CHAPTER 3
Initial Study

1. **Project Title:** 2017 Storm Damage DWR Rehabilitation Phases 4 and 5 Repair Sites

2. **Lead Agency Name and Address:** California Department of Water Resources

3. **Contact Person and Phone Number:** Kristin Ford, (916) 574-0368

4. **Project Location:** See Chapter 2, Project Description

5. **Project Sponsor's Name and Address:** California Department of Water Resources, Divisions of Flood Management
3310 El Camino Avenue
Sacramento, CA 95821

6. **General Plan Designation(s):** See Chapter 2, Project Description

7. **Description of Project:** See Chapter 2, Project Description

8. **Surrounding Land Uses and Setting.**

See Chapter 2, Project Description and checklist for land use and setting information

9. **Other public agencies whose approval is required**

See Chapter 2, Project Description and checklist for specific permitting agencies

10. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?**

Yes, and yes.

3.1 Environmental Factors Potentially Affected

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

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

DETERMINATION: (To be completed by the Lead Agency)
On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

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

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Scott Deal Acting Chief Flood Maintenance office — 4-19-2019

Signature — Date

Signature — Date

3.2 Environmental Checklist

3.2.1 Aesthetics

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
1.	**AESTHETICS — Except as provided in Public Resources Code Section 21099, would the project:**				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☐	☐	☒

Discussion

The proposed project is located at 29 repair sites at existing State Plan of Flood Control levees in Yolo, Sutter, Tehama, Butte, Colusa, Glenn, San Joaquin, and Sacramento counties.

Land surrounding the project sites is primarily flat with rural agricultural uses and some developed residential and urban uses. There are no designated scenic vistas or State-designated scenic highways located in or around the proposed project repair sites. Notable scenic views from the project sites include Mount Shasta, Mount Lassen, the Sacramento River, the California Delta, and the Coast Range.

a) **No Impact.** The proposed project would include the repair and rehabilitation of levees to near original conditions, meeting existing flood design standards. The proposed project would not include the construction of any new or modified buildings or other structures that would block views from neighboring properties or roadways. Therefore, the proposed project would not obstruct or otherwise affect a scenic vista, and no impact would occur.

b) **No Impact.** A review of the current California Department of Transportation (Caltrans) Map of Designated State Scenic Highways indicated that there are no officially designated State scenic highways in or adjacent to the project repair sites (Caltrans 2018). Therefore, proposed project activities would not affect designated scenic resources within a State scenic highway, and no impact would occur.

c) **Less-than-Significant Impact.** The proposed project activities would be limited to the existing levees and adjacent lands and repair existing infrastructure and, therefore, would

not significantly alter the visual character of the repair sites and surroundings. Staging areas and temporary access roads would be returned to existing conditions by ripping to loosen the soil surface and then seeding with a native grass mix to promote revegetation and minimize soil erosion. This would restore the repair site to pre-project conditions, or better.

Any damage as a result of the construction, including haul route roads and fencing, would be repaired to existing or better conditions. All areas would be cleaned and cleared of rubbish and left in a safe and suitable condition. In addition, maintenance activities would be temporary in nature and would result in restoring the levees to their pre-flood damage appearance. Residents, local workers, and passers-by may view the project activities for the duration of the proposed project. However, construction is temporary, and there would be no permanent visual disturbance. The visual character of the levees and surrounding areas would not change as a result of the proposed project and the visual character would not be substantially degraded. This impact would be less-than-significant.

d) **No Impact.** The proposed project would repair and rehabilitate existing levees. There would be no new sources of light and glare. Furthermore, construction activities would occur during daylight hours and no impact would occur.

References

California Department of Transportation (Caltrans), 2018. Available: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm. Accessed October 30, 2018.

3.2.2 Agriculture and Forestry Resources

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
2. AGRICULTURE AND FORESTRY RESOURCES — In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the project:**				
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?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
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))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

The proposed project repair sites are located at 30 locations along State Plan of Flood Control levees which are primarily adjacent to agriculture land uses within the various counties. The lands adjacent to the project sites may contain prime farmland or be under Williamson Act Contracts. There are no forestry resources adjacent to or located in the proposed project sites.

a, b) **Less-than-Significant Impact.** The proposed project would occur at 29 repair sites which include sites that are adjacent to agricultural land. The land adjacent to the project sites could be Prime Farmland and/or under Williamson Act Contract. Access to project sites would occur primarily along existing paved public roads, levee crown roads, or unpaved private farm roads. However, temporary access roads may be constructed for hauling equipment and materials to and from the sites. Staging areas for each site would be located close to the repair site. Both the temporary access roads and staging areas could be on agricultural land, but would be temporary and restored to pre-project conditions, or better after construction is finished. Further, access roads and laydown areas are allowed uses of agricultural lands under existing land use policies and regulations. Therefore, the proposed project would not result in the permanent conversion of farmland to non-agricultural uses or conflict with existing zoning for agricultural use,

TABLE AQ-4
CRITERIA AIR POLLUTANT EMISSIONS WITHIN YSAQMD JURISDICTION HAUL TRUCK ONLY SCENARIO

	Emissions		
Levee Site #	ROG (tons/year)	NOx (tons/year)	PM10 (pounds/day)
42	0.04	0.80	14.1
48	0.03	0.42	10.7
49	0.03	0.34	10.5
50	0.03	0.37	10.8
51	0.03	0.28	10.2
52	0.03	0.30	10.3
53	0.03	0.28	9.8
61	0.04	0.83	18.4
63	0.04	0.83	13.2
65	0.03	0.39	10.5
67	0.03	0.33	10.1
YSAQMD Threshold	10	10	80

TABLE AQ-5
CRITERIA AIR POLLUTANT EMISSIONS WITHIN YSAQMD JURISDICTION WITH BARGE TRANSPORT AND HAUL TRUCK SCENARIO

Levee Site #	Emissions in pounds per day		
	ROG	NOx	PM10
42 (truck)	0.04	0.80	14.1
48 (barge)	0.06	0.62	3.3
49 (truck)	0.03	0.34	10.5
50 (truck)	0.03	0.37	10.8
51 (truck)	0.03	0.28	10.2
52 (truck)	0.03	0.30	10.3
53 (truck)	0.03	0.28	9.8
61 (barge)	0.22	2.5	12.8
63 (barge)	0.10	1.1	5.78
65 (barge)	0.03	0.38	2.0
67 (barge)	0.03	0.29	1.6
YSAQMD Threshold	10	10	80 (with BMPs)

As shown in Table AQ-4, emissions from all repair sites would be below the YSAQMD emission threshold for ROG, NOx, and PM10 under the truck hauling scenario. This would be a less-than-significant impact and no mitigation is required. However, a cumulative PM10 impact within the jurisdiction could occur if a majority of the repair sites were to be

active simultaneously. Therefore, a mitigation measure is identified to ensure that no more than six repair sites are active simultaneously within YSAQMD jurisdiction.

As shown in Table AQ-5, emissions from all repair sites would be below the YSAQMD emission threshold for ROG, NOx, and PM10 under the barge hauling scenario. This would be a less-than-significant-impact and no mitigation is required. However, a cumulative PM10 impact within the jurisdiction could occur if a majority of the repair sites were to be active simultaneously. Therefore, a mitigation measure is identified to ensure that no more than six repair sites are active simultaneously within YSAQMD jurisdiction.

Repair site within FRAQMD jurisdiction. Repair site 54 is located within Sutter County. CEQA emission thresholds in the FRAQMD jurisdiction are 10 tpy, respectively of the ozone precursors NOx and ROG and 80 pounds per day of PM10. Material hauling for site 54 would be done by truck. Emission estimates for this site are 0.03 tpy of ROG, 0.38 tpy of NOx and 10.9 pounds per day of PM10, which are all below FRAQMD thresholds. This would be a less-than-significant impact and no mitigation is required.

Repair site within CCAPCD jurisdiction. Repair site 44 is located within Colusa County. CEQA emission thresholds applied to Colusa County in this analysis are those of the FRAQMD jurisdiction which are 10 tpy, respectively of the ozone precursors NOx and ROG and 80 pounds per day of PM10. Material hauling for site 44 would be done by truck. Emission estimates for this site are 0.03 tpy of ROG, 0.43 tpy of NOx and 11.3 pounds per day of PM10, which are all below FRAQMD thresholds. This would be a less-than-significant-impact and no mitigation is required.

Repair sites within SJVAPCD jurisdiction. Repair sites 55, 62 and 69 through 74 are located within San Joaquin County in the jurisdiction of the SJVAPCD. The SJVAPCD's CEQA thresholds of significance specific to construction projects are 100 tpy of carbon monoxide (CO), 10 tpy, respectively of the ozone precursors NOx and ROG, 27 tpy of sulfur oxides (SOx), and 15 tpy of either PM10 or PM2.5, respectively. Material hauling for all sites would be done by truck.

Estimated emissions are presented in **Table AQ-6** and are compared to SJVAPCD emission thresholds. As shown in Table AQ-6, emissions from all repair sites would be below the SJVAPCD emission thresholds for CO, ROG, NOx, SOx, PM10 and PM2.5. This would be a less than-significant-impact and no mitigation is required.

TABLE AQ-6
CRITERIA AIR POLLUTANT EMISSIONS WITHIN SJVAPCD JURISDICTION

Levee Site #	Emissions in tons per year					
	CO	ROG	NOx	SOx	PM10	PM2.5
55	0.31	0.05	1.1	0.003	0.17	0.08
62	0.17	0.02	0.27	<0.001	0.11	0.06
69	0.30	0.05	1.04	0.003	0.17	0.08
70	0.18	0.03	0.32	<0.001	0.11	0.06
71	0.20	0.03	0.42	0.001	0.12	0.06
72	0.22	0.04	0.56	0.001	0.13	0.07
73	0.23	0.04	0.65	0.001	0.14	0.07
74	0.27	0.04	0.85	0.002	0.15	0.08
SJVAPCD Threshold	100	10	10	27	15	15

Repair site within TCAPCD jurisdiction. Repair site 76 is located within Tehama County. CEQA emission thresholds in the TCAPCD jurisdiction are 25 pounds per day, respectively of the ozone precursors NOx and ROG and 80 pounds per day of PM10. A project with emissions exceeding these levels indicate a potentially significant impact warranting mitigation. Emissions exceeding 137 pounds per day of ROG, NOx or PM10 are considered significant. Material hauling for site 76 would be done by truck. Emission estimates for this site are 3.8 pounds per day of ROG, 67.1 pounds per day of NOx and 13.1 pounds per day of PM10. NOx emissions would exceed the 25 pound per day threshold warranting mitigation. Mitigation Measure AQ-4 implements best management practices for controlling construction emissions identified by TCAPCD in its CEQA Guidelines. With mitigation NOx emissions would not exceed the 137 pound per day significance threshold and would be less than significant.

Repair site within BCAPCD jurisdiction. Repair site 79 is located within Butte County. CEQA emission thresholds in the BCAPCD jurisdiction are 137 pounds per day, respectively of the ozone precursors NOx and ROG, and 80 pounds per day of PM10. Material hauling for site 79 would be done by truck. Emission estimates for this site are 2.5 pounds per day of ROG, 25.6 pounds per day of NOx and 10.1 pounds per day of PM10, which are all below BCAPCD thresholds. This would be a less-than-significant impact and no mitigation is required.

Mitigation Measure AQ-1: Implement DWR Best Management Practices (BMPs) for Construction. The following measures identified in DWR's Climate Action Plan will reduce construction-related emissions of NOx and are applicable to repair sites in Sacramento County and Tehama County:

BMP 7. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide

clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

BMP 12. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay[7] certified truck will be used to the maximum extent feasible.

Mitigation Measure AQ-2: Truck Hauling requirements for Repair Sites 46 and 58. Material hauling for Repair Sites 46 and 58 shall be conducted using trucks and not barges to reduce daily emission of NOx to below SMAQMD significant thresholds.

Mitigation Measure AQ-3: Avoid Concurrent Activities of Repair Sites in Sacramento County. This measure applies to all repair sites in Sacramento County. DWR shall schedule work to avoid concurrent activities of repair sites 46, 47, 58, and 59 with any other repair site such that daily NOx emissions would not cumulatively exceed 85 pounds per day on the same day.

Mitigation Measure AQ-4: Limit Concurrent Activities of Repair Sites in YSAQMD Jurisdiction. This measure applies to all repair sites in YSAQMD jurisdiction. DWR shall schedule work to restrict concurrent activities of repair sites to no more than six at any one time to ensure that daily PM10 emissions would not cumulatively exceed 80 pounds per day.

