5	68.0	44.3	41.0
9:00	42.8	58.7	40.7	38.1
10:00	45.0	66.3	39.7	36.7

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	58.7	67.1	43.6	39.8
Nighttime (10 p.m. - 7 a.m.)	63.1	63.4	33.0	28.7

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	68.6	91.0	47.8	45.3
Nighttime (10 p.m. - 7 a.m.)	68.7	88.2	45.7	43.1

Percentage of Energy

Daytime	37%
Nighttime	63%

Calculated L_{dn}, dBA

69.1

AECOM

Project-Generated Construction Source Noise Prediction Model

TRLIA WPIC_Construction Equipment Noise (Phase 1)

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	145	75
	50	84
	2500	
	2000	
	800	
	250	
	600	
	250	

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Scraper	85	0.4
Dump Truck	84	0.4
Front End Loader	80	0.4
Pickup Truck	55	0.4
Ground Type	Hard	
Ground Factor	0.00	

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Scraper	81.0
Dump Truck	80.0
Front End Loader	76.0
Pickup Truck	51.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
84.3

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, J

[2] Based on the following from the Federal Transit Noise and Vibra

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

AECOM

Project-Generated Construction Source Noise Prediction Model

TRLIA WPIC_Construction Equipment Noise (Phase 2)

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	202	75
	50	87
	2500	53
	2000	55
	800	63
	250	73
	600	66
	250	73

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	85	0.4
Scraper	85	0.4
Roller	85	0.2
Dump Truck	84	0.4
Dump Truck	84	0.4
Ground Type	Hard	
Ground Factor	0.00	

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Excavator	81.0
Scraper	81.0
Roller	78.0
Dump Truck	80.0
Dump Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
87.1

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, J

[2] Based on the following from the Federal Transit Noise and Vibra

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

AECOM

Project-Generated Construction Source Noise Prediction Model

TRLIA WPIC_Construction Equipment Noise (Phase 3)

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	1,185	60
	50	87
	2500	54
	2000	55
	800	63
	250	74
	600	66
	250	74

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	85	0.4
Soil Mix Drill Rig	80	0.5
Front End Loader	80	0.4
Front End Loader	80	0.4
Generator	82	0.5
Pumps	77	0.5
Pickup Truck	55	0.4
Dump Truck	84	0.4
Dump Truck	84	0.4

Ground Type	Hard
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]	
Excavator	81.0	
Soil Mix Drill Rig	77.0	
Front End Loader	76.0	
Front End Loader	76.0	
Generator		
Pumps	74.0	79.0
Pickup Truck	51.0	
Dump Truck	80.0	
Dump Truck	80.0	
Combined Predicted Noise Level (L_{eq} dBA at 50 feet)		
	87.5	

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, J

[2] Based on the following from the Federal Transit Noise and Vibra

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

AECOM

Project-Generated Construction Source Noise Prediction Model

TRLIA WPIC_Construction Equipment Noise (Phase 4)

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	202	75
	50	87
	2500	53
	2000	55
	800	63
	250	73
	600	66
	250	

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Scraper	85	0.4
Grader	85	0.4
Tractor	84	0.4
Roller	85	0.2
Dump Truck	84	0.4

Ground Type	Hard
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Scraper	81.0
Grader	81.0
Tractor	80.0
Roller	78.0
Dump Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
87.1

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, J

[2] Based on the following from the Federal Transit Noise and Vibra

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

AECOM

Project-Generated Construction Source Noise Prediction Model

TRLIA WPIC_Construction Equipment Noise (Phases 5&6)

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	197	75
	50	87
	2500	53
	2000	55
	800	63
	250	73
	600	65
	250	

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Grader	85	0.4
Roller	85	0.2
Dump Truck	84	0.4
Dump Truck	84	0.4
Dump Truck	84	0.4
Pickup Truck	55	0.4

Ground Type	Hard
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]	
Grader	81.0	
Roller	78.0	
Dump Truck	80.0	
Dump Truck	80.0	
Dump Truck		
Pickup Truck	51.0	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
86.9

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, J

[2] Based on the following from the Federal Transit Noise and Vibra

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

AECOM

Project-Generated Construction Source Noise Prediction Model

TRLIA WPIC_Construction Equipment Noise (Phase 7)

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	105	75
	50	81
	2500	47
	2000	49
	800	57
	250	67
	600	60
	250	

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Front End Loader	80	0.4
Dump Truck	84	0.4

Ground Type	Hard
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Front End Loader	76.0
Dump Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
81.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, J

[2] Based on the following from the Federal Transit Noise and Vibra

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase1 (1)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Market Street	Flumas Street	Lynn Way	53	20	50	97	2	1	87	0	13	
2	Market Street	Lynn Way	Sutter Street	53	20	50	97	2	1	87	0	13	
3	Sutter Street	Market Street	State Route 20	53	20	200	97	2	1	87	0	13	
4	North George Washington Boulevard	Franklin Road	State Route 20	53	20	50	97	2	1	87	0	13	
5	State Route 20	North George Washington Blvd	El Margarita Road	53	35	100	97	2	1	87	0	13	
6	State Route 20	El Margarita Road	Tharp Road	53	35	100	97	2	1	87	0	13	
7	State Route 20	Tharp Road	Civic Center Boulevard	53	35	1000	97	2	1	87	0	13	
8	State Route 20	Civic Center Boulevard	Golden State Highway	53	35	1000	97	2	1	87	0	13	
9	State Route 20	Golden State Highway	Clark Avenue	53	35	250	97	2	1	87	0	13	
10	State Route 20	Clark Avenue	Live Oak Boulevard	53	35	150	97	2	1	87	0	13	
11	State Route 20	Live Oak Boulevard	Plumas Street	53	35	300	97	2	1	87	0	13	
12	State Route 20	Plumas Street	Sutter Street	53	35	200	97	2	1	87	0	13	
13	State Route 20	Sutter Street	Feather River Way	53	35	1350	97	2	1	87	0	13	
14	State Route 20	Feather River Way	Orange Street	53	35	100	97	2	1	87	0	13	
15	State Route 20	Orange Street	State Route 70	53	35	150	97	2	1	87	0	13	
16	State Route 70	10th Street	9th Street	53	40	200	97	2	1	87	0	13	
17	State Route 70	9th Street	7th Street	53	40	250	97	2	1	87	0	13	
18	State Route 70	7th Street	5th Street	53	40	150	97	2	1	87	0	13	
19	State Route 70	5th Street	3rd Street	53	40	50	97	2	1	87	0	13	
20	State Route 70	3rd Street	1st Street	53	40	250	97	2	1	87	0	13	
21	State Route 70	1st Street	North Beale Road	53	55	350	97	2	1	87	0	13	