Mitigation Measure AQ-5: Implement Construction BMPs for Tehama County. The following measures identified in TCAPCD's CEQA Guidelines will reduce construction-related emissions of NOx and are applicable to construction equipment for the repair site in Tehama County:

- Maintain all construction equipment in proper tune according to manufacturer's specifications.
- Maximize to the extent feasible, the use of diesel construction equipment meeting current CARB certification standards for off-road heavy-duty diesel engines.
- Registration of off-road equipment in the California Air Resources Board's DOORS program and meeting all applicable standards for replacement and/or retrofit.
- All portable equipment, including generators and air compressors rated over 50 brake horse power, shall be registered in the Portable Equipment Registration Program (PERP), or permitted through the District as a stationary source.

7 The U.S. Environmental Protection Agency has developed the SmartWay truck and trailer certification program to set voluntary standards for trucks and trailers that exhibit the highest fuel efficiency and emissions reductions. These tractors and trailers are outfitted at point of sale or retrofitted with equipment that significantly reduces fuel use and emissions including idle reduction technologies, improved aerodynamics, automatic tire inflation systems, advanced lubricants, advanced powertrain technologies, and low rolling resistance tires.

- Water shall be applied by means of truck(s), hoses and/or sprinklers as needed prior to any land clearing or earth movement to minimize dust emission.
- Haul vehicles transporting soil into or out of the property shall be covered to reduce track out.
- Water shall be applied to disturbed areas a minimum of 2 times per day or more as necessary to reduce fugitive dust emissions.

c) **Less-than-Significant Impact.** Diesel powered construction equipment can generate diesel particulate matter which has been identified by the California Air Resources Board (CARB) as a toxic air contaminant. Repair sites are located in rural areas and are generally located a long distance from any sensitive receptors. Additionally, the duration of repairs for each site is proposed to be 4 weeks. The state Office of Environmental Health Hazard Assessment (OEHHA) has published Guidelines for performing health risk assessments to evaluate potential health exposure impacts to sensitive populations (OEHHA 2015). This guidance states that it does not recommend assessing cancer risk for projects lasting less than two months for any sensitive receptor.

Consequently, given the short duration of construction activity at each site and the distance to sensitive receptors, the project would have a less-than-significant impact with respect to exposure of sensitive receptors to substantial pollutant concentrations.

d) **Less-than-Significant Impact.** Diesel powered construction equipment can generate short term, non-persistent odors due to engine exhaust. Repair sites are located in rural areas and are generally located distant from sensitive receptors. Specifically repair sites 44, 47, 48, 52, 61, 71 and 79 have a single rural residence approximately 400 feet away as the closest receptor. Repair sites 50, 58, 59 and 63 have a single rural residence approximately 200 feet away as the closest receptor. Repair sites 60, 65 and 67 have a single rural residence approximately 100 feet away as the closest receptor. All other repair sites are distant from sensitive receptors.

While some repair sites may be active as close as 100 feet from a receptor, given the short duration of construction activity at each site and the rural residential areas in which they would occur, odors from diesel equipment exhaust would be a brief occurrence and would not effect a substantial number of people and therefore, the project would have a less-than-significant impact with respect to creation of odors affecting a substantial number of people.

References

Butte County Air Pollution Control District, *CEQA Air Quality Handbook*, October 2014.

Feather River Air Quality Management District (FRAQMD), 2010. Indirect Source Review Guidelines, June 2010.

Ledbetter, Ian. Environmental Program Manager, Glen County Air Pollution Control District. Personal communication with Chris Sanchez (ESA), October 23, 2018.

Office of Environmental Health Hazard Assessment (OEHHA), 2015. California Environmental Protection Agency, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessment, February 2015. Available: http://oehha.ca.gov/air/hot_spots/2015/.pdf. Accessed November 11, 2018.

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2013. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)*. September 26, 2013.

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2009a. *CEQA Guidelines.* December 2009, revised May 2018.

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2009b. *2009 Triennial Report and Plan Revision.* December 2009.

San Joaquin Valley Air Pollution Control District (SJVAPCD), 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*, March 2015.

Tehama County Air Pollution Control District (TCAPCD), 2015. *Air Quality Planning and Permitting Handbook.* April 2015.

Yolo-Solano Air Quality Management District (YSAQMD), 2007. *Handbook for Assessing and Mitigating Air Quality Impacts.* July 2007.

3.2.4 Biological Resources

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
4. BIOLOGICAL RESOURCES — Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
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?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
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?	☐	☐	☐	☒

Environmental Setting

Information in this section is based on data collected during reconnaissance-level field surveys conducted by ESA biologists on October 8, 9, 10, 15, 16, and 17, 2018, and review of other relevant documentation for the repair sites and surrounding vicinity including:

- CDFW's California Natural Diversity Database (CNDDB) records search for special-status species documented on the Sacramento West, Davis, Kirkville, Llano Seco, Rio Vista, Courtland, Clarksburg, Sheridan, Vernalis, Lathrop, Stockton West, Gerber, Isleton, and Chico U.S. Geological Survey (USGS) 7.5-minute quadrangles (**Appendix C**);
- CDFW's CNDDB 5-mile radius around the repair sites (CDFW 2018) (Appendix C);
- USFWS List of Threatened and Endangered Species (USFWS 2018) (Appendix C); and
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants for special-status plants documented on the Sacramento West, Davis, Kirkville, Llano Seco, Rio Vista, Courtland, Clarksburg, Sheridan, Vernalis, Lathrop, Stockton West, Gerber, Isleton, and Chico U.S. Geological Survey (USGS) 7.5-minute quadrangles (CNPS 2018) (Appendix C).

As described previously in Chapter 2, the repair sites occur in discrete locations along levees of the Sacramento River, San Joaquin River, Old River, Yankee Slough, Elk Slough, Steamboat Slough, Yolo Bypass, Georgiana Slough, Butte Creek, and Elder Creek. Surrounding land uses consist of agricultural land, residential development, and urban. Habitat within the repair sites (including staging and laydown areas, and access roads) includes riparian, annual grassland, agricultural land, disturbed, developed, and riverine (**Figure BIO-1**). Habitat types by repair sites are summarized in **Table BIO-1** and shown in the figures included in Appendix C.

TABLE BIO-1
HABITAT TYPES BY REPAIR SITE

Phase	Site	Waterway	Habitats by Repair Sites
4	42	Yolo Bypass	Ruderal/disturbed
	44	Sacramento River	Grassland, riparian, riverine
	46	Steamboat Slough	Riparian, riverine, developed
	47	Steamboat Slough	Riparian, riverine, grassland, developed
	48	Sacramento River	Grassland, riverine, developed
	49	Elk Slough	Riparian, riverine, grassland, developed
	50	Elk Slough	Riparian, riverine, grassland, developed
	51	Elk Slough	Riparian, riverine ruderal/disturbed
	52	Elk Slough	Riparian, riverine, grassland, ruderal/disturbed
	53	Elk Slough	Riparian, riverine, ruderal/disturbed
	54	Yankee Slough	Grassland, ruderal/disturbed
	55	San Joaquin River	Ruderal/disturbed, riverine, developed
5	58	Sacramento River	Grassland, riparian, riverine
	59	Sacramento River	Grassland, riverine, ruderal/disturbed
	60	Sacramento River	Riverine, developed, ruderal/disturbed
	61	Sacramento River	Riparian, riverine, grassland
	62	San Joaquin River	Ruderal/disturbed, developed, riverine
	63	Sacramento River	Riparian, riverine, developed, ruderal/disturbed
	65	Sacramento River	Riparian, riverine, grassland, developed
	67	Sacramento River	Riparian, riverine, developed, grassland
	69	San Joaquin River	Ruderal/disturbed, riverine
	70	San Joaquin River	Riparian, ruderal/disturbed, riverine
	71	Old River	Riparian, riverine, ruderal/disturbed
	72	Old River	Riparian, riverine, ruderal/disturbed, grassland
	73	Old River	Riparian, riverine, ruderal/disturbed
	74	Old River	Ruderal/disturbed, riparian, riverine
	76	Elder Creek	Grassland, riverine, developed
	77	Georgiana Slough	Grassland, riverine, ruderal/disturbed
	79	Butte Creek	Riparian, riverine, grassland, ruderal/disturbed

Riparian habitat includes Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), box elder (*Acer negundo*), white alder (*Alnus rhombifolia*), Northern California black walnut (*Juglans hindsii*), narrow-leaved willow (*Salix exigua* var. *exigua*), Goodding's black willow (*Salix gooddingii*), Oregon ash (*Fraxinus latifolia*), valley oak (*Quercus lobata*), California button willow (*Cephalanthus occidentalis*), western sycamore (*Platanus racemosa*), western poison oak (*Toxicodendron diversilobum*), California rose (*Rosa californica*) and blue elderberry (*Sambucus nigra* ssp. *caerulea*).

Annual grassland includes ripgut grass (*Bromus diandrus*), Bermuda grass (*Cynodon dactylon*), soft chess (*Bromus hordeaceus*), wild oat (*Avena fatua*), and barley (*Hordeum murinum*). Trees occur in isolated locations within some of the repair sites.

Agricultural land consists of ground crops, including rice, or orchards. Disturbed land includes riprap, or areas that have previously been manipulated including areas on the sides of levees where vegetation maintenance occurs. Developed includes paved and graded roads.

Several species known to occur in the vicinity of repair sites are protected pursuant to federal and/or State endangered species laws, or have been designated as Species of Special Concern by the CDFW. In addition, Section 15380(b) of the CEQA Guidelines provides a definition of rare, endangered, or threatened species that are not included in any listing. For example, vascular plants listed as rare or endangered or as California Rare Plant Rank (CRPR) List 1 or 2 by the CNPS are considered to meet Section 15380(b) requirements. Species recognized under these terms are collectively referred to as "special-status species."

Special-status species considered for this analysis are based on the CNDDB, CNPS, and USFWS lists. A comprehensive list of special-status plant and wildlife species that were considered in the analysis is provided in Appendix C. The list includes the common and scientific names for each species, regulatory status (federal, State, local, CNPS), habitat descriptions, and a discussion of the potential for occurrence within the repair sites. The following set of criteria has been used to determine each species potential for occurrence within the repair sites:

High: Species known to occur on or near the repair sites (based on CNDDB records within 5 miles of the repair sites) and there is suitable habitat within or in the vicinity of the repair sites.

Low: Species known to occur in the vicinity of the repair sites and there is marginal habitat within the repair sites or species is not known to occur in the vicinity of the repair sites, however, there is suitable habitat on the repair sites.

None: There is no suitable habitat within or in the vicinity of the repair sites regardless of whether occurrences are documented within the vicinity or plant species were not observed during surveys conducted within their blooming periods.

Only those species that have a high or low potential for occurrence are discussed further. **Table BIO-2** summarizes the special status species with the potential to occur within the repair sites.

TABLE BIO-2
REGIONALLY OCCURRING FEDERAL AND STATE-LISTED SPECIES WITH THE POTENTIAL TO OCCUR AT THE REPAIR SITES

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Repair Sites
Amphibians				
Ambystoma californiense	California tiger salamander	FT/ST	Found in vernal pools, ephemeral wetlands, and seasonal ponds, including constructed stock ponds, in grassland and oak savannah plant communities from 3 to 1,054 meters.	**None.** The repair sites do not provide habitat for this species.
Rana boylii	Foothill yellow-legged frog	--/CT, CSC	Found in partially shaded, permanent, slow-moving streams or channels with rocky or muddy bottoms and open, sunny banks within chaparral, open woodland, and forest.	**Low.** Species depends on gravel bars and backwater pools which the reach in Butte Creek (Site 79) lacks due to confinement of levees.
Rana draytonii	California red-legged frog	FT/CSC	Found in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation from 0 to 1,500 meters.	**None.** The repair sites occur outside of the extant geographic range for this species.
Birds				
Agelaius tricolor	Tricolored blackbird	--/CE, CSC	Highly colonial species, most numerous in central valley and vicinity. Nests in dense blackberry, cattail, tules, bulrushes, sedges, willow, or wild rose within freshwater marshes. Nests in large colonies (up to thousands of individuals).	**Low.** The grassland and agricultural land within the repair sites provide foraging habitat; however, the repair sites do not provide suitable nesting habitat for this species.
Buteo swainsoni	Swainson's hawk	--/ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian sites, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging sites such as grasslands, or alfalfa or grain fields supporting rodent populations.	**High.** Trees within riparian habitat provide suitable nesting habitat for this species. Suitable foraging habitat for this species consists of five acres or more of annual grassland or suitable agricultural cropland (e.g., alfalfa). The repair sites do not provide suitable foraging habitat for this species since the repair sites are predominately disturbed sites less than 5 acres in size.
Charadrius alexandrinus nivosus	Western snowy plover	FT/CSC	Ground nesting bird found primarily on unvegetated to sparsely vegetated playas, salt flats, and sand dunes on coastal beaches, dry mud or salt flats, and sandy shores of rivers, lakes, and ponds.	**None.** The repair sites do not provide habitat for this species. The repair sites do not provide habitat for this species.
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FT/SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in dense riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	**Low.** Dense riparian sites in the vicinity certain repair sites provide habitat for this species.

Discussion

a) **Less than Significant with Mitigation Incorporated.** Discussion of impacts to special-status species are provided below, organized by species and species groups.

Special-Status Fish

No construction-related impacts to fish would occur in Yankee Slough (site 54 in phase 4), Yolo Bypass (site 42 in phase 4), and Elder Creek (site 76 in phase 5) due to the lack of suitable habitat during the construction period.

The Sacramento River (sites 44 and 48 in phase 4 and sites 58-61, 63, 65, 67 in phase 5), Elk Slough (sites 49-53 in phase 4), the San Joaquin River (site 55 in phase 4 and sites 62, 69, and 70 in phase 5), Georgiana Slough (site 77 in phase 5), and Old River (sites 71-74 in phase 5) provide habitat for all races/ESUs of Chinook salmon, steelhead, green sturgeon, delta smelt, and longfin smelt. Butte Creek (site 79 in phase 5) provides habitat for Central Valley spring-run Chinook salmon and steelhead. Construction associated with increased sedimentation, removal of riparian vegetation, and input of hazardous materials could result in direct take, in disruption of migration or behavioral patterns, or in loss of overhead and instream cover resulting in significant impacts. Implementation of the environmental commitments identified within Section 2.4.5, including providing crew members environmental awareness training, marking work area limits, installing erosion control materials that minimize soil or sediment for entering waterways, limiting instream work windows by fish species and repair area would help to avoid and minimize effects on fish species during construction by educating workers and limiting the construction area and instream effects to periods where fish species are not present.

Further, additional environmental commitments identified within Section 2.4.5 also require DWR to secure SRA (salmonids) and shallow water habitat (smelt) credits at a NMFS-, USFWS-, and CDFW-approved mitigation bank for permanent impacts at repair sites as ordered in regulatory permits. Combined, the environmental commitments, including compensatory mitigation, would reduce long-term impacts associated with habitat degradation or loss to these species to less-than-significant levels.

Nesting Birds, including Western Yellow-billed Cuckoo, Swainson's Hawk, Bank Swallow, Yellow Warbler, Purple Martin, Song Sparrow, Loggerhead Shrike, Yellow-breasted Chat, American Peregrine Falcon, and White-tailed Kite

Migratory birds and other birds of prey may nest within and in the vicinity of the repair sites. The generally accepted nesting season extends from February 1 through September 15 for nesting birds excluding Swainson's hawk. The nesting season for Swainson's hawk extends from March 1 through September 15. Construction activities including removal of riparian vegetation and nest trees occurring within the nesting season could result in take of an active nest, nest abandonment, or disruption of foraging or nesting behavior, resulting in potential significant impacts. Implementation of the environmental commitments identified within Section 2.4.5, including conducting preconstruction

surveys and implementing appropriate avoidance buffers would help to avoid and minimize effects on nesting birds, thereby reducing impacts to *less than significant*.

Burrowing Owl

Burrowing owl has the potential to nest and overwinter within the annual grassland, agricultural land, and ruderal/disturbed areas within the repair sites. Construction activities could result in disturbance and/or death to burrowing owl, resulting in potentially significant impacts. Implementation of the environmental commitments identified within Section 2.4.5, including conducting preconstruction surveys in addition to implementation of BIO MM-1, would reduce the potential for impacts on this species to less than significant.

> **Mitigation Measure BIO-1:** If the biologist observes an occupied burrow during the preconstruction survey (as identified under Section 2.4.5), a minimum 600-foot buffer shall be established during work between April 1 and October 15 and a 150-foot buffer shall be established during work between October 15 and March 31.

Valley Elderberry Longhorn Beetle (VELB)

Elderberry shrubs, which are sole hosts for the valley elderberry longhorn beetle, are found along levees and in riparian habitats throughout the repair sites, staging, and laydown areas and in proximity to these areas. The phase 4 repair sites within Elk Slough (49, 50, 51, and 52) contain elderberry shrubs. The phase 5 repair sites within the San Joaquin River (69) and Old River (71, 72, and 74) contain habitat. No exit holes were observed within the elderberry shrubs.

VELB are assumed to be present in elderberry shrubs with stems one inch or greater in diameter at ground level (dgl). Although no elderberry shrubs are proposed for removal, any unanticipated removal during vegetation clearing and grading would impact valley elderberry longhorn beetle through direct take. Valley elderberry longhorn beetle may be indirectly impacted through noise, vibration, and the accumulation of dust on elderberry foliage. Implementation of the environmental commitments identified within Section 2.4.5 and 2.5, including flagging and placing protective fencing around the shrubs or by purchasing compensatory mitigation credits from a USFWS-approved bank in the unanticipated event that a protected shrub is removed or damaged as a result of the proposed project, would help to avoid and minimize effects on VELB and reduce impacts on this species to *less than significant*.

Special-Status Bats including Pallid Bat, Western Mastiff Bat, and Western Red Bat

Special-status bats have the potential to roost in trees within the repair sites. No trees are currently proposed for removal. However, if, during construction, it is determined that trees are required to be removed, impacts to roosting bats could occur through direct take, if present within the trees during the removal. This would be a significant impact. The following mitigation measures shall be implemented to reduce impacts to special-status bats to less than significant.

Mitigation Measure BIO-2: Within 24 hours prior to tree removal, a qualified biologist shall conduct a survey of all trees proposed for removal. If no special-status bats are observed within the trees, no additional mitigation is required for bats so long as the trees are removed within 24 hours of the survey. If the tree removal lapses for more than 24 hours, an additional survey is required.

Mitigation Measure BIO-3: If a bat is observed within a tree proposed for removal, the removal shall be halted and a minimum 20-foot buffer would be established around the tree. Through coordination with the CDFW, methods shall be established and implemented to exclude the bats from roosting in the tree. No tree removal would occur until the biologist determines that the tree is no longer occupied by the bats.

American Badger

American badger has the potential to den within the agricultural land and annual grassland within the repair sites. Construction activities including vegetation removal, grading activities, and spoils placement could impact an American badger or its den, if present within the footprint. This could be a significant impact. The following mitigation measures shall be implemented to reduce impacts to American badger to less than significant.

Mitigation Measure BIO-4: A qualified biologist shall conduct a preconstruction survey for active dens within 3 days prior to the start of vegetation clearing and grading activities in repair sites containing agricultural land, annual grassland, and ruderal/disturbed sites. If no active dens are observed, no additional measures are required so long as construction activities commence within 3 days of the survey. If construction activities lapse for more than 3 days, an additional survey would be required.

Mitigation Measure BIO-5: If active American badger dens are found, the biologist shall establish a minimum 20-foot buffer using flagging and shall be onsite to monitor all vegetation clearing and grading activities for the purpose of temporarily halting construction activities until the biologist determines that the badger has left the construction footprint on its own accord.

Western Pond Turtle

Western pond turtle could utilize aquatic areas for breeding and foraging and the adjacent annual grassland and agricultural land for upland nesting and overwintering habitat within the repair sites. Construction activities including instream work, vegetation removal, and grading activities could impact western pond turtle through direct take if present during these activities, resulting in a potentially significant impact. Implementation of the environmental commitments identified within Section 2.4.5, including conducting work during the western pond turtle's active season, having a biological monitor onsite or on-call during all activities within 200 feet of suitable aquatic habitat, and stopping work within 200 feet of a turtle, if observed, until the turtle leaves on its own accord, or until the biological relocates the turtle to suitable habitat downstream following authorization from the CDFW would help to avoid and minimize effects on westerns pond turtle and would reduce the impacts on this species to less than significant.

Giant Garter Snake

GGS could occur within aquatic and adjacent upland habitat at repair area site numbers 54 in phase 4 and 77 and 79 in phase 5. While with the Sacramento River and San Joaquin River does not provide suitable aquatic habitat, GGS are documented to occur in habitat in the vicinity of repair area site numbers 44 in phase 4 and 60, 62, 69, and 70 in phase 5. Although the Yolo Bypass provides aquatic and upland habitat, repair area site number 42 in phase 4 occurs entirely in upland, disturbed areas.

If suitable aquatic habitat occurs at or near a repair area, impacts to GGS may include temporary fill of areas that support GGS as a result of construction of temporary access roads or staging areas and obstruction of snake movement. Construction of levee repairs could result in injury or mortality of individuals due to crushing by equipment; however, this is likely to be avoided and minimized because construction activities would occur during the time period when snakes are active and should be able to move out of harm's way.

Other direct impacts may include the removal of basking sites necessary for thermoregulation and the destruction of burrows or crevices that provide hibernacula. Individual snakes could be killed or hurt by moving construction equipment and personnel. Construction disturbance also may cause GGS to move into open areas such as roads or cleared areas where they have a greater chance of being killed by vehicles or predation. Temporary impacts that may occur on the landside of project levees due to staging and hauling are likely to be avoided or minimized because repair sites occur along established project levees where existing roads and disturbed areas may be used for temporary disturbances. These activities and conditions could result in potentially significant impacts.

Although changes in channel configuration and potential changes in bank substrate size and shoreline aquatic vegetation as a result of the repairs may restrict movement and remove cover and foraging habitat, permanent impacts associated with the waterside erosion repairs would generally be restricted to steep slopes along the waterside of project levees where conditions typically are not (or less) suitable for GGS. Further, all affected GGS aquatic and adjacent upland habitat shall be restored in accordance with criteria listed in the USFWS Mitigation Criteria for Restoration and/or Replacement of Giant Garter snake Habitat (Appendix A to *Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Gartersnake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo Counties, California* [USFWS 1997]), or the most current criteria provided by USFWS and/or CDFW (see Section 3.3), to the extent feasible. Any areas that cannot be restored, impacts would be compensated for through the purchase of compensatory mitigation credits from an USFWS- and CDFW-approved bank at a ratio determined in consultation with USFWS and CDFW.

Therefore, implementation of the environmental commitments identified within Section 2.4.2, establishment of buffers, monitoring and potentially capturing and removing GGS

if they are found in the work areas, implementing equipment controls, and the aforementioned compensatory mitigation, would reduce the impacts on this species to less than significant.

Foothill Yellow-legged Frog

Foothill yellow-legged frog has the potential to occur within Butte Creek (repair site 79 in phase 5). Construction activities including instream work and removal of adjacent riparian vegetation could adversely affect this species through direct take, if present within Butte Creek, resulting in a potentially significant impact. The following mitigation measures would be implemented to reduce impacts to foothill yellow-legged frog to *less than significant.*

> **Mitigation Measure BIO-6:** Within 3 days prior to entering or working near stream/riparian habitat within the foothill yellow-legged frog range, a qualified biologist shall conduct a survey in aquatic habitat and adjacent riparian habitat within the repair area and a 500-foot buffer upstream and downstream of the repair area.
>
> **Mitigation Measure BIO-7:** If foothill yellow-legged frogs are observed in the repair area, DWR will stop work in the immediate area until the frog is out of the area and will notify a qualified biologist immediately. If possible, the frog will be allowed to leave on its own, and the qualified biologist will remain in the area until the biologist deems his or her presence is no longer necessary to ensure that the frog is not harmed. If the frog does not leave the work area on its own volition, CDFW would be consulted to identify next steps.
>
> **Mitigation Measure BIO-8:** A qualified biologist will be onsite to monitor all locations where repairs will occur within aquatic habitat where the frog has the potential to occur or was observed during the preconstruction survey.

Special-Status Plants

No state or federal listed plants occur or have the potential to occur within the repair sites. Several non-listed special-status plants occur or have the potential to occur within the repair sites. While Northern California black walnut occurs within some of the repair sites, impacts to this species are addressed above as a part of the discussion of riparian impacts.