0

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase1 (1)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Market Street	Flumas Street	Lynn Way	44.4	40.4	45.6	48.7	0	1	4	12	37
2	Market Street	Lynn Way	Sutter Street	44.4	40.4	-31.2	45.8	0	1	2	6	19
3	Sutter Street	Market Street	State Route 20	38.3	34.4	-37.2	39.8	0	1	2	6	19
4	North George Washington	Franklin Road	State Route 20	44.4	40.4	-31.2	45.8	0	1	2	6	19
5	State Route 20	North George Was	El Margarita Road	48.3	41.2	43.4	50.1	1	3	10	33	103
6	State Route 20	El Margarita Road	Tharp Road	48.3	41.2	43.4	50.1	1	3	10	33	103
7	State Route 20	Tharp Road	Civic Center Boule	38.3	31.2	33.4	40.1	1	3	10	33	103
8	State Route 20	Civic Center Boule	Golden State High	38.3	31.2	33.4	40.1	1	3	10	33	103
9	State Route 20	Golden State High	Clark Avenue	44.4	37.2	39.4	46.2	1	3	10	33	103
10	State Route 20	Clark Avenue	Live Oak Boulevar	46.6	39.4	41.6	48.4	1	3	10	33	103
11	State Route 20	Live Oak Boulevar	Plumas Street	43.6	36.4	38.6	45.4	1	3	10	33	103
12	State Route 20	Plumas Street	Sutter Street	45.3	38.2	40.4	47.1	1	3	10	33	103
13	State Route 20	Sutter Street	Feather River Way	37.0	29.9	32.1	38.8	1	3	10	33	103
14	State Route 20	Feather River Way	Orange Street	48.3	41.2	43.4	50.1	1	3	10	33	103
15	State Route 20	Orange Street	State Route 70	46.6	39.4	41.6	48.4	1	3	10	33	103
16	State Route 70	10th Street	9th Street	47.0	39.1	40.9	48.5	1	4	14	45	141
17	State Route 70	9th Street	7th Street	46.0	38.1	39.9	47.5	1	4	14	45	141
18	State Route 70	7th Street	5th Street	48.3	40.3	42.1	49.7	1	4	14	45	141
19	State Route 70	5th Street	3rd Street	53.0	45.1	46.9	54.5	1	4	14	45	141
20	State Route 70	3rd Street	1st Street	46.0	38.1	39.9	47.5	1	4	14	45	141
21	State Route 70	1st Street	North Beale Road	48.6	38.8	39.7	49.5	3	10	31	98	311

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase1 (2)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	State Route 70	North Beale Road	Feather River Boulevard	53	55	450	97	2	1	87	0	13	
2	State Route 70	Feather River Boulevard	Erle Road	53	55	500	97	2	1	87	0	13	
3	Hammonton-Smartville Road	Hammonton Road	Hackberry Way	53	30	150	97	2	1	87	0	13	
4	Hammonton-Smartville Road	Hackberry Way	Griffin Avenue	53	30	50	97	2	1	87	0	13	
5	Hammonton-Smartville Road	Griffin Avenue	Alberta Avenue	53	30	50	97	2	1	87	0	13	
6	Hammonton-Smartville Road	Alberta Ave	Dunning Avenue	53	30	50	97	2	1	87	0	13	
7	Hammonton-Smartville Road	Dunning Avenue	Mapes Way	53	30	50	97	2	1	87	0	13	
8	Hammonton-Smartville Road	Mapes Way	Simpson Lane	53	30	50	97	2	1	87	0	13	
9	Hammonton-Smartville Road	Simpson Lane	Lindhurst	53	30	50	97	2	1	87	0	13	
10	Lindhurst	Hammonton-Smartville Road	Erle Road	53	30	200	97	2	1	87	0	13	
11	State Route 70	Erle Road	Olivehurst Avenue	53	55	150	97	2	1	87	0	13	
12	State Route 70	Olivehurst Avenue	State Route 65	53	55	150	97	2	1	87	0	13	
13	State Route 70	State Route 65	McGowan Parkway	53	55	300	97	2	1	87	0	13	
14	State Route 70	McGowan Parkway	Plumas Arboga Road	53	55	250	97	2	1	87	0	13	
15	State Route 70	Plumas Arboga Road	Feather River Boulevard	53	55	200	97	2	1	87	0	13	
16	State Route 70	Feather River Boulevard	South of Feather River Boulevard	53	55	1200	97	2	1	87	0	13	
17	Plumas Arboga Road	Old Marysville Road	West of Old Marysville Road	53	20	100	97	2	1	87	0	13	
18	Feather River Boulevard	State Route 70	Chalice Creek Road	53	15	950	97	2	1	87	0	13	

0

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase1 (2)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	State Route 70	North Beale Road	Feather River Bou	47.5	37.7	38.6	48.4	3	10	31	98	311
2	State Route 70	Feather River Bou	Erle Road	47.0	37.3	38.2	47.9	3	10	31	98	311
3	Hammonton-Smartville Roa	Hammonton Road	Hackberry Way	44.7	38.4	42.5	47.3	1	3	8	26	81
4	Hammonton-Smartville Roa	Hackberry Way	Griffin Avenue	49.4	43.1	47.3	52.1	1	3	8	26	81
5	Hammonton-Smartville Roa	Griffin Avenue	Alberta Avenue	49.4	43.1	47.3	52.1	1	3	8	26	81
6	Hammonton-Smartville Roa	Alberta Ave	Dunning Avenue	49.4	43.1	47.3	52.1	1	3	8	26	81
7	Hammonton-Smartville Roa	Dunning Avenue	Mapes Way	49.4	43.1	47.3	52.1	1	3	8	26	81
8	Hammonton-Smartville Roa	Mapes Way	Simpson Lane	49.4	43.1	47.3	52.1	1	3	8	26	81
9	Hammonton-Smartville Roa	Simpson Lane	Lindhurst	49.4	43.1	47.3	52.1	1	3	8	26	81
10	Lindhurst	Hammonton-Smar	Erle Road	43.4	37.1	41.2	46.1	1	3	8	26	81
11	State Route 70	Erle Road	Olivehurst Avenue	52.2	42.5	43.4	53.2	3	10	31	98	311
12	State Route 70	Olivehurst Avenue	State Route 65	52.2	42.5	43.4	53.2	3	10	31	98	311
13	State Route 70	State Route 65	McGowan Parkwa	49.2	39.5	40.4	50.2	3	10	31	98	311
14	State Route 70	McGowan Parkwa	Plumas Arboga R	50.0	40.3	41.2	50.9	3	10	31	98	311
15	State Route 70	Plumas Arboga R	Feather River Bou	51.0	41.2	42.2	51.9	3	10	31	98	311
16	State Route 70	Feather River Bou	South of Feather F	43.2	33.5	34.4	44.1	3	10	31	98	311
17	Plumas Arboga Road	Old Marysville Roa	West of Old Marys	41.3	37.4	-34.2	42.8	0	1	2	6	19
18	Feather River Boulevard	State Route 70	Chalice Creek Roa	28.0	25.7	-42.7	30.0	0	0	1	3	9

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase2 (1)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Market Street	Flumas Street	Lynn Way	50	20	50	97	2	1	87	0	13	
2	Market Street	Lynn Way	Sutter Street	50	20	50	97	2	1	87	0	13	
3	Sutter Street	Market Street	State Route 20	50	20	200	97	2	1	87	0	13	
4	North George Washington Boulevard	Franklin Road	State Route 20	50	20	50	97	2	1	87	0	13	
5	State Route 20	North George Washington Blvd	El Margarita Road	50	35	100	97	2	1	87	0	13	
6	State Route 20	El Margarita Road	Tharp Road	50	35	100	97	2	1	87	0	13	
7	State Route 20	Tharp Road	Civic Center Boulevard	50	35	1000	97	2	1	87	0	13	
8	State Route 20	Civic Center Boulevard	Golden State Highway	50	35	1000	97	2	1	87	0	13	
9	State Route 20	Golden State Highway	Clark Avenue	50	35	250	97	2	1	87	0	13	
10	State Route 20	Clark Avenue	Live Oak Boulevard	50	35	150	97	2	1	87	0	13	
11	State Route 20	Live Oak Boulevard	Plumas Street	50	35	300	97	2	1	87	0	13	
12	State Route 20	Plumas Street	Sutter Street	50	35	200	97	2	1	87	0	13	
13	State Route 20	Sutter Street	Feather River Way	50	35	1350	97	2	1	87	0	13	
14	State Route 20	Feather River Way	Orange Street	50	35	100	97	2	1	87	0	13	
15	State Route 20	Orange Street	State Route 70	50	35	150	97	2	1	87	0	13	
16	State Route 70	10th Street	9th Street	50	40	200	97	2	1	87	0	13	
17	State Route 70	9th Street	7th Street	50	40	250	97	2	1	87	0	13	
18	State Route 70	7th Street	5th Street	50	40	150	97	2	1	87	0	13	
19	State Route 70	5th Street	3rd Street	50	40	50	97	2	1	87	0	13	
20	State Route 70	3rd Street	1st Street	50	40	250	97	2	1	87	0	13	
21	State Route 70	1st Street	North Beale Road	50	55	350	97	2	1	87	0	13	