Pappose tarplant occurs adjacent to the staging area for repair site 42. These species and Ferris' milk-vetch, alkali milk-vetch, big tarplant, watershield, bristly sedge, Bolander's water-hemlock, slough thistle, dwarf downingia, adobe-lily, woolly rose-mallow, Heckard's pepper-grass, Delta mudwort, Ahart's paronychia, side-flowering skullcap, Wright's trichocoronis, and saline clover have the potential to occur within the repair sites containing suitable habitat. The proposed project could impact these species, if present, through vegetation clearing and grading activities, resulting in a potentially significant impact. Implementation of the environmental commitments identified within Section 2.4.5, including conducting surveys in suitable habitat, if present, mapping and quantifying special-status plants, and establishing avoidance and minimization measures

if found (including no-disturbance buffers, installing silt or construction fencing around populations), and providing a biological monitor in areas, if necessary, or if avoidance is infeasible, coordinating with CDFW or USFWS to develop appropriate minimization measures would help to avoid and minimize impacts on special-status plant species, thereby reducing potential impacts on special-status plants to *less than significant.*

b) **Less-than-Significant Impact.** Riparian habitats are generally considered sensitive as they provide cover and foraging opportunities for wildlife species. Sensitive natural communities are land cover types that are especially diverse, regionally uncommon, or of special concern to federal, State, and/or local agencies. Riparian habitat occurs within several of the repair sites. Construction activities associated with vegetation removal would remove riparian habitat, resulting in a potentially significant impact on this habitat. Implementation of the environmental commitments identified within Section 2.4, including restoring riparian habitat at an adjacent offsite or onsite location by planting native trees and shrubs at a ratio determined in consultation with CDFW and/or NMFS, would ensure restoration and replacement of riparian habitat lost during repairs, thereby reducing impacts on this habitat to less than significant.

c) **Less-than-Significant Impact.** The proposed project repairs would occur partially within waters of the U.S. and/or jurisdictional wetlands, resulting in potentially significant impacts. Any waters of the U.S. or jurisdictional wetlands that would be lost or disturbed shall be replaced or rehabilitated on a "no-net-loss" basis in accordance with the USACE's mitigation guidelines through the Section 404 permit process. Habitat restoration, rehabilitation, and/or replacement should be at a location and by methods acceptable to the USACE. Therefore, compliance with theses mandatory methods would reduce impacts on waters of the U.S. to less than significant.

d) **Less-than-Significant Impact.** Impacts to riparian habitat along some areas of the waterways may disrupt terrestrial wildlife movement. These areas are small segments of the riparian corridor and the duration of work is limited to no more than 3 weeks per repair area. Impacts to the waterways could also temporarily impact fish movement. Thus, the proposed project repairs could result in potentially significant impacts one the movement of wildlife. However, implementation of the environmental commitments identified within Section 2.4, including restoring riparian habitat at an adjacent offsite or onsite location, securing native riparian habitat credits or acres at a mitigation bank, installing erosion control materials that minimize soil or sediment for entering waterways, limiting instream work windows by fish species and repair area, and by securing shallow water habitat (smelt) credits at a USFWS- and CDFW-approved mitigation bank for permanent impacts at the repair area would avoid, minimize, and restore impacts on wildlife passage areas, thereby reducing impacts to less than significant.

e) **Less-than-Significant Impact.** To the extent feasible, the proposed project would comply with applicable adopted city and county ordinances protecting native and heritage trees. If native or heritage trees need to be removed for public safety, or to meet other

objectives, DWR, to the extent feasible, will implement the mitigation measures required by the ordinance that applies to the affected tree. The criteria used to define protected trees vary by local jurisdiction, but typical criteria include the tree's species (e.g., native species of oak, sycamore) and the tree's size, as defined by the tree's dbh or similar methodology. Protected trees in these locations may be removed to improve levee visibility and accessibility, or they may be removed because they pose an unacceptable threat to levee integrity. They also may be removed when stability berms are constructed next to levees or as needed to facilitate other maintenance actions (e.g., those related to providing equipment access, constructing haul routes, and performing similar activities). In general, State agencies such as DWR are not subject to local ordinances; however, to the extent feasible maintenance activities will incorporate the goals of local tree protection ordinances, which are conceptually consistent with DWR's Environmental Stewardship Policy. The implementation of environmental commitments identified within Section 2.4 would reduce impacts on heritage trees, native oaks, and other trees protected by local tree preservation ordinances or local policies to less than significant by applying a sequence of education, avoidance, minimization, monitoring by a qualified biologist when needed; water quality protection measures would be implemented; and when avoidance of wetlands or riparian habitat would not be feasible, DWR, to the extent feasible, will implement the mitigation measures required by the ordinance that applies to the affected tree, thereby reducing impacts to less than significant.

f) **No Impact.** The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, and there would be no impact.

References

Hays, D. W., K. R. McAllister, S. A. Richardson, and D. W. Stinson. 1999. *Washington state recovery plan for the western pond turtle.* Wash. Dept. Fish and Wild., Olympia. 66 pp.

Spinks, P. Q., Pauly, G. B., Crayon, J. J., Shaffer, H. B. 2003. Survival of the western pond turtle (*Emys marmorata*) in an urban California environment. *Biological Conservation* 113 (257-267).

U.S. Fish and Wildlife Service (USFWS). 1999. *Draft Recovery Plan for the Giant gartersnake (*Thamnopsis gigas*)*. U.S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2017. *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)*. U.S. Fish and Wildlife Service; Sacramento, California. 28 pp.

3.2.5 Cultural Resources

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
5. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Environmental Setting

This section provides a discussion of the existing conditions, as well as relevant prehistoric and historical conditions, related to cultural resources at the repair sites (including roads and laydown areas) as well as the immediately surrounding area. Information in this section is based on the *2019 Storm Damage DWR Rehabilitation – Phases 4 and 5 Repair Sites: Cultural Resources Technical Report* (ESA 2019) prepared for the proposed project. Cultural resources include architectural resources, archaeological resources, and human remains. Paleontological resources include fossilized remains of vertebrate and invertebrate organisms, fossil tracks, and plant fossils. The following provides a broad overview of the cultural resources setting in and adjacent to the proposed project repair sites.

Prehistoric Context

Categorizing the prehistoric period into cultural stages allows researchers to describe a broad range of archaeological resources with similar cultural patterns and components during a given timeframe, thereby creating a regional chronology. Rosenthal et al. (2007) provide a framework for the interpretation of the Central Valley prehistoric record and have divided human history in the region into three basic periods: *Paleo-Indian* (13,550 to 10,550 BP), *Archaic* (10,550 to 900 BP), and *Emergent* (900 to 300 BP). The Archaic period is subdivided into three sub-periods: *Lower Archaic* (10,550 to 7,550 BP), *Middle Archaic* (7,550 to 2,550 BP), and *Upper Archaic* (2,550 to 900 BP) (Rosenthal et al. 2007). Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

The Paleo-Indian Period is poorly represented in the archaeological record for Central California. Erosion or sediment deposits have either removed this component from the surface or has deeply buried it. The most conclusive evidence comes in the shape of basally thinned and fluted projectile points found in the mid and southern San Joaquin Valley; a single fluted point has been recovered from the Sacramento Valley While the dearth of artifacts presents minimal opportunities for interpretation, the early cultures seem to be focused on big game hunting and plant foraging, with milling equipment absent. The sites from this time period have been found exclusively on relict exposed Pleistocene landforms (Rosenthal et al. 2007:151).

The Lower Archaic is likewise poorly represented, a result of the mid-Holocene Altithermal that took place at the end of this period, a time of extreme drought and, initially, landform instability that, like the Pleistocene/Holocene transition, resulted in the burial of much of the habitable landscape. Isolated finds of stone crescents and stemmed points have been found alongside Paleo-Indian points along the Pleistocene shorelines of Lake Tulare at the southern end of the Central Valley. A single intact deposit from Kern County has yielded a small but diverse faunal assemblage, with waterfowl, fish, fresh water mussel, and artiodactyl. The size and form of the recovered projectile points from Lower Archaic sites suggest a continued reliance on big game. Studies in the Sierra Nevada and Coast range foothills along the valley margin have begun to identify robust milling equipment assemblages that point towards a reliance on large nut gathering and processing. Trade corridors appear to be well established by this time, with marine shell beads dating to this time period found in the great Basin and non-local obsidian found in several Lower Archaic sites (Rosenthal et al. 2007:151-152).

The Middle Archaic is marked by the onset of the mid-Holocene Altithermal. Drought led to western lakes drying up, while global warmer weather was followed by ice melt and sea level rise backing water into the Delta region, creating a substantially more robust riparian environment. Landforms stabilized and much of the Middle Holocene archaeological record has been recovered from these stable surfaces buried by late Holocene alluvial deposits. Two distinct settlement-subsistence adaptations have been identified, a valley cultural tradition and a foothill tradition. The Valley tradition is characterized by extended residential settlements with specialized tool assemblages, including fishing gear, non-utilitarian items, and trade goods. Faunal assemblages reflect year-round occupation, and the advent of mortar and pestle reflect acorn and pine-nut processing. The Foothill Tradition is better represented that than the Valley Tradition, with sites from this time comparatively common. An emphasis on cobble tools and grinding implements indicate a focus on acorn and pine-nut processing. The non-utilitarian and trade items are generally absent and the sites tend to represent mobility as opposed to the year-round occupation seen on the valley floor. The projectile point styles are represented by leaf, narrow concave-based and corner-notched points crafted from local toolstone (Rosenthal et al. 2007:152-155).

The Upper Archaic marks a time of a cooler, wetter, more stable environment. Archaeological sites were more abundant, and reflect regional variations in burial postures and artifact styles, indicating distinct geopolitical units across a broad landscape. New types of bone tools, ornaments, ceremonial items, and shell beads were invented. Obsidian trade and use played an important role in Upper Archaic communities and community-level subsistence strategies—mass harvesting of acorn, rabbit, shellfish, and salmon have been recorded, and large mounded villages appear in the Sacramento Delta region. The foothills have yielded substantial yet still seasonally occupied villages. Differences in burial patterns and material culture continue to suggest that valley and foothill populations represented different cultures (Rosenthal et al. 2007:155-157).

The Emergent Period continued to see stable climatic conditions. Large, well-populated towns were distributed along the major river waterways. The bow and arrow were introduced, likely from Penutian-speaking proto Patwin and Wintun speakers arriving from the north. Social forms become more complex and the material and ceremonial culture diversifies further, with the introduction of new ceremonial regalia, hopper mortars, coiled basketry, and cremation instead of

burial introduced. An increased reliance on fish and plant food sources has been noted, though large mammal and other game continue to appear in the archaeological record. Local bead processing and obsidian cobble reduction, the base material for both acquired by trade, is evident. Mortar and pestle are the predominate food-processing tool.

Historic Context

Settlement of the Sacramento Valley

The earliest documented expeditions into the Sacramento River Delta were undertaken by Spanish explorers in the late 18th and early 19th centuries. Explorers aimed to colonize the region to expand Spanish sovereignty, and numerous Native Americans were enslaved in the process. Many Native groups resisted and retaliated against the Spanish, and this resulted in lengthy conflicts. These conflicts and devastating epidemics severely reduced native populations.

Alta California came under Mexican rule in 1822, and the government awarded 813 land grants throughout California between 1824 and 1846. In 1841, John Sutter was awarded the New Helvetia land grant that included 49,000 acres in the Sacramento Valley. Sutter's colony, which comprised a large number of enslaved Native Americans, cultivated the land through crop and livestock farming. Despite the seasonal flooding of the Sacramento and American rivers, Sutter's achievements attracted more and more settlers to the Sacramento Valley, and many new towns, ranches, and outposts were established during the mid-19th century. Sutter's settlement continued to grow, and this area was incorporated as the City of Sacramento in 1850.

At the outset of the Gold Rush in 1848, huge numbers of prospectors arrived in Sacramento to mine for gold in the Sierra Nevada foothills. The Delta, which was still in its natural state and was not a desirable destination for farmers or those in search of gold, provided numerous waterways to transport mining-related machinery and tools throughout the region. Many people who arrived ultimately decided not to mine for gold because they deemed it too difficult or dangerous, and they instead turned to subsistence farming and agricultural pursuits. Farms and ranches developed along the Sacramento River and throughout the Delta, and shipping food and other supplies to the mining camps proved to be highly lucrative for these farmers. With the end of the Mexican-American War in 1848, California became a territory of the United States, and two years later, on September 9, 1850, California was admitted into the Union as the 31st state.

Early History of Land Reclamation in the Delta

Settlers in the Sacramento River Delta constructed the area's first network of levees in the mid-19th century to drain and reclaim land for farming, and these early levees were expanded and widened seasonally. In 1861, the State Board of Swampland Commissioners was created to spearhead a statewide effort to handle frequent flooding of agricultural land and towns, and in 1866 the board was abolished so that counties could control reclamation efforts. Reclamation activities in the Delta during the remainder of the 19th century were dominated by the Tide Land Reclamation Co. and the Glasgow-California Land and Reclamation Co., and the workforce was comprised primarily of Chinese, Japanese, and Native American laborers. The outcome of these large-scale activities was the creation of numerous "islands" within the Delta that were defined by canals, river channels, and levees.

Since 1913, the Central Valley Flood Protection Board (formerly the California Reclamation Board) has presided over reclamation districts and levee plans throughout the state.

USACE Sacramento River Flood Control Project (1917 – 1961; SRFCP)

The following historic context is excerpted from DWR's 2017 Fremont Weir Adult Fish Passage Modification Project Cultural Resources Inventory Report's comprehensive history of regional flood control and the Project area (DWR 2017).

> The SRFCP is the core of the flood protection system along the Sacramento River and its tributaries. The SRFCP was authorized under the Flood Control Act of 1917 and by 1961, construction of all components was completed. Upon completion, the SRFCP was composed of approximately 1,000 miles of levees, five weirs (Moulton, Colusa, Tisdale, Fremont, and Sacramento), control structures (Knight's Landing Outfall Gates, Butte Slough Outfall Gates, Sutter-Butte Canal Headgate), and bypasses (Sutter and Yolo). Units of the SRFCP cross nine counties (Glenn, Colusa, Butte, Sutter, Yuba, Placer, Sacramento, Yolo, and Solano). The northwestern limit of the system is Unit 140 in Glenn County, the northeastern end is Unit 152 in Butte County and the southern end is in Sacramento County at Sherman Island (Unit 101). The system was designed so that 82% of flood discharges flow through the Yolo Bypass and only 18% in the main river channel. The northern extent of the SRFCP lies along the Sacramento River in Glenn County and includes levees along the Sacramento and Feather rivers and many tributaries down to Sherman Island at the southern end of Sacramento County. Segments of the SRFCP levees were originally constructed by local interests and were modified to United States Army Corps of Engineers [USACE] flood control standards before being incorporated into the SRFCP system. Once the levee system was finalized in 1961, the State took over the operations and maintenance in accordance with USACE regulations.

Methodology and Results

Tribal Consultation

Tribal consultation under AB52 and in accordance with DWR Tribal Policy was carried out for this project. The details and results of this consultation are discussed in Section 3.2.18, Tribal Cultural Resources of this document.

Records Search and Literature Review

An ESA archaeologist completed in-person records searches of the proposed repair sites (including laydown areas) and a 0.5 mile radius around each area, including the haul routes, at four California Historical Resources Information System (CHRIS) information centers (IC) between September 24, 2018 and October 2, 2018. The four ICs visited were the Northwest Information Center (NWIC), the North Central Information Center (NCIC), the Central California Information Center (CCaIC), and the Northeast Information Center (NEIC). The purpose of the records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the proposed project repair sites; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources. The

ICs visited, dates visited, IC File Number, and U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps reviewed are as follows:

- **NWIC**, visited on September 24, 2018. IC File Number: 18-0621. USGS 7.5-minute topographic quadrangles reviewed: Davis, Clarksburg, Courtland, Isleton, Kirkville, Knights Landing, Rio Vista, and Sacramento West.
- **NCIC**, visited on September 25, 2018. IC File Number: SAC-18-163. USGS 7.5-minute topographic quadrangle: Clarksburg, Courtland, Florin, Isleton, and Sacramento East.
- **CCaIC**, visited on October 1, 2018. IC File Number: 10859L. USGS 7.5-minute topographic quadrangles reviewed: Lathrop, Stockton West, and Vernalis.
- **NEIC**, visited on October 2, 2018. IC File Number: W18-167. USGS 7.5-minute topographic quadrangles reviewed: Chico, Geber, Llano Seco, and Vina.

Results of the combined records searches indicate that eight (8) cultural resources are located in the proposed project repair sites, and an additional thirteen (13) cultural resources are within the 0.5 mile of the footprints of the proposed project repair sites. Seven (7) cultural resources are the levees which the proposed project proposes to rehabilitate: P-34-002143, P-52-002605, P-34-004030, P-39-004517, P-39-004857, P-39-005084 and, P-39-005085. The remaining resource within the proposed project repair sites is the shipwreck of the Clarksburg Ferry (P-57-000609) at project repair site 61 (**Table CUL-1**).

TABLE CUL-1
PREVIOUSLY RECORDED CULTURAL RESOURCES

Primary	Type	Description	Data Center	Project Sites	Distance to APE	Cult. report App. C Fig.
Phase 4						
P-6-000025	Site	Large prehistoric village and mound site with numerous burials. Includes house floors and many artifacts, and faunal remains including freshwater shellfish. Potentially destroyed and spread in agricultural field.	NWIC	44	686 feet	3
P-6-000599	Structure	Historic-era concrete irrigation canal and pump.	NWIC	44	623 feet	3
P-34-002143	Structure (Levee)	Sacramento River levee system, initially built on various islands along the river starting in 1870 and continuing through the 1880s.	NCIC	Phase 4: *44, 47, and *48 Phase 5: 58, *59, *60, *61, *63, *65, and *67	In	1, 3, 4, 5, 10, 11, 12, 14
P-34-004030	Structure (Levee)	Grand Island Levee, initially built between 1855 and 1895.	NCIC	*46, and *47[a]	In	4
P-34-004454	Site	Buried dirt landing.	NCIC	47	264 feet	4
P-39-005084	Structure (Levee)	Paradise Cut levee, initially built in the late 19th century.	CCaIC	Phase 4: *55	In	9, 13, 17

TABLE CUL-1
PREVIOUSLY RECORDED CULTURAL RESOURCES

Primary	Type	Description	Data Center	Project Sites	Distance to APE	Cult. report App. C Fig.
Phase 4 (cont.)						
P-57-000063	Site	Prehistoric mound or village site with projectile points and clay cooking balls. Potentially partially destroyed and used as agricultural soil. No burials recorded.	NCIC	48	1,214 feet	5
YOL-HRI-276	Recorded Natural Feature	The natural course of Elk Slough was recorded as historical resource due its historic use for transportation.	NWIC	50, 51, 52, and 53	Immediately Adjacent	6
Phase 5						
P-34-000096	Site	Prehistoric site mound site	NCIC	58	0.5 mile	10
P-34-000101	Site	Prehistoric site mound site	NCIC	59 and 60	1,214 feet	11
P-39-002513	Structure	Swing through steel bridge that is a minor example from a significant designer, but is otherwise not significant.	CCalC	69 and 70	1109 feet	15
P-39-004516	Structure (Levee)	Stockton RWCF East Bank Levee, initially built in the 1850s.	CCalC	69 and 70	319 feet	15
P-39-004517	Structure (Levee)	Stockton RWCF West Bank Levee, initially built in the 1850s.	CCalC	69 and 70	In	15
P-39-004857	Structure (Levee)	Old River Levee system, initially built in the late 19th century.	CCalC	71	In	16
P-39-005084	Structure (Levee)	San Joaquin River Levee,	CCalC	62, 72, 73, and 74	In	17
P-52-000223	Site	Very large prehistoric and Historic-era Native American village and mound site, with glass beads. Site extends north by an unspecified distance, likely to the southern bank of Elder Creek (and closer to Project site). Mound is intact, and more of the site maybe.	NEIC	76	0.46 mile	18
P-52-002605	Structure (Levee)	Elder Creek Levee, initially built in 1961 by DWR.	NEIC	76	In	18
P-57-000047	Site	Prehistoric village and mound site extending from levee, with an unknown number of burials.	NWIC	63, 65, and 67	1,207 feet	14
P-57-000182	Site	The "Mississippi River Mat" is a series of pilings associated with the Sacramento River East Bank Levee. It is a contributing to the levee.	NWIC	63, 65, and 67	0.3 mile	14
P-57-000183	Site	An intact prehistoric site with midden and artifacts, and with burials.	NWIC	63, 65, and 67	0.44 mile	14
P-57-000609	Site	Clarksburg Ferry shipwreck. The ferry was active from 1920 to 1928, when it sank. The shipwreck is considered eligible for the National Register.	NWIC	61	In	12

TABLE CUL-1
PREVIOUSLY RECORDED CULTURAL RESOURCES

Primary	Type	Description	Data Center	Project Sites	Distance to APE	Cult. report App. C Fig.
Phase 5 (cont.)						
P-57-000839	District	Lisbon District is a collection of 15 pioneer era houses located along the Sacramento River.	NWIC	63, 65, and 67	0.5 mile	14
C-849	Site	Remains of Cave Landing, which is a series of tightly clustered pilings perpendicular to the Sacramento River levee.	NWIC	63, 65, and 67	0.44 mile	14

NOTES:
* These resource records were updated and extended following field work and further analysis. Record updates are in Appendix E of the technical report (ESA 2019).

Archaeological Resources

One historic-era archaeological site is located within the project APE within a Phase 5 proposed project repair site. The Clarksburg Ferry shipwreck (P-57-000609) was identified during the current study as being in the proposed project repair site 61, along with associated landing or dock remains.

An ESA archaeologist surveyed all 13 of the Phase 4 proposed project repair sites and their 11 laydown areas, including alterative locations. No new archaeological resources were identified in any of the surveyed Phase 4 proposed project repair sites or their laydown areas. All 17 Phase 5 proposed project repair sites and all 15 laydown areas were surveyed. No new archaeological resources were identified in any of the surveyed Phase 5 proposed project repair sites or their laydown areas. Only P-57-000609, a previously known site, was identified within a project repair site.

Historic Architectural Resources

All proposed project repair sites were subject to archival review and field survey by a qualified ESA architectural historian. The archival review identified ten known built environment resources within the various sites, as listed in **Table CUL-2**. Of these, two resources – the Isleton Levee Section and the Elder Creek Levee – were previously determined ineligible for listing in the National Register of Historic Places (National Register) and California Register of Historical Resources (California Register). Additionally, the field survey identified five additional resources that were not previously recorded. Unevaluated built resources documented through the course of review and survey include earthen levees dating from the early 1900s through the mid-1960s. These levees are closely associated with historic events relating to reclamation and flood control (Criteria 1/A of the California and National Registers). Additionally, the USACE, as federal lead agency charged with oversight of the levees, treats the levees as potentially eligible for listing in the National Register for their association with flood management and the development of the Central Valley. While not formally evaluated for eligibility under the National or California Registers, for the purposes of the proposed project, and following the

precedent set by USACE, these remaining 13 levee segments are treated as historical resources for the purposes of CEQA analysis

TABLE CUL-2
ELIGIBILITY OF BUILT RESOURCES WITHIN THE PROJECT FOOTPRINT

Resource	Eligibility Determination
Isleton Levee Section (P-34-002143)	Previously determined ineligible for listing in the National Register and California Register
Historic Grand Island Levee (P-34-004030)	Not evaluated as part of earlier recordation; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
Paradise Cut Levee (P-39-005084)	Not evaluated as part of earlier recordation; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
San Joaquin River Levee (P-39-005085)	Not evaluated as part of earlier recordation; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
Stockton RWCF Western Levee Segment (P-39-004517)	Not evaluated as part of earlier recordation; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
Old River Levees (P-39-004857)	Not evaluated as part of earlier recordation; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
Elder Creek Levee Segment (P-52-002605)	Previously determined ineligible for listing in the National Register and California Register
Merritt Island Levee	Not previously recorded or evaluated; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
Yankee Slough North Bank Levee	Not previously recorded or evaluated; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
Yolo Bypass West Bank Levee	Not previously recorded or evaluated; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
Tyler Island Georgiana Slough Levee	Not previously recorded or evaluated; presumed eligible for listing in the National Register and the California Register for the purposes of this Project
Butte Creek Levee	Not previously recorded or evaluated; presumed eligible for listing in the National Register and the California Register for the purposes of this Project

Discussion

a) **Less-than-Significant Impact.** CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a project on historical resources. A historical resource is defined as any building, structure, site, or object listed in or determined to be eligible for listing in the California Register, or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California. The following discussion focuses on architectural and structural resources. Archaeological resources, including archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed under checklist issue b), below.

Proposed project activities involve making repairs along existing levees slopes to restore the levee back to its original design. These repairs would not result in significant physical change of the levees as a potentially eligible historical resource. As such, a less-than-significant impact to the levees as historical resources are anticipated.

b) **Less than Significant with Mitigation Incorporated.** This section discusses archaeological resources, both as historical resources according to CEQA Guidelines CEQA Guidelines Section 15064.5, as well as unique archaeological resources as defined in Public Resources Code (PRC) Section 21083.2(g). A significant impact would occur if the project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

Based on the IC records searches, the distribution of nearby archaeological sites, survey results, previous disturbance, and environmental context, the majority of the proposed project repair sites have a low potential to encounter or impact an archaeological site or to encounter human remains. Despite the low potential, the probability remains for the discovery and potentially significant impact on unknown archaeological resources. Potential impacts would be mitigated to a less-than-significant level through implementation of preconstruction training and a plan for the inadvertent discovery of archaeological resources (**Mitigation Measure CUL-1**).