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Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase2 (1)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Market Street	Flumas Street	Lynn Way	44.1	40.2	45.4	48.5	0	1	4	11	36
2	Market Street	Lynn Way	Sutter Street	44.1	40.2	-31.4	45.6	0	1	2	6	18
3	Sutter Street	Market Street	State Route 20	38.1	34.2	-37.4	39.6	0	1	2	6	18
4	North George Washington	Franklin Road	State Route 20	44.1	40.2	-31.4	45.6	0	1	2	6	18
5	State Route 20	North George Was	El Margarita Road	48.1	41.0	43.2	49.9	1	3	10	31	98
6	State Route 20	El Margarita Road	Tharp Road	48.1	41.0	43.2	49.9	1	3	10	31	98
7	State Route 20	Tharp Road	Civic Center Boule	38.1	31.0	33.2	39.9	1	3	10	31	98
8	State Route 20	Civic Center Boule	Golden State High	38.1	31.0	33.2	39.9	1	3	10	31	98
9	State Route 20	Golden State High	Clark Avenue	44.2	37.0	39.2	45.9	1	3	10	31	98
10	State Route 20	Clark Avenue	Live Oak Boulevar	46.4	39.2	41.4	48.2	1	3	10	31	98
11	State Route 20	Live Oak Boulevar	Plumas Street	43.4	36.2	38.4	45.2	1	3	10	31	98
12	State Route 20	Plumas Street	Sutter Street	45.1	38.0	40.1	46.9	1	3	10	31	98
13	State Route 20	Sutter Street	Feather River Way	36.8	29.7	31.9	38.6	1	3	10	31	98
14	State Route 20	Feather River Way	Orange Street	48.1	41.0	43.2	49.9	1	3	10	31	98
15	State Route 20	Orange Street	State Route 70	46.4	39.2	41.4	48.2	1	3	10	31	98
16	State Route 70	10th Street	9th Street	46.8	38.9	40.7	48.3	1	4	13	43	134
17	State Route 70	9th Street	7th Street	45.8	37.9	39.7	47.3	1	4	13	43	134
18	State Route 70	7th Street	5th Street	48.0	40.1	41.9	49.5	1	4	13	43	134
19	State Route 70	5th Street	3rd Street	52.8	44.9	46.7	54.3	1	4	13	43	134
20	State Route 70	3rd Street	1st Street	45.8	37.9	39.7	47.3	1	4	13	43	134
21	State Route 70	1st Street	North Beale Road	48.4	38.6	39.5	49.3	3	9	30	94	296

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase2 (2)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	State Route 70	North Beale Road	Feather River Boulevard	50	55	450	97	2	1	87	0	13	
2	State Route 70	Feather River Boulevard	Erle Road	50	55	500	97	2	1	87	0	13	
3	Hammonton-Smartville Road	Hammonton Road	Hackberry Way	50	30	150	97	2	1	87	0	13	
4	Hammonton-Smartville Road	Hackberry Way	Griffin Avenue	50	30	50	97	2	1	87	0	13	
5	Hammonton-Smartville Road	Griffin Avenue	Alberta Avenue	50	30	50	97	2	1	87	0	13	
6	Hammonton-Smartville Road	Alberta Ave	Dunning Avenue	50	30	50	97	2	1	87	0	13	
7	Hammonton-Smartville Road	Dunning Avenue	Mapes Way	50	30	50	97	2	1	87	0	13	
8	Hammonton-Smartville Road	Mapes Way	Simpson Lane	50	30	50	97	2	1	87	0	13	
9	Hammonton-Smartville Road	Simpson Lane	Lindhurst	50	30	50	97	2	1	87	0	13	
10	Lindhurst	Hammonton-Smartville Road	Erle Road	50	30	200	97	2	1	87	0	13	
11	State Route 70	Erle Road	Olivehurst Avenue	50	55	150	97	2	1	87	0	13	
12	State Route 70	Olivehurst Avenue	State Route 65	50	55	150	97	2	1	87	0	13	
13	State Route 70	State Route 65	McGowan Parkway	50	55	300	97	2	1	87	0	13	
14	State Route 70	McGowan Parkway	Plumas Arboga Road	50	55	250	97	2	1	87	0	13	
15	State Route 70	Plumas Arboga Road	Feather River Boulevard	50	55	200	97	2	1	87	0	13	
16	State Route 70	Feather River Boulevard	South of Feather River Boulevard	50	55	1200	97	2	1	87	0	13	
17	Plumas Arboga Road	Old Marysville Road	West of Old Marysville Road	50	20	100	97	2	1	87	0	13	
18	Feather River Boulevard	State Route 70	Chalice Creek Road	50	15	950	97	2	1	87	0	13	

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Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase2 (2)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	State Route 70	North Beale Road	Feather River Bou	47.3	37.5	38.4	48.2	3	9	30	94	296
2	State Route 70	Feather River Bou	Erle Road	46.8	37.0	38.0	47.7	3	9	30	94	296
3	Hammonton-Smartville Roa	Hammonton Road	Hackberry Way	44.4	38.2	42.3	47.1	1	2	8	24	77
4	Hammonton-Smartville Roa	Hackberry Way	Griffin Avenue	49.2	42.9	47.1	51.9	1	2	8	24	77
5	Hammonton-Smartville Roa	Griffin Avenue	Alberta Avenue	49.2	42.9	47.1	51.9	1	2	8	24	77
6	Hammonton-Smartville Roa	Alberta Ave	Dunning Avenue	49.2	42.9	47.1	51.9	1	2	8	24	77
7	Hammonton-Smartville Roa	Dunning Avenue	Mapes Way	49.2	42.9	47.1	51.9	1	2	8	24	77
8	Hammonton-Smartville Roa	Mapes Way	Simpson Lane	49.2	42.9	47.1	51.9	1	2	8	24	77
9	Hammonton-Smartville Roa	Simpson Lane	Lindhurst	49.2	42.9	47.1	51.9	1	2	8	24	77
10	Lindhurst	Hammonton-Smar	Erle Road	43.2	36.9	41.0	45.9	1	2	8	24	77
11	State Route 70	Erle Road	Olivehurst Avenue	52.0	42.3	43.2	53.0	3	9	30	94	296
12	State Route 70	Olivehurst Avenue	State Route 65	52.0	42.3	43.2	53.0	3	9	30	94	296
13	State Route 70	State Route 65	McGowan Parkwa	49.0	39.3	40.2	49.9	3	9	30	94	296
14	State Route 70	McGowan Parkwa	Plumas Arboga R	49.8	40.1	41.0	50.7	3	9	30	94	296
15	State Route 70	Plumas Arboga R	Feather River Bou	50.8	41.0	42.0	51.7	3	9	30	94	296
16	State Route 70	Feather River Bou	South of Feather F	43.0	33.2	34.2	43.9	3	9	30	94	296
17	Plumas Arboga Road	Old Marysville Roa	West of Old Marys	41.1	37.2	-34.4	42.6	0	1	2	6	18
18	Feather River Boulevard	State Route 70	Chalice Creek Roa	27.8	25.5	-43.0	29.8	0	0	1	3	9