While the majority of locations are not sensitive for containing cultural resources, a handful of locations have been determined sensitive. Known archaeological resources are near proposed project repair sites 44, 60, 61, 63, 65, 67 and 69. Tribal monitoring may be carried out where appropriate (**Mitigation Measure CUL-2**) reducing potential impacts on archeological resources to less than significant. The proposed project has the potential to impact archaeological resources at these locations. In addition, at proposed project repair sites 44, and 69, soil types, artifacts, or ambiguous faunal remains that could not be clearly identified as archaeological may still indicate a cultural resource in, or very near, the proposed project repair sites. Impacts to potential archaeological resources at proposed project repair sites 44, 60, 61, 63, 65, 67 and 69 would be reduced to a less-than-significant level with implementation of archaeological monitoring and a plan for the inadvertent discovery of archaeological resources (**Mitigation Measure CUL-3**).

There is no indication that portions of the proposed project repair sites have been used for human burials, but there are archaeological sites with burials in the vicinity of some project repair sites and there is the possibility that unmarked burials may be unearthed during ground-disturbing activities. The proposed project would involve ground-disturbing activities; therefore, it is possible that such actions could inadvertently unearth, expose, or disturb buried human remains, which would be a potentially significant impact. Implementation of **Mitigation Measure CUL-4**, which includes provisions compliant with the Public Resources Code and Health and Safety Code would reduce this impact to a less-than-significant level. These locations and other prehistoric archaeological sites may also be considered Traditional Cultural Resources by tribal groups. **Mitigation Measure CUL-5** includes provisions for Traditional Cultural Resources to reduce potential impacts to less-than-significant levels.

The possibility exists for shipwrecks to be present within the water-side toe of levees subject to repair. There is one known shipwreck within a project repair site, P-57-000609. If water-side—i.e. from a barge-- levee work will be required in the vicinity of P-57-

000609, **Mitigation Measure CUL-6** includes provisions for reducing potential impacts to these resources to a less-than-significant level, as well as a plan for the inadvertent discovery of additional submerged shipwrecks or maritime features.

Mitigation Measure CUL-1. Preconstruction Training and a Plan for Inadvertent Discovery of Archaeological Resources.

Prior to construction, a qualified archaeologist with expertise in California archaeology will develop an archaeological resources training program for all construction and field workers involved in ground-disturbing activities. Only personnel who have received cultural resource awareness and sensitivity training will be allowed to enter areas potentially containing archaeological resources. Training will include a presentation developed in coordination with affiliated tribal representatives. Topics may include the potential presence and type of Native American and non-Native American resources that might be found during operations associated with the individual flood control projects, and necessary reporting protocols. Written materials will be provided to personnel as appropriate.

While unlikely, the accidental discovery of archaeological resources or human remains at these locations cannot be entirely discounted. If prehistoric or historic-era archaeological resources are encountered, all construction activities within 100 feet will halt. DWR will be notified, and a Secretary of the Interior-qualified archaeologist will inspect the findings within 24 hours of discovery. If it is determined that the proposed project could damage a significant archaeological resource, DWR shall re-design the proposed project to avoid any adverse effects. If avoidance is not feasible, a qualified archaeologist shall prepare and implement a detailed Archaeological Resources Management Plan in consultation with the State Historic Preservation Officer and, for prehistoric resources, the appropriate Native American representative.

Mitigation Measure CUL-2. Conduct Monitoring at Locations Identified by Native Americans as Sensitive.

Native American monitoring may be conducted at sensitive locations under agreements between DWR and culturally affiliated Native American Tribes. If cultural materials are encountered during construction, Mitigation Measure CUL-2 will be implemented.

Mitigation Measure CUL-3. Archaeological Monitoring and a Plan for Inadvertent Discovery of Archaeological Resources.

Project-related activities would require ground-disturbance, including excavation, trenching, grading, and use of staging areas. Ground disturbing activities could result in damage to or destruction of known archaeological sites, if present in the construction area. However, based on the archaeological studies on file at the CHRIS that have been conducted, there are no known prehistoric or historic-era (other than the Clarksburg Ferry, addressed in CUL-6) archaeological sites on the project site.

Archaeological monitoring is necessary when ground-disturbing activities occur at the proposed project repair sites 44, 60, 61, 63, 65, 67 and 69. Monitoring shall be conducted by or supervised by a qualified archaeologist who meets the Secretary of the Interior's Qualification Standards. A Monitoring Plan shall be developed that includes (but not be limited to) the following components:

- Person(s) responsible for conducting monitoring activities;
- Person(s) responsible for overseeing and directing the monitors;
- How the monitoring shall be conducted and the required format and content of monitoring reports;
- Schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports;
- Protocol for notifications in case of encountering cultural resources, as well as methods of dealing with the encountered resources (e.g., collection, identification, curation);
- Methods to ensure security of cultural resources sites;
- A protocol for notifying local authorities (i.e., Sheriff, Police) should site looting and other illegal activities occur during construction.
- During the course of the monitoring, the archaeologist may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to impact resources.
- Contact information for all responsible personnel identified in the Plan

If an archaeological resource is encountered, all activity within 100 feet of the find shall immediately halt until it can be evaluated by a qualified archaeologist (and a Native American representative if the artifacts are prehistoric). If it is determined that project activities could damage a significant archaeological resource, DWR shall re-design the proposed project to avoid any adverse effects. If avoidance is not feasible, a qualified archaeologist shall prepare and implement a detailed Archaeological Resources Management Plan in consultation with the State Historic Preservation Officer and, for prehistoric resources, the appropriate Native American representative.

In considering any suggested mitigation proposed by the archaeologist and Native American representative, DWR shall determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is not feasible, other appropriate measures (e.g., data recovery as agreed upon between DWR, the archaeological consultant, and Native American representatives) shall be instituted. Work may proceed in other parts of the project site while mitigation for archaeological resources is being carried out.

Because no known prehistoric or historic-era (other than the Clarksburg Ferry, (addressed in CUL-7) archaeological sites are on file with the CHRIS are present

within the project sites, there would be no damage to or destruction of known archaeological resource locations during project construction. Therefore, there would be no impact on known prehistoric archaeological resources.

c) **Less than Significant with Mitigation Incorporated**

Mitigation Measure CUL-4. Inadvertent Discovery of Human Remains: If potential human remains are encountered, all work will halt within 100 feet of the find and the on-site construction crew will immediately contact DWR. DWR will contact the appropriate County coroner in accordance with PRC Section 5097.98 and Health and Safety Code Section 7050.5. If the coroner determines the remains are Native American, the coroner will contact the Native American Heritage Commission (NAHC). As provided in PRC Section 5097.98, the NAHC will identify the person or persons believed most likely to be descended from the deceased Native American. The most likely descendent will make recommendations for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98.

Mitigation Measure CUL-5. In the Event that Tribal Cultural Resources or Traditional Cultural Properties are Discovered during Construction, Implement Procedures to Evaluate Tribal Cultural Resources/Traditional Cultural Properties and Implement Avoidance and Minimization Measures to Avoid Significant Adverse Effects.

California Native American Tribes that are traditionally and culturally affiliated with the geographic area in which the project is located may have expertise concerning their TCRs (California PRC Section 21080.3.1). As was done during EIS/EIR preparation, culturally affiliated Tribes will be further consulted concerning TCRs and TCPs that may be impacted. If these types of resources are discovered during construction. Further consultation with culturally affiliated Tribes will focus on identification of measures to avoid or minimize impacts on any such resources discovered during construction. Should TCRs or TCPs be identified in the project APE during construction, the following performance standards shall me met prior to continuance of construction and associated activities that may result in damage to or destruction of TCRs or TCPs:

- Each identified TCR/TCP will be evaluated for CRHR and NRHP eligibility through application of established eligibility criteria (California Code of Regulations 15064.636 and CFR Part 63 respectively), in consultation with interested Native American Tribes.

- If a TCR is determined to be eligible for listing on the NRHP, DWR will avoid damaging effects to the TCR/TCP in accordance with California PRC Section 21084.3, if feasible. If DWR determines that the project may cause a substantial adverse change to a TCR/TCP, and measures are not otherwise identified in the consultation process, the following are examples of mitigation capable of avoiding or substantially lessening potential significant impacts to a TCR/TCP or alternatives that would avoid significant impacts to a TCR/TCP. These measures may be considered to avoid or minimize significant adverse impacts and constitute the standard by which an impact conclusion of less-than significant may be reached:

- Treat the resource with culturally appropriate dignity taking into account the Tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - Protect the cultural character and integrity of the resource.
  - Protect the traditional use of the resource.
  - Protect the confidentiality of the resource.
  - Protect the resource.

If a TCP is determined to be eligible for listing in the NRHP, then the procedures for determination of effect and, if adverse, treatment of the resource to resolve adverse effect will be conducted in accordance with the procedures required for compliance with Section 106 of the NHPA (36 CFR Parts 800.5–800.6).

Mitigation Measure CUL-6: Mitigation of Effects to Submerged Shipwrecks or Maritime Features

There is one known shipwreck within a project repair site on the water-side toe of the levee subject to repair, P-57-000609. Water-side levee work conducted from a barge is expected in the vicinity of P-57-000609. The resources should be avoided to avoid adverse effects. If it is determined that project activities could damage P-57-000609, DWR shall re-design the proposed project to avoid any adverse effects. If avoidance is not feasible, DWR will follow an existing an Historic Property Treatment Plan, prepared by the USACE for this resource, that will reduce the effects of the project to less than significant.

While unlikely, the accidental discovery of additional submerged shipwrecks or maritime features cannot be entirely discounted. If additional submerged shipwrecks or maritime features are encountered, all construction activities within 100 feet will halt. DWR will be notified, and a Secretary of the Interior-qualified archaeologist will inspect the findings within 24 hours of discovery. The shipwreck or maritime feature will be evaluated for CRHR and NRHP eligibility through application of established eligibility criteria (California Code of Regulations 15064.636 and CFR Part 63 respectively). If it is determined that the proposed project could damage a significant archaeological resource, DWR shall re-design the proposed project to avoid any adverse effects. If avoidance is not feasible, a qualified archaeologist shall prepare and implement a detailed Archaeological Resources Management Plan in consultation with the State Historic Preservation Officer.

References

California Department of Water Resources (DWR), 2017. *Fremont Weir Adult Fish Passage Modification Project Cultural Resources Inventory Report.*

ESA, 2018. *2017 Storm Damage DWR Rehabilitation – Phases 4 and 5 Critical Repair Sites: Cultural Resources Technical Report.* Prepared for DWR, February 2019.

Rosenthal, Jeffrey S., Gregory G. White, and Mark Q. Sutton, "The Central Valley: A View from the Catbird's Seat", In *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones and Kathryn A. Klar, pp. 147-163, AltaMira Press, Lanham, MD, 2007.

3.2.6 Energy

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
6. ENERGY — Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Discussion

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for the Project to result in a substantial increase in energy demand and/or wasteful use of energy during Project construction, operation and maintenance, and decommissioning. The impact analysis is informed by Appendix F of the CEQA Guidelines. The potential impacts are analyzed based on an evaluation of whether construction energy use estimates for the project would be considered excessive, wasteful, or inefficient.

a) **Less-than-Significant Impact.** The analysis in this section utilizes the assumptions identified Section 3.2.3 Air Quality and Section 3.2.8 Greenhous Gases. Because the California Emissions Estimator Model (CalEEMod) program, used for those analyses, does not quantify in the output file the fuel volume or type for construction-related sources; additional calculations were completed and are summarized below.

Construction of the project would result in fuel consumption from the use of construction tools and equipment, truck trips or barge trips to haul material, and vehicle trips generated from construction workers commuting to and from the site. Project construction is expected to consume a total of approximately 383,400 gallons of diesel fuel from construction equipment and vendor, hauling, and water truck trips under the haul truck scenario or approximately 278,200 gallons of diesel from construction equipment and vendor, hauling, and barge trips under the barge hauling scenario.

Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel and heavy-duty equipment would not be a long-term condition of the project. In addition, there are no unusual project characteristics that would cause the use of construction equipment or haul vehicles that would be less energy efficient compared with other similar construction sites in other parts of the State. In conclusion, construction-related fuel consumption by the project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region. Due to the temporary nature of the project, there will be no long-term operational energy impacts as addressed above.

b) **Less-than-Significant Impact.** The transportation sector is a major end-user of energy in California, accounting for approximately 39 percent of total statewide energy

consumption in 2014 (USIA 2016). In addition, energy is consumed in connection with construction and maintenance of transportation infrastructure, such as streets, highways, freeways, rail lines, and airport runways. California's 30 million vehicles consume more than 16 billion gallons of gasoline and more than 3 billion gallons of diesel each year, making California the second largest consumer of gasoline in the world (CEC 2016).