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase3 (1)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Market Street	Flumas Street	Lynn Way	58	20	50	97	2	1	87	0	13	
2	Market Street	Lynn Way	Sutter Street	58	20	50	97	2	1	87	0	13	
3	Sutter Street	Market Street	State Route 20	58	20	200	97	2	1	87	0	13	
4	North George Washington Boulevard	Franklin Road	State Route 20	58	20	50	97	2	1	87	0	13	
5	State Route 20	North George Washington Blvd	El Margarita Road	58	35	100	97	2	1	87	0	13	
6	State Route 20	El Margarita Road	Tharp Road	58	35	100	97	2	1	87	0	13	
7	State Route 20	Tharp Road	Civic Center Boulevard	58	35	1000	97	2	1	87	0	13	
8	State Route 20	Civic Center Boulevard	Golden State Highway	58	35	1000	97	2	1	87	0	13	
9	State Route 20	Golden State Highway	Clark Avenue	58	35	250	97	2	1	87	0	13	
10	State Route 20	Clark Avenue	Live Oak Boulevard	58	35	150	97	2	1	87	0	13	
11	State Route 20	Live Oak Boulevard	Plumas Street	58	35	300	97	2	1	87	0	13	
12	State Route 20	Plumas Street	Sutter Street	58	35	200	97	2	1	87	0	13	
13	State Route 20	Sutter Street	Feather River Way	58	35	1350	97	2	1	87	0	13	
14	State Route 20	Feather River Way	Orange Street	58	35	100	97	2	1	87	0	13	
15	State Route 20	Orange Street	State Route 70	58	35	150	97	2	1	87	0	13	
16	State Route 70	10th Street	9th Street	58	40	200	97	2	1	87	0	13	
17	State Route 70	9th Street	7th Street	58	40	250	97	2	1	87	0	13	
18	State Route 70	7th Street	5th Street	58	40	150	97	2	1	87	0	13	
19	State Route 70	5th Street	3rd Street	58	40	50	97	2	1	87	0	13	
20	State Route 70	3rd Street	1st Street	58	40	250	97	2	1	87	0	13	
21	State Route 70	1st Street	North Beale Road	58	55	350	97	2	1	87	0	13	

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Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase3 (1)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Market Street	Flumas Street	Lynn Way	44.8	40.8	46.0	49.1	0	1	4	13	41
2	Market Street	Lynn Way	Sutter Street	44.8	40.8	-30.8	46.2	0	1	2	7	21
3	Sutter Street	Market Street	State Route 20	38.7	34.8	-36.8	40.2	0	1	2	7	21
4	North George Washington	Franklin Road	State Route 20	44.8	40.8	-30.8	46.2	0	1	2	7	21
5	State Route 20	North George Was	El Margarita Road	48.7	41.6	43.8	50.5	1	4	11	36	113
6	State Route 20	El Margarita Road	Tharp Road	48.7	41.6	43.8	50.5	1	4	11	36	113
7	State Route 20	Tharp Road	Civic Center Boule	38.7	31.6	33.8	40.5	1	4	11	36	113
8	State Route 20	Civic Center Boule	Golden State High	38.7	31.6	33.8	40.5	1	4	11	36	113
9	State Route 20	Golden State High	Clark Avenue	44.8	37.6	39.8	46.6	1	4	11	36	113
10	State Route 20	Clark Avenue	Live Oak Boulevar	47.0	39.8	42.0	48.8	1	4	11	36	113
11	State Route 20	Live Oak Boulevar	Plumas Street	44.0	36.8	39.0	45.8	1	4	11	36	113
12	State Route 20	Plumas Street	Sutter Street	45.7	38.6	40.8	47.5	1	4	11	36	113
13	State Route 20	Sutter Street	Feather River Way	37.4	30.3	32.5	39.2	1	4	11	36	113
14	State Route 20	Feather River Way	Orange Street	48.7	41.6	43.8	50.5	1	4	11	36	113
15	State Route 20	Orange Street	State Route 70	47.0	39.8	42.0	48.8	1	4	11	36	113
16	State Route 70	10th Street	9th Street	47.4	39.5	41.3	48.9	2	5	15	49	155
17	State Route 70	9th Street	7th Street	46.4	38.5	40.3	47.9	2	5	15	49	155
18	State Route 70	7th Street	5th Street	48.7	40.7	42.5	50.1	2	5	15	49	155
19	State Route 70	5th Street	3rd Street	53.4	45.5	47.3	54.9	2	5	15	49	155
20	State Route 70	3rd Street	1st Street	46.4	38.5	40.3	47.9	2	5	15	49	155
21	State Route 70	1st Street	North Beale Road	49.0	39.2	40.1	49.9	3	11	34	108	340

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase3 (2)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	State Route 70	North Beale Road	Feather River Boulevard	58	55	450	97	2	1	87	0	13	
2	State Route 70	Feather River Boulevard	Erle Road	58	55	500	97	2	1	87	0	13	
3	Hammonton-Smartville Road	Hammonton Road	Hackberry Way	58	30	150	97	2	1	87	0	13	
4	Hammonton-Smartville Road	Hackberry Way	Griffin Avenue	58	30	50	97	2	1	87	0	13	
5	Hammonton-Smartville Road	Griffin Avenue	Alberta Avenue	58	30	50	97	2	1	87	0	13	
6	Hammonton-Smartville Road	Alberta Ave	Dunning Avenue	58	30	50	97	2	1	87	0	13	
7	Hammonton-Smartville Road	Dunning Avenue	Mapes Way	58	30	50	97	2	1	87	0	13	
8	Hammonton-Smartville Road	Mapes Way	Simpson Lane	58	30	50	97	2	1	87	0	13	
9	Hammonton-Smartville Road	Simpson Lane	Lindhurst	58	30	50	97	2	1	87	0	13	
10	Lindhurst	Hammonton-Smartville Road	Erle Road	58	30	200	97	2	1	87	0	13	
11	State Route 70	Erle Road	Olivehurst Avenue	58	55	150	97	2	1	87	0	13	
12	State Route 70	Olivehurst Avenue	State Route 65	58	55	150	97	2	1	87	0	13	
13	State Route 70	State Route 65	McGowan Parkway	58	55	300	97	2	1	87	0	13	
14	State Route 70	McGowan Parkway	Plumas Arboga Road	58	55	250	97	2	1	87	0	13	
15	State Route 70	Plumas Arboga Road	Feather River Boulevard	58	55	200	97	2	1	87	0	13	
16	State Route 70	Feather River Boulevard	South of Feather River Boulevard	58	55	1200	97	2	1	87	0	13	
17	Plumas Arboga Road	Old Marysville Road	West of Old Marysville Road	58	20	100	97	2	1	87	0	13	
18	Feather River Boulevard	State Route 70	Chalice Creek Road	58	15	950	97	2	1	87	0	13	

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Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase3 (2)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	State Route 70	North Beale Road	Feather River Bou	47.9	38.1	39.0	48.8	3	11	34	108	340
2	State Route 70	Feather River Bou	Erle Road	47.4	37.7	38.6	48.3	3	11	34	108	340
3	Hammonton-Smartville Roa	Hammonton Road	Hackberry Way	45.1	38.8	42.9	47.7	1	3	9	28	89
4	Hammonton-Smartville Roa	Hackberry Way	Griffin Avenue	49.8	43.5	47.7	52.5	1	3	9	28	89
5	Hammonton-Smartville Roa	Griffin Avenue	Alberta Avenue	49.8	43.5	47.7	52.5	1	3	9	28	89
6	Hammonton-Smartville Roa	Alberta Ave	Dunning Avenue	49.8	43.5	47.7	52.5	1	3	9	28	89
7	Hammonton-Smartville Roa	Dunning Avenue	Mapes Way	49.8	43.5	47.7	52.5	1	3	9	28	89
8	Hammonton-Smartville Roa	Mapes Way	Simpson Lane	49.8	43.5	47.7	52.5	1	3	9	28	89
9	Hammonton-Smartville Roa	Simpson Lane	Lindhurst	49.8	43.5	47.7	52.5	1	3	9	28	89
10	Lindhurst	Hammonton-Smar	Erle Road	43.8	37.5	41.6	46.5	1	3	9	28	89
11	State Route 70	Erle Road	Olivehurst Avenue	52.6	42.9	43.8	53.6	3	11	34	108	340
12	State Route 70	Olivehurst Avenue	State Route 65	52.6	42.9	43.8	53.6	3	11	34	108	340
13	State Route 70	State Route 65	McGowan Parkwa	49.6	39.9	40.8	50.5	3	11	34	108	340
14	State Route 70	McGowan Parkwa	Plumas Arboga R	50.4	40.7	41.6	51.3	3	11	34	108	340
15	State Route 70	Plumas Arboga R	Feather River Bou	51.4	41.6	42.6	52.3	3	11	34	108	340
16	State Route 70	Feather River Bou	South of Feather F	43.6	33.8	34.8	44.5	3	11	34	108	340
17	Plumas Arboga Road	Old Marysville Roa	West of Old Marys	41.7	37.8	-33.8	43.2	0	1	2	7	21
18	Feather River Boulevard	State Route 70	Chalice Creek Roa	28.4	26.1	-42.3	30.4	0	0	1	3	10

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase4 (1)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Market Street	Flumas Street	Lynn Way	938	20	50	97	2	1	87	0	13	
2	Market Street	Lynn Way	Sutter Street	938	20	50	97	2	1	87	0	13	
3	Sutter Street	Market Street	State Route 20	938	20	200	97	2	1	87	0	13	
4	North George Washington Boulevard	Franklin Road	State Route 20	938	20	50	97	2	1	87	0	13	
5	State Route 20	North George Washington Blvd	El Margarita Road	938	35	100	97	2	1	87	0	13	
6	State Route 20	El Margarita Road	Tharp Road	938	35	100	97	2	1	87	0	13	
7	State Route 20	Tharp Road	Civic Center Boulevard	938	35	1000	97	2	1	87	0	13	
8	State Route 20	Civic Center Boulevard	Golden State Highway	938	35	1000	97	2	1	87	0	13	
9	State Route 20	Golden State Highway	Clark Avenue	938	35	250	97	2	1	87	0	13	
10	State Route 20	Clark Avenue	Live Oak Boulevard	938	35	150	97	2	1	87	0	13	
11	State Route 20	Live Oak Boulevard	Plumas Street	938	35	300	97	2	1	87	0	13	
12	State Route 20	Plumas Street	Sutter Street	938	35	200	97	2	1	87	0	13	
13	State Route 20	Sutter Street	Feather River Way	938	35	1350	97	2	1	87	0	13	
14	State Route 20	Feather River Way	Orange Street	938	35	100	97	2	1	87	0	13	
15	State Route 20	Orange Street	State Route 70	938	35	150	97	2	1	87	0	13	
16	State Route 70	10th Street	9th Street	938	40	200	97	2	1	87	0	13	
17	State Route 70	9th Street	7th Street	938	40	250	97	2	1	87	0	13	
18	State Route 70	7th Street	5th Street	938	40	150	97	2	1	87	0	13	
19	State Route 70	5th Street	3rd Street	938	40	50	97	2	1	87	0	13	
20	State Route 70	3rd Street	1st Street	938	40	250	97	2	1	87	0	13	
21	State Route 70	1st Street	North Beale Road	938	55	350	97	2	1	87	0	13	

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Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase4 (1)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Market Street	Flumas Street	Lynn Way	56.9	52.9	58.2	61.3	7	21	67	212	670
2	Market Street	Lynn Way	Sutter Street	56.9	52.9	-18.7	58.3	3	11	34	108	342
3	Sutter Street	Market Street	State Route 20	50.9	46.9	-24.7	52.3	3	11	34	108	342
4	North George Washington	Franklin Road	State Route 20	56.9	52.9	-18.7	58.3	3	11	34	108	342
5	State Route 20	North George Was	El Margarita Road	60.9	53.7	55.9	62.7	18	58	184	583	1845
6	State Route 20	El Margarita Road	Tharp Road	60.9	53.7	55.9	62.7	18	58	184	583	1845
7	State Route 20	Tharp Road	Civic Center Boule	50.9	43.7	45.9	52.7	18	58	184	583	1845
8	State Route 20	Civic Center Boule	Golden State High	50.9	43.7	45.9	52.7	18	58	184	583	1845
9	State Route 20	Golden State High	Clark Avenue	56.9	49.7	51.9	58.7	18	58	184	583	1845
10	State Route 20	Clark Avenue	Live Oak Boulevar	59.1	51.9	54.1	60.9	18	58	184	583	1845
11	State Route 20	Live Oak Boulevar	Plumas Street	56.1	48.9	51.1	57.9	18	58	184	583	1845
12	State Route 20	Plumas Street	Sutter Street	57.9	50.7	52.9	59.6	18	58	184	583	1845
13	State Route 20	Sutter Street	Feather River Way	49.6	42.4	44.6	51.4	18	58	184	583	1845
14	State Route 20	Feather River Way	Orange Street	60.9	53.7	55.9	62.7	18	58	184	583	1845
15	State Route 20	Orange Street	State Route 70	59.1	51.9	54.1	60.9	18	58	184	583	1845
16	State Route 70	10th Street	9th Street	59.5	51.6	53.4	61.0	25	80	252	798	2523
17	State Route 70	9th Street	7th Street	58.6	50.6	52.4	60.0	25	80	252	798	2523
18	State Route 70	7th Street	5th Street	60.8	52.8	54.7	62.3	25	80	252	798	2523
19	State Route 70	5th Street	3rd Street	65.6	57.6	59.4	67.0	25	80	252	798	2523
20	State Route 70	3rd Street	1st Street	58.6	50.6	52.4	60.0	25	80	252	798	2523
21	State Route 70	1st Street	North Beale Road	61.1	51.3	52.3	62.0	56	176	556	1757	5555