With respect to transportation energy, existing energy standards are promulgated either through the regulation of fuel refineries and products, such as the Low Carbon Fuel Standard (LCFS), which mandates an 10 percent reduction in the non-biogenic carbon content of vehicle fuels by 2020. Additionally, there are other regulatory program with emissions and fuel efficiency standards established by USEPA and CARB such as Pavley II/LEV III and the Heavy-Duty (Tractor-Trailer) GHG Regulation. CARB has set a goal of 4.2 million Zero Emissions Vehicles (ZEV) on the road by the year 2030. Further, construction sites will need to comply with State requirements designed to minimize idling and associated emissions, which also minimizes use of fuel. Specifically, idling of commercial vehicles and off-road equipment would be limited to five minutes in accordance with the Commercial Motor Vehicle Idling Regulation and the Off-Road Regulation (CCR 2005). In conclusion, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

References

California Air Resources Board (CARB), 2016, *Mobile Source Strategy*, May 2016. Available: https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm. Accessed March 2019.

California Code of Regulations (CCR), 2005. Title 13, Chapter 10, 2485, updated through 2014.

California Energy Commission (CEC). 2016. Summary of California Vehicle and Transportation Energy. Available: http://www.energy.ca.gov/almanac/transportation_data/summary.html#vehicles. Accessed January 2019.

U.S. Energy Information Administration (USIA). 2016. California State Profile and Energy Estimates: Consumption by Sector. Available: http://www.eia.gov/state/?sid=CA#tabs-2. Accessed January 15, 2019.

3.2.7 Geology and Soils

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
7. GEOLOGY AND SOILS — Would the project:				
a) Directly or indirectly cause 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 Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
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?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
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?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Discussion

The proposed project is located within the Great Valley Geomorphic province. The province includes the area known as the Great Central Valley of California, which extends approximately 400 miles north to south and 50 miles east to west. The northern and southern portions of the Central Valley are referred to as the Sacramento Valley and San Joaquin Valley, respectively; with the Sacramento River draining areas to the north and the San Joaquin River draining areas to the south. The Great Central Valley is encompassed by the Coast Ranges (metamorphic), the Klamath Ranges (metamorphic), the Cascade Range (volcanic) and the Sierra Nevada (granitic and metamorphic). The majority of rocks and deposits found within the province are sedimentary. According to the U.S. Geological Survey, sedimentary rocks are formed from pre-existing rocks or pieces of once living organisms. They form from deposits that accumulate on the Earth's surface. Sedimentary rocks often have distinctive layering or bedding.

The topography of the Central Valley is relatively level, with elevations ranging from a few feet to a few hundred feet above mean sea level (msl). The proposed project levee repair sites are not

located within an Alquist-Priolo Special Studies Zone and there are no underlying active earthquake faults (CDC 2018). According to the California Department of Conservation (CDC) (2016) earthquake shaking potential for California, the project sites are located in areas distant from known, active faults and will experience lower levels of shaking less frequently.

In the Sacramento Valley, rich alluvial soils predominate, supporting an extensive agricultural region. The accumulation of salts in the soils of the San Joaquin Valley is due to a combination of the regional geology, high water table, intensive irrigation and fertilization practices, and the importation of water from the Delta that is high in salinity. The dominant form of salinity in the San Joaquin Valley, sodium sulfate, adversely affects soil structure, reducing permeability and hydraulic connectivity, and further impacting plant growth.

Soils in the Delta remained saturated with water over thousands of years, allowing organic matter to accumulate faster than it could decay. These soils are typically dark and acidic because of their high organic matter content, and are usually referred to as peat. Drainage of Delta peat soils for agricultural production has allowed the decomposition process to accelerate, and in many areas the oxidation of peat soils has led to subsidence. In areas that remain saturated, peat soils can emit gases such as methane.

Liquefaction is the process where the soil is transformed to a fluid form during intense and prolonged ground shaking. Areas most prone to liquefaction are those that are water saturated and consist of relatively uniform sands that are loose to medium density. Granular layers underlying certain areas in the Sacramento Valley have higher relative densities and thus have moderate liquefaction potential. The risk of liquefaction does exist within the proposed project levee repair sites due to the presence of sandy soils.

Expansive soils are characterized by the ability to undergo significant volume change (shrink and swell) as a result of variation in soil moisture content. Soil moisture content can change due to many factors, including perched groundwater, landscape irrigation, rainfall, and utility leakage. The soils in the proposed project area have a slight to moderate swell potential.

a) i - iv **Less-than-Significant Impact.** The proposed project repair sites are not located in an Alquist-Priolo Earthquake Fault Zone, as defined by the California Geological Survey, and no active or potentially active faults exist on, or in the immediate vicinity of the levee repair sites (CDC 2018). In addition, the proposed project is located in areas known to experience infrequent and lower levels of shaking. Furthermore, the proposed project would not exacerbate seismic conditions that could expose people or structures to seismic risks or result in inducing seismically triggered landslides. Furthermore, the levee repairs would be constructed to meet current engineering specifications that meet seismic safety levels for the region. The potential for surface fault rupture, strong seismic ground shaking, seismic-related ground failure including liquefaction, and landslides would be less-than-significant.

b) **Less-than-Significant Impact.** The proposed project would involve ground-disturbing construction activities, including vegetation clearing and grubbing, excavation, and placement of rockfill and soil-filled rockfill. Ground-disturbing activities at the repair

sites would result in minor removal and storage of top soil where temporary access roads and laydown areas would be graded. However, there top soil would be replaced after repair activities and reseeded and returned to existing conditions of better, and any underlying top soil would have a low potential for erosion. Disturbed areas could be exposed to erosion caused by wind or early-season rainfall events. Effects of wind erosion are evaluated in Section 3.2.3, Air Quality and water quality effects are evaluated in Section 3.2.10, Hydrology and Water Quality. Exposure of topsoil has the potential to occur during construction of the proposed project, especially during periods of ground disturbance and vegetation removal and other activities involving heavy equipment use during maintenance activities, resulting in potentially significant impact. Therefore, DWR would implement its appropriate BMPs for water quality and compliance with regulatory permits as described in Section 2.4 of the project description to minimize erosion and loss of topsoil. Implementation of these standard BMPs would prevent erosion and loss of topsoil, and ensure that the potential impact of soil erosion or the loss of topsoil during construction is less than significant.

c, d) **No Impact.** As described previously, some of the proposed project repair sites contain soils that are known to have liquefaction potential and moderate shrink-swell potential. However, no new buildings or habitable structures would be constructed as part of the proposed project and there would be no impacts to life or property.

e) **No Impact.** The proposed project would not involve the generation of sewage or wastewater that would require onsite treatment, no septic systems or alternative wastewater disposal systems would be necessary. There would be no impact.

f) **Less-than-Significant Impact.** The proposed project would involve ground-disturbing construction activities, including vegetation clearing and grubbing, excavation, and placement of rockfill and soil-filled rockfill. Ground-disturbing activities at the repair sites would result in minor removal and storage of top soil. Excavation and removal of top soil would be of more recent deposits and engineered soil from previous construction of the levees. Further, excavations would not be deep enough to encounter soil deposits that are associated with paleontological resources. Therefore, impacts on paleontological resources would be less than significant.

References

California Department of Conservation (CDC), 2016. Earthquake Shaking Potential for California.

California Department of Conservation (CDC), 2018. Fault Activity Map of California. Available: http://maps.conservation.ca.gov/cgs/fam/. Accessed November 2, 2018.

3.2.8 Greenhouse Gas Emissions

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
8. GREENHOUSE GAS EMISSIONS — Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☒	☐	☐

Environmental Setting

Greenhouse gases (GHGs) trap heat by preventing some of the solar radiation that hits the earth from being reflected back into space. Some GHGs occur naturally and are needed to keep the earth's surface habitable. Over the past 100 years, human activities have substantially increased the concentration of GHGs in our atmosphere. This has intensified the greenhouse effect, increasing average global temperatures and resulting the climate change.

Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are the principal GHGs associated with land use projects. CO_2, CH_4, and N_2O occur naturally, and through human activity. Emissions of CO_2 are largely by-products of fossil fuel combustion and CH_4 results from off gassing[8] associated with agricultural practices and landfills.

CO_2 is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas contributes to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2. CH_4 and N_2O are substantially more potent GHGs than CO_2, with 100-year GWPs of 28 and 265 times that of CO_2, respectively.

In emissions inventories, GHG emissions are typically reported as metric tons of CO_2 equivalents (CO_2e). CO_2e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH_4 and N_2O have much higher GWPs than CO_2, CO_2 is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO_2e.

Approach to Analysis

The California Air Pollution Control Officers Association (CAPCOA) considers GHG impacts to be exclusively cumulative impacts (CAPCOA 2008). Therefore, assessment of significance is based on whether a project's GHG emissions represent a cumulatively considerable contribution to the global atmosphere.

[8] Off-gassing is defined as the release of chemicals under normal conditions of temperature and pressure.

Each Air District have the discretion to establish significance criteria with respect to GHGs. The following summarizes the current status of each applicable air district to GHG impact assessment under CEQA.

SMAQMD: The SMAQMD has established a GHG significance threshold for construction activities of 1,100 metric tons (MT) of CO2e per year. If a project exceeds this threshold then all feasible mitigation measure shall be implemented.

YSAQMD: The YSAQMD has not formally adopted a GHG threshold relative to CEQA but routinely accepts the thresholds established by SMAQMD. Consequently, this analysis applies SMAQMD's GHG significance threshold for construction activities of 1,100 MT of CO2e per year.

FRAQMD: The FRAQMD has not formally adopted a GHG threshold relative to CEQA. Consequently, this analysis applies SMAQMD's GHG significance threshold for construction activities of 1,100 MT of CO2e per year.

CCAPCD: The CCAPCD has not formally adopted a GHG threshold relative to CEQA. Consequently, this analysis applies SMAQMD's GHG significance threshold for construction activities of 1,100 MT of CO2e per year.

SJVAPCD: The guidance and policy of SJVAPCD rely on the use of performance based standards, otherwise known as Best Performance Standards (BPS), to assess significance of project specific greenhouse gas emissions on global climate change during the environmental review process, as required by CEQA.

TCAPCD: The TCAPCD adopted a 25 percent reduction over a "Business as Usual" (or BAU) scenario as its threshold for evaluating GHG emissions under CEQA. However, the California Supreme Court questioned the use of Scoping Plan targets for individual projects without adequate explanation (*Center for Biological Diversity v. California Department of Fish and Wildlife*). Therefore, this analysis does not use demonstration of a 25 percent reduction in GHG emissions from BAU emissions. Consequently, similar to the other districts, this analysis applies SMAQMD's GHG significance threshold for construction activities of 1,100 MT of CO2e per year.

BCAPCD: The BCAPCD has not formally adopted a GHG threshold relative to CEQA. Consequently, this analysis applies SMAQMD's GHG significance threshold for construction activities of 1,100 MT) of CO2e per year.

Discussion

a) **Less-than-Significant Impact.** Construction of the proposed project would generate GHG emissions from a variety of sources, including off-road construction equipment and on-road worker, vendor, and hauling vehicles. Emissions from land-based construction emission sources were estimated using the CalEEMod emission estimator model version 2016.3.2. For the barge haul scenario, in-water emissions from barges and work boats

were calculated using emission factors generated by the Harbor, Dredge, and Barge Emission Factor Calculator of the SMAQMD. Model reports are provided in Appendix B.

Total construction-related GHG emissions were amortized over an assumed 30-year life of the project to determine emissions in terms of MT per year. As can be seen from Table GHG-1, all annualized emissions would be below the 1,100 MT per year threshold applied in this analysis. Consequently, GHG emissions would represent a less-than-significant cumulative GHG impact.

TABLE GHG-1
CONSTRUCTION GHG EMISSIONS IN EACH AIR DISTRICT FROM PROJECT SCENARIOS

Air District Jurisdiction	GHG Emissions (MT) Truck Hauling Scenario	Annualized Emissions (MT/yr) Truck Hauling Scenario	GHG Emissions (MT) Barge Hauling Scenario	Annualized Emissions (MT/yr) Barge Hauling Scenario
SMAQMD	1,449	48.3	592	19.7
YSAQMD	918	30.6	704	23.5
FRAQMD	60	2.0	NA	NA
CCAPCD	72	2.4	NA	NA
SJVAPCD	1,121	40.7	NA	NA
TCAPCD	148	4.9	NA	NA
BCAPCD	27	0.9	NA	NA

NOTES:
NA = Not applicable; these sites are not proposed as potential locations for in-water barge transport.

b) **Less than Significant with Mitigation Incorporated.** DWR in an effort to reduce its impact on the environment and lead by example, has developed a GHG Emissions Reduction Plan (GGERP) to guide its project development and decision making with respect to energy use and GHG emissions. The GGERP details the steps DWR will take to reduce its emissions by over 80% below 1990 levels. Measure CO-1 of the GGERP implements Best Management Practices (BMPs).