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase4 (2)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	State Route 70	North Beale Road	Feather River Boulevard	938	55	450	97	2	1	87	0	13	
2	State Route 70	Feather River Boulevard	Erle Road	938	55	500	97	2	1	87	0	13	
3	Hammonton-Smartville Road	Hammonton Road	Hackberry Way	938	30	150	97	2	1	87	0	13	
4	Hammonton-Smartville Road	Hackberry Way	Griffin Avenue	938	30	50	97	2	1	87	0	13	
5	Hammonton-Smartville Road	Griffin Avenue	Alberta Avenue	938	30	50	97	2	1	87	0	13	
6	Hammonton-Smartville Road	Alberta Ave	Dunning Avenue	938	30	50	97	2	1	87	0	13	
7	Hammonton-Smartville Road	Dunning Avenue	Mapes Way	938	30	50	97	2	1	87	0	13	
8	Hammonton-Smartville Road	Mapes Way	Simpson Lane	938	30	50	97	2	1	87	0	13	
9	Hammonton-Smartville Road	Simpson Lane	Lindhurst	938	30	50	97	2	1	87	0	13	
10	Lindhurst	Hammonton-Smartville Road	Erle Road	938	30	200	97	2	1	87	0	13	
11	State Route 70	Erle Road	Olivehurst Avenue	938	55	150	97	2	1	87	0	13	
12	State Route 70	Olivehurst Avenue	State Route 65	938	55	150	97	2	1	87	0	13	
13	State Route 70	State Route 65	McGowan Parkway	938	55	300	97	2	1	87	0	13	
14	State Route 70	McGowan Parkway	Plumas Arboga Road	938	55	250	97	2	1	87	0	13	
15	State Route 70	Plumas Arboga Road	Feather River Boulevard	938	55	200	97	2	1	87	0	13	
16	State Route 70	Feather River Boulevard	South of Feather River Boulevard	938	55	1200	97	2	1	87	0	13	
17	Plumas Arboga Road	Old Marysville Road	West of Old Marysville Road	938	20	100	97	2	1	87	0	13	
18	Feather River Boulevard	State Route 70	Chalice Creek Road	938	15	950	97	2	1	87	0	13	

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Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase4 (2)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	State Route 70	North Beale Road	Feather River Bou	60.0	50.2	51.2	60.9	56	176	556	1757	5555
2	State Route 70	Feather River Bou	Erle Road	59.5	49.8	50.7	60.5	56	176	556	1757	5555
3	Hammonton-Smartville Roa	Hammonton Road	Hackberry Way	57.2	50.9	55.0	59.8	14	46	144	457	1444
4	Hammonton-Smartville Roa	Hackberry Way	Griffin Avenue	62.0	55.7	59.8	64.6	14	46	144	457	1444
5	Hammonton-Smartville Roa	Griffin Avenue	Alberta Avenue	62.0	55.7	59.8	64.6	14	46	144	457	1444
6	Hammonton-Smartville Roa	Alberta Ave	Dunning Avenue	62.0	55.7	59.8	64.6	14	46	144	457	1444
7	Hammonton-Smartville Roa	Dunning Avenue	Mapes Way	62.0	55.7	59.8	64.6	14	46	144	457	1444
8	Hammonton-Smartville Roa	Mapes Way	Simpson Lane	62.0	55.7	59.8	64.6	14	46	144	457	1444
9	Hammonton-Smartville Roa	Simpson Lane	Lindhurst	62.0	55.7	59.8	64.6	14	46	144	457	1444
10	Lindhurst	Hammonton-Smar	Erle Road	55.9	49.6	53.8	58.6	14	46	144	457	1444
11	State Route 70	Erle Road	Olivehurst Avenue	64.8	55.0	55.9	65.7	56	176	556	1757	5555
12	State Route 70	Olivehurst Avenue	State Route 65	64.8	55.0	55.9	65.7	56	176	556	1757	5555
13	State Route 70	State Route 65	McGowan Parkwa	61.8	52.0	52.9	62.7	56	176	556	1757	5555
14	State Route 70	McGowan Parkwa	Plumas Arboga R	62.5	52.8	53.7	63.5	56	176	556	1757	5555
15	State Route 70	Plumas Arboga R	Feather River Bou	63.5	53.8	54.7	64.4	56	176	556	1757	5555
16	State Route 70	Feather River Bou	South of Feather F	55.7	46.0	46.9	56.7	56	176	556	1757	5555
17	Plumas Arboga Road	Old Marysville Roa	West of Old Marys	53.9	49.9	-21.7	55.3	3	11	34	108	342
18	Feather River Boulevard	State Route 70	Chalice Creek Roa	40.5	38.2	-30.2	42.5	2	5	17	53	169

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase5&6 (1)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Market Street	Flumas Street	Lynn Way	106	20	50	97	2	1	87	0	13	
2	Market Street	Lynn Way	Sutter Street	106	20	50	97	2	1	87	0	13	
3	Sutter Street	Market Street	State Route 20	106	20	200	97	2	1	87	0	13	
4	North George Washington Boulevard	Franklin Road	State Route 20	106	20	50	97	2	1	87	0	13	
5	State Route 20	North George Washington Blvd	El Margarita Road	106	35	100	97	2	1	87	0	13	
6	State Route 20	El Margarita Road	Tharp Road	106	35	100	97	2	1	87	0	13	
7	State Route 20	Tharp Road	Civic Center Boulevard	106	35	1000	97	2	1	87	0	13	
8	State Route 20	Civic Center Boulevard	Golden State Highway	106	35	1000	97	2	1	87	0	13	
9	State Route 20	Golden State Highway	Clark Avenue	106	35	250	97	2	1	87	0	13	
10	State Route 20	Clark Avenue	Live Oak Boulevard	106	35	150	97	2	1	87	0	13	
11	State Route 20	Live Oak Boulevard	Plumas Street	106	35	300	97	2	1	87	0	13	
12	State Route 20	Plumas Street	Sutter Street	106	35	200	97	2	1	87	0	13	
13	State Route 20	Sutter Street	Feather River Way	106	35	1350	97	2	1	87	0	13	
14	State Route 20	Feather River Way	Orange Street	106	35	100	97	2	1	87	0	13	
15	State Route 20	Orange Street	State Route 70	106	35	150	97	2	1	87	0	13	
16	State Route 70	10th Street	9th Street	106	40	200	97	2	1	87	0	13	
17	State Route 70	9th Street	7th Street	106	40	250	97	2	1	87	0	13	
18	State Route 70	7th Street	5th Street	106	40	150	97	2	1	87	0	13	
19	State Route 70	5th Street	3rd Street	106	40	50	97	2	1	87	0	13	
20	State Route 70	3rd Street	1st Street	106	40	250	97	2	1	87	0	13	
21	State Route 70	1st Street	North Beale Road	106	55	350	97	2	1	87	0	13	

0

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase5&6 (1)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Market Street	Flumas Street	Lynn Way	47.4	43.5	48.7	51.8	1	2	8	24	76
2	Market Street	Lynn Way	Sutter Street	47.4	43.5	-28.1	48.9	0	1	4	12	39
3	Sutter Street	Market Street	State Route 20	41.4	37.4	-34.2	42.9	0	1	4	12	39
4	North George Washington	Franklin Road	State Route 20	47.4	43.5	-28.1	48.9	0	1	4	12	39
5	State Route 20	North George Was	El Margarita Road	51.4	44.2	46.4	53.2	2	7	21	66	209
6	State Route 20	El Margarita Road	Tharp Road	51.4	44.2	46.4	53.2	2	7	21	66	209
7	State Route 20	Tharp Road	Civic Center Boule	41.4	34.2	36.4	43.2	2	7	21	66	209
8	State Route 20	Civic Center Boule	Golden State High	41.4	34.2	36.4	43.2	2	7	21	66	209
9	State Route 20	Golden State High	Clark Avenue	47.4	40.3	42.5	49.2	2	7	21	66	209
10	State Route 20	Clark Avenue	Live Oak Boulevar	49.7	42.5	44.7	51.4	2	7	21	66	209
11	State Route 20	Live Oak Boulevar	Plumas Street	46.6	39.5	41.7	48.4	2	7	21	66	209
12	State Route 20	Plumas Street	Sutter Street	48.4	41.2	43.4	50.2	2	7	21	66	209
13	State Route 20	Sutter Street	Feather River Way	40.1	32.9	35.1	41.9	2	7	21	66	209
14	State Route 20	Feather River Way	Orange Street	51.4	44.2	46.4	53.2	2	7	21	66	209
15	State Route 20	Orange Street	State Route 70	49.7	42.5	44.7	51.4	2	7	21	66	209
16	State Route 70	10th Street	9th Street	50.1	42.1	44.0	51.5	3	9	29	90	286
17	State Route 70	9th Street	7th Street	49.1	41.2	43.0	50.6	3	9	29	90	286
18	State Route 70	7th Street	5th Street	51.3	43.4	45.2	52.8	3	9	29	90	286
19	State Route 70	5th Street	3rd Street	56.1	48.2	50.0	57.6	3	9	29	90	286
20	State Route 70	3rd Street	1st Street	49.1	41.2	43.0	50.6	3	9	29	90	286
21	State Route 70	1st Street	North Beale Road	51.6	41.9	42.8	52.5	6	20	63	199	629

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase5&6 (2)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	State Route 70	North Beale Road	Feather River Boulevard	106	55	450	97	2	1	87	0	13	
2	State Route 70	Feather River Boulevard	Erle Road	106	55	500	97	2	1	87	0	13	
3	Hammonton-Smartville Road	Hammonton Road	Hackberry Way	106	30	150	97	2	1	87	0	13	
4	Hammonton-Smartville Road	Hackberry Way	Griffin Avenue	106	30	50	97	2	1	87	0	13	
5	Hammonton-Smartville Road	Griffin Avenue	Alberta Avenue	106	30	50	97	2	1	87	0	13	
6	Hammonton-Smartville Road	Alberta Ave	Dunning Avenue	106	30	50	97	2	1	87	0	13	
7	Hammonton-Smartville Road	Dunning Avenue	Mapes Way	106	30	50	97	2	1	87	0	13	
8	Hammonton-Smartville Road	Mapes Way	Simpson Lane	106	30	50	97	2	1	87	0	13	
9	Hammonton-Smartville Road	Simpson Lane	Lindhurst	106	30	50	97	2	1	87	0	13	
10	Lindhurst	Hammonton-Smartville Road	Erle Road	106	30	200	97	2	1	87	0	13	
11	State Route 70	Erle Road	Olivehurst Avenue	106	55	150	97	2	1	87	0	13	
12	State Route 70	Olivehurst Avenue	State Route 65	106	55	150	97	2	1	87	0	13	
13	State Route 70	State Route 65	McGowan Parkway	106	55	300	97	2	1	87	0	13	
14	State Route 70	McGowan Parkway	Plumas Arboga Road	106	55	250	97	2	1	87	0	13	
15	State Route 70	Plumas Arboga Road	Feather River Boulevard	106	55	200	97	2	1	87	0	13	
16	State Route 70	Feather River Boulevard	South of Feather River Boulevard	106	55	1200	97	2	1	87	0	13	
17	Plumas Arboga Road	Old Marysville Road	West of Old Marysville Road	106	20	100	97	2	1	87	0	13	
18	Feather River Boulevard	State Route 70	Chalice Creek Road	106	15	950	97	2	1	87	0	13	

0

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase5&6 (2)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	State Route 70	North Beale Road	Feather River Bou	50.5	40.8	41.7	51.5	6	20	63	199	629
2	State Route 70	Feather River Bou	Erle Road	50.1	40.3	41.2	51.0	6	20	63	199	629
3	Hammonton-Smartville Roa	Hammonton Road	Hackberry Way	47.7	41.4	45.6	50.4	2	5	16	52	164
4	Hammonton-Smartville Roa	Hackberry Way	Griffin Avenue	52.5	46.2	50.3	55.1	2	5	16	52	164
5	Hammonton-Smartville Roa	Griffin Avenue	Alberta Avenue	52.5	46.2	50.3	55.1	2	5	16	52	164
6	Hammonton-Smartville Roa	Alberta Ave	Dunning Avenue	52.5	46.2	50.3	55.1	2	5	16	52	164
7	Hammonton-Smartville Roa	Dunning Avenue	Mapes Way	52.5	46.2	50.3	55.1	2	5	16	52	164
8	Hammonton-Smartville Roa	Mapes Way	Simpson Lane	52.5	46.2	50.3	55.1	2	5	16	52	164
9	Hammonton-Smartville Roa	Simpson Lane	Lindhurst	52.5	46.2	50.3	55.1	2	5	16	52	164
10	Lindhurst	Hammonton-Smar	Erle Road	46.5	40.2	44.3	49.1	2	5	16	52	164
11	State Route 70	Erle Road	Olivehurst Avenue	55.3	45.5	46.5	56.2	6	20	63	199	629
12	State Route 70	Olivehurst Avenue	State Route 65	55.3	45.5	46.5	56.2	6	20	63	199	629
13	State Route 70	State Route 65	McGowan Parkwa	52.3	42.5	43.5	53.2	6	20	63	199	629
14	State Route 70	McGowan Parkwa	Plumas Arboga Ro	53.1	43.3	44.3	54.0	6	20	63	199	629
15	State Route 70	Plumas Arboga Ro	Feather River Bou	54.1	44.3	45.2	55.0	6	20	63	199	629
16	State Route 70	Feather River Bou	South of Feather F	46.3	36.5	37.4	47.2	6	20	63	199	629
17	Plumas Arboga Road	Old Marysville Roa	West of Old Marys	44.4	40.5	-31.2	45.9	0	1	4	12	39
18	Feather River Boulevard	State Route 70	Chalice Creek Roa	31.0	28.7	-39.7	33.0	0	1	2	6	19

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase7 (1)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Market Street	Flumas Street	Lynn Way	50	20	50	97	2	1	87	0	13	
2	Market Street	Lynn Way	Sutter Street	50	20	50	97	2	1	87	0	13	
3	Sutter Street	Market Street	State Route 20	50	20	200	97	2	1	87	0	13	
4	North George Washington Boulevard	Franklin Road	State Route 20	50	20	50	97	2	1	87	0	13	
5	State Route 20	North George Washington Blvd	El Margarita Road	50	35	100	97	2	1	87	0	13	
6	State Route 20	El Margarita Road	Tharp Road	50	35	100	97	2	1	87	0	13	
7	State Route 20	Tharp Road	Civic Center Boulevard	50	35	1000	97	2	1	87	0	13	
8	State Route 20	Civic Center Boulevard	Golden State Highway	50	35	1000	97	2	1	87	0	13	
9	State Route 20	Golden State Highway	Clark Avenue	50	35	250	97	2	1	87	0	13	
10	State Route 20	Clark Avenue	Live Oak Boulevard	50	35	150	97	2	1	87	0	13	
11	State Route 20	Live Oak Boulevard	Plumas Street	50	35	300	97	2	1	87	0	13	
12	State Route 20	Plumas Street	Sutter Street	50	35	200	97	2	1	87	0	13	
13	State Route 20	Sutter Street	Feather River Way	50	35	1350	97	2	1	87	0	13	
14	State Route 20	Feather River Way	Orange Street	50	35	100	97	2	1	87	0	13	
15	State Route 20	Orange Street	State Route 70	50	35	150	97	2	1	87	0	13	
16	State Route 70	10th Street	9th Street	50	40	200	97	2	1	87	0	13	
17	State Route 70	9th Street	7th Street	50	40	250	97	2	1	87	0	13	
18	State Route 70	7th Street	5th Street	50	40	150	97	2	1	87	0	13	
19	State Route 70	5th Street	3rd Street	50	40	50	97	2	1	87	0	13	
20	State Route 70	3rd Street	1st Street	50	40	250	97	2	1	87	0	13	
21	State Route 70	1st Street	North Beale Road	50	55	350	97	2	1	87	0	13	