Based on the emissions presented in Table GHG-1, the proposed project would not be considered an "extraordinary project".[9] These thresholds represent a level of GHG emissions that by themselves could potentially adversely affect DWR's ability to achieve its GHG emissions reduction goals. Note that these construction emissions thresholds are not established as thresholds of significance for CEQA purposes, which were applied in response to question a, above.

Because the proposed project would not result in emissions that would potentially adversely affect DWR's ability to achieve its GHG emissions reduction goals, it would be

9 An extraordinary project is defined by DWR as one that emits more than 25,000 MT CO2e in a total construction phase or 12,500 MT in a given year of construction.

considered consistent with the GGERP if it implements the applicable measures of Measure CO-1 of the GGERP. Consequently, Mitigation Measure GHG-1, below, identifies the BMP's applicable to the project to ensure consistency with the GGERP. With implementation of Mitigation Measure GHG-1, the proposed project would have a less-than-significant impact with respect to conflicts with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Mitigation Measure GHG-1: Implement DWR BMP's for Construction Practices. The following GGERP Plan BMP's shall be implemented as part of construction activities associated with the proposed project:

BMP 1. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.

BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines. This BMP has been implemented by consideration of barge transport.

BMP 3. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.

BMP 6. Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.

BMP 7. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

BMP 8. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.

BMP 9. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.

BMP 10. Develop a project specific ride share program to encourage carpools and shuttle vans for construction worker commutes.

BMP 12. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay certified truck will be used to the maximum extent feasible.

BMP 14. Develop a project specific construction debris recycling and diversion program to achieve a documented 50% diversion of construction waste.

BMP 15. Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible, uses of public roadways that would increase traffic congestion.

References

California Department of Water Resources (DWR), 2012. Climate Action Plan, Phase 1: Greenhouse Gas Emissions Reduction Plan, May 2012.

California Air Pollution Control Officers Association (CAPCOA), 2008. *CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from projects Subject to the California Environmental Quality Act*, January 2008.

Butte County Air Pollution Control District, 2014. *CEQA Air Quality Handbook*, October 2014.

Feather River Air Quality Management District (FRAQMD), 2010. Indirect Source Review Guidelines, June 2010.

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2009. *CEQA Guidelines*, December 2009, revised May 2018.

San Joaquin Valley Air Pollution Control District (SJVAPCD), 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*, March 2015.

Tehama County Air Pollution Control District (TCAPCD), 2015. *Air Quality Planning and Permitting Handbook*, April 2015.

Yolo-Solano Air Quality Management District (YSAQMD), 2007. *Handbook for Assessing and Mitigating Air Quality Impacts*, July 2007.

3.2.9 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
9.	**HAZARDS AND HAZARDOUS MATERIALS — Would the project:**				
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
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?	☐	☐	☐	☒
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 or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

Discussion

The proposed project repair sites are located in 8 counties within the Central Valley. Proposed project activities would occur at 29 sites at State Plan of Flood Control levees. A few of the repair sites would be located within a quarter mile of a school, which are sensitive receptors.

Hazardous Materials

Materials and waste may be considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode or generate vapors when mixed with water (reactivity). The term "hazardous material" is defined in law as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.[10] In some cases, past uses can result in spills or leaks of hazardous materials to the ground, resulting in soil and groundwater contamination. The use, storage, transportation and disposal of hazardous materials are subject to numerous federal, State and local laws and regulations.

[10] State of California, Health and Safety Code, Chapter 6.95, Section 25501(o).

Information about hazardous materials sites in the proposed project repair sites was collected by conducting a review of the California Environmental Protection Agency's (CalEPA) Cortese List Data Resources (Cortese List) and the State Water Resources Control Board's GeoTracker list. The Cortese List includes data resources that provide information regarding the facilities or sites identified as meeting the Cortese List requirements. The Cortese List is updated at least annually, in compliance with California regulations (California Code Section 65964.6(a)(4)) and includes federal superfund sites, State response sites, non-operating hazardous waste sites, voluntary cleanup sites, and school cleanup sites. The GeoTracker list shows the locations and cleanup status of Leaking Underground Storage Tanks (LUST).

Based on a review of the Cortese List and GeoTracker conducted in November 2018, no active listed sites or LUSTs are located within 0.25 miles of the proposed project activities (CalEPA 2018). In addition, none of the sites listed were identified to be within the proposed project repair sites.

Fire Suppression

The proposed project repair sites are primarily located within a Local Responsibility Area (LRA) where the individual counties are responsible for fire suppression. One site is within the City of Sacramento. The California Department of Forestry and Fire Protection (CAL FIRE) has identified the areas of the counties where the repair sites are located has mostly unzoned and some Moderate Fire Hazard Severity Zones (MFHSZ) (CAL FIRE 2018).

a, b) **Less-than-Significant Impact.** Construction activities associated with the proposed project would require use of hazardous materials such diesel, gasoline, solvents, hydraulic fluid, grease, and other compounds not considered acutely hazardous or hazardous when used in small quantities. The improper use, storage, handling, transport or disposal of hazardous materials could result in accidental release of hazardous materials, thereby exposing construction workers, the public and the environment, including soil and/or ground or surface water, to hazardous materials contamination. Transportation of hazardous materials on area roadways is regulated by California Highway Patrol (CHP) and Caltrans, and storage and use of these materials is regulated by the Department of Toxic Substances Control (DTSC), as outlined in Title 22 of the CCR. Any proposed project activities that would use or store hazardous materials would be required to obtain permits, as needed, and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases. Compliance with these laws and requirements, and implementation of some of the BMPs described in the project description would ensure that potential impacts would be minimized, and impacts would be less than significant.

c) **Less-than-Significant Impact.** Hazardous materials such as fuels, oils, and other vehicle maintenance fluids would be on site during construction, creating the potential for a spill or accident to occur. Hazardous materials could also be transported near and around the proposed project area while materials are being hauled. The transportation of hazardous materials is regulated by State and federal law. Furthermore, the proposed project would not emit or otherwise use of large amounts of hazardous or acutely hazardous materials or

highly toxic materials that could existing schools within one-quarter mile of the repair sites, and this impact would be less than significant.

d) **No Impact.** The project is not located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Cortese List) and therefore would not create a significant hazard to the public or the environment from identified hazardous materials sites. No known hazardous materials exist within the proposed project sites. Therefore, no impact would occur.

e) **Less-than-Significant Impact.** The proposed project includes construction activities at several sites within two miles of private airport facilities. No structures would be erected within airport property or within two miles of a public or private use airport that would impede or impair airport operations. Therefore, impacts would be less than significant.

f) **Less-than-Significant Impact.** The proposed project would result in construction traffic (primarily haul of sediment and vegetation) along roadways that may be used by emergency vehicles. However, given the temporary increase in traffic volumes and similarity to existing traffic patterns and vehicle use, alternative routes are anticipated to be readily available. Furthermore, in areas where construction traffic may be heavier, signage and traffic safety measures would be implemented by DWR. This impact would be less than significant.

g) **Less-than-Significant Impact.** Project construction activities involve fuel burning equipment and machinery located in areas where the risk of wildland fire is considered to be low to moderate (CAL FIRE 2018). Construction activities would occur along levees where riparian vegetation is present and adjacent lands that are mostly irrigated agriculture. These vegetation and land use types have a low potential for wildland fires. Furthermore, DWR contractors and staff would be equipped with fire safety equipment (e.g., water trucks, extinguishers, etc.) and fire safety plans to prevent accidental fire on the project site. Therefore, the proposed project would not result in significant increase in risk of fire that would expose people or structures to a significant risk of loss, injury or death involving wildland fires, and impacts would be less than significant.

References

California Environmental Protection Agency (CalEPA), 2018. List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database. Available: List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database. Accessed November 5, 2018.

California Department of Forestry and Fire Protection (CAL FIRE), 2018. California Fires Hazard Severity Zone Map Update Project. Available: http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_maps. Accessed November 2, 2018.

3.2.10 Hydrology and Water Quality

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
10. HYDROLOGY AND WATER QUALITY — Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☒
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Discussion

The proposed project levee repair sites are located along the Sacramento River, San Joaquin River, Old River, Yankee Slough, Elk Slough, Steamboat Slough, Yolo Bypass, and Georgiana Slough. The levees are within the Sacramento River Basin north of the Delta and the San Joaquin River Basin south of the Delta.

The Sacramento River Basin covers 27,210 square miles and includes the entire area drained by the Sacramento River. For planning purposes, this includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. The principal streams are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers to the east; and Cottonwood, Stony, Cache, and Putah Creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa. DWR Bulletin 118-80 identifies 63 ground water basins in the Sacramento watershed area. The Sacramento Valley floor is divided into 2 ground water basins. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with ground waters that have beneficial uses Central Valley Regional Water Quality Control Board (CVRWQCB) (2018).

The San Joaquin River Basin covers 15,880 square miles and includes the entire area drained by the San Joaquin River. It includes all watersheds tributary to the San Joaquin River and the Delta south of the Sacramento River and south of the American River watershed. The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones (CVRWQCB 2018).

DWR Bulletin 118-80 identifies 39 ground water basins in the San Joaquin watershed area. The San Joaquin Valley floor is divided into 15 separate ground water basins, largely based on political considerations. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with ground waters that have beneficial uses (CVRWQCB 2018).

Significant portions of major rivers and the Delta are impaired, to some degree, by discharges from agriculture, mining, urbanization, and industries. Upstream, small streams and tributaries to the Sacramento and San Joaquin Rivers are impaired or threatened because of discharges from mining, forestry, and urban development activities.

A variety of historic and ongoing point and non-point industrial, urban, and agricultural activities degrade the quality of ground water. Discharges to ground water associated with these activities include industrial and agricultural chemical use and spills; underground and above ground tank and sump leaks; landfill leachate and gas releases; septic tank failures; improper animal waste management; and chemical seepage via shallow drainage wells and abandoned wells (CVRWQCB 2018).

Dam failure is a potential hazard in numerous areas downstream of local, State, and federal dams in the Central Valley. Flooding of the area below a dam may occur as a result of structural failure of the dam, overtopping, or a seiche (earthquake generated waves). The collapse and structural failure of a dam may be caused by a severe storm, earthquakes, or internal erosion of piping caused by embankment and foundation leakage. Larger dams that would inundate significant portions of the project area include the Shasta Dam, Red Bluff Diversion Dam on the Sacramento River and Black Butte Dam on Stony Creek, Oroville Dam, Folsom Dam, and Camanche Dam.

a, e) **Less-than-Significant Impact.** Exposed slopes and graded contours during construction could be subject to rainfall and erosion and could cause temporary discharges of sediment and other contaminants in stormwater runoff to surrounding areas. Sediment and other pollutants could result in degradation of receiving water quality in the Sacramento River and San Joaquin River and the Delta at levels above applicable water quality standards, which could result in potentially significant impacts. DWR would be implement appropriate erosion control BMPs as described in Section 2.4.9 of the project description, apply for a general construction National Pollutant and Discharge Elimination System permit from the RWQCB, and comply with applicable water quality certification permits pursuant to Section 401 of the Clean Water Act to prevent water quality pollutants such as silt, sediment, hazardous materials, and construction related fluids from entering

receiving waters. Therefore, the proposed project would result in less-than-significant impacts to water quality.

b) **No Impact.** The proposed project would not alter hydrology, pump groundwater, or reduce groundwater recharge such that the groundwater table would be altered. There would be no additional impervious surfaces created as part of the proposed project that would reduce surface area capable of percolation. Therefore, no impact would occur.

c) **Less-than-Significant Impact.** The proposed project would not alter the existing drainage pattern of the tributaries or rivers flows and high water events that are contained by the State Plan of Flood Control levees. Restoration of the flood capacity of the levees would better accommodate high water events. There would be no change to drainage patterns in the project sites that would alter stormwater runoff and flows. As described previously, the proposed project would prevent erosion and siltation through the implementation of BMPs and compliance with applicable permits. By restoring the flood capacity of the State Plan of Flood Control levees, high water events would be more thoroughly contained by the levees and their impacts would be less than significant.

d) **No Impact.** The proposed project activities would not be located in tsunami or seiche hazard zones. The proposed repair sites of the State Plan of Flood