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Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase7 (1)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Market Street	Flumas Street	Lynn Way	44.1	40.2	45.4	48.5	0	1	4	11	36
2	Market Street	Lynn Way	Sutter Street	44.1	40.2	-31.4	45.6	0	1	2	6	18
3	Sutter Street	Market Street	State Route 20	38.1	34.2	-37.4	39.6	0	1	2	6	18
4	North George Washington	Franklin Road	State Route 20	44.1	40.2	-31.4	45.6	0	1	2	6	18
5	State Route 20	North George Was	El Margarita Road	48.1	41.0	43.2	49.9	1	3	10	31	98
6	State Route 20	El Margarita Road	Tharp Road	48.1	41.0	43.2	49.9	1	3	10	31	98
7	State Route 20	Tharp Road	Civic Center Boule	38.1	31.0	33.2	39.9	1	3	10	31	98
8	State Route 20	Civic Center Boule	Golden State High	38.1	31.0	33.2	39.9	1	3	10	31	98
9	State Route 20	Golden State High	Clark Avenue	44.2	37.0	39.2	45.9	1	3	10	31	98
10	State Route 20	Clark Avenue	Live Oak Boulevar	46.4	39.2	41.4	48.2	1	3	10	31	98
11	State Route 20	Live Oak Boulevar	Plumas Street	43.4	36.2	38.4	45.2	1	3	10	31	98
12	State Route 20	Plumas Street	Sutter Street	45.1	38.0	40.1	46.9	1	3	10	31	98
13	State Route 20	Sutter Street	Feather River Way	36.8	29.7	31.9	38.6	1	3	10	31	98
14	State Route 20	Feather River Way	Orange Street	48.1	41.0	43.2	49.9	1	3	10	31	98
15	State Route 20	Orange Street	State Route 70	46.4	39.2	41.4	48.2	1	3	10	31	98
16	State Route 70	10th Street	9th Street	46.8	38.9	40.7	48.3	1	4	13	43	134
17	State Route 70	9th Street	7th Street	45.8	37.9	39.7	47.3	1	4	13	43	134
18	State Route 70	7th Street	5th Street	48.0	40.1	41.9	49.5	1	4	13	43	134
19	State Route 70	5th Street	3rd Street	52.8	44.9	46.7	54.3	1	4	13	43	134
20	State Route 70	3rd Street	1st Street	45.8	37.9	39.7	47.3	1	4	13	43	134
21	State Route 70	1st Street	North Beale Road	48.4	38.6	39.5	49.3	3	9	30	94	296

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase7 (2)
Ground Type : Hard
K Factor : NA
Metric (L_{eq}, L_{dn}, CNEL) : Leq
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	State Route 70	North Beale Road	Feather River Boulevard	50	55	450	97	2	1	87	0	13	
2	State Route 70	Feather River Boulevard	Erle Road	50	55	500	97	2	1	87	0	13	
3	Hammonton-Smartville Road	Hammonton Road	Hackberry Way	50	30	150	97	2	1	87	0	13	
4	Hammonton-Smartville Road	Hackberry Way	Griffin Avenue	50	30	50	97	2	1	87	0	13	
5	Hammonton-Smartville Road	Griffin Avenue	Alberta Avenue	50	30	50	97	2	1	87	0	13	
6	Hammonton-Smartville Road	Alberta Ave	Dunning Avenue	50	30	50	97	2	1	87	0	13	
7	Hammonton-Smartville Road	Dunning Avenue	Mapes Way	50	30	50	97	2	1	87	0	13	
8	Hammonton-Smartville Road	Mapes Way	Simpson Lane	50	30	50	97	2	1	87	0	13	
9	Hammonton-Smartville Road	Simpson Lane	Lindhurst	50	30	50	97	2	1	87	0	13	
10	Lindhurst	Hammonton-Smartville Road	Erle Road	50	30	200	97	2	1	87	0	13	
11	State Route 70	Erle Road	Olivehurst Avenue	50	55	150	97	2	1	87	0	13	
12	State Route 70	Olivehurst Avenue	State Route 65	50	55	150	97	2	1	87	0	13	
13	State Route 70	State Route 65	McGowan Parkway	50	55	300	97	2	1	87	0	13	
14	State Route 70	McGowan Parkway	Plumas Arboga Road	50	55	250	97	2	1	87	0	13	
15	State Route 70	Plumas Arboga Road	Feather River Boulevard	50	55	200	97	2	1	87	0	13	
16	State Route 70	Feather River Boulevard	South of Feather River Boulevard	50	55	1200	97	2	1	87	0	13	
17	Plumas Arboga Road	Old Marysville Road	West of Old Marysville Road	50	20	100	97	2	1	87	0	13	
18	Feather River Boulevard	State Route 70	Chalice Creek Road	50	15	950	97	2	1	87	0	13	

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Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : TRLIA WPIC Levee Improvements
Project Number : 60321471
Modeling Condition : Construction Phase7 (2)
Metric (Leq, Ldn, CNEL) : Leq

		Segment		Noise Levels, dB Leq				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	State Route 70	North Beale Road	Feather River Bou	47.3	37.5	38.4	48.2	3	9	30	94	296
2	State Route 70	Feather River Bou	Erle Road	46.8	37.0	38.0	47.7	3	9	30	94	296
3	Hammonton-Smartville Roa	Hammonton Road	Hackberry Way	44.4	38.2	42.3	47.1	1	2	8	24	77
4	Hammonton-Smartville Roa	Hackberry Way	Griffin Avenue	49.2	42.9	47.1	51.9	1	2	8	24	77
5	Hammonton-Smartville Roa	Griffin Avenue	Alberta Avenue	49.2	42.9	47.1	51.9	1	2	8	24	77
6	Hammonton-Smartville Roa	Alberta Ave	Dunning Avenue	49.2	42.9	47.1	51.9	1	2	8	24	77
7	Hammonton-Smartville Roa	Dunning Avenue	Mapes Way	49.2	42.9	47.1	51.9	1	2	8	24	77
8	Hammonton-Smartville Roa	Mapes Way	Simpson Lane	49.2	42.9	47.1	51.9	1	2	8	24	77
9	Hammonton-Smartville Roa	Simpson Lane	Lindhurst	49.2	42.9	47.1	51.9	1	2	8	24	77
10	Lindhurst	Hammonton-Smar	Erle Road	43.2	36.9	41.0	45.9	1	2	8	24	77
11	State Route 70	Erle Road	Olivehurst Avenue	52.0	42.3	43.2	53.0	3	9	30	94	296
12	State Route 70	Olivehurst Avenue	State Route 65	52.0	42.3	43.2	53.0	3	9	30	94	296
13	State Route 70	State Route 65	McGowan Parkwa	49.0	39.3	40.2	49.9	3	9	30	94	296
14	State Route 70	McGowan Parkwa	Plumas Arboga R	49.8	40.1	41.0	50.7	3	9	30	94	296
15	State Route 70	Plumas Arboga R	Feather River Bou	50.8	41.0	42.0	51.7	3	9	30	94	296
16	State Route 70	Feather River Bou	South of Feather F	43.0	33.2	34.2	43.9	3	9	30	94	296
17	Plumas Arboga Road	Old Marysville Roa	West of Old Marys	41.1	37.2	-34.4	42.6	0	1	2	6	18
18	Feather River Boulevard	State Route 70	Chalice Creek Roa	27.8	25.5	-43.0	29.8	0	0	1	3	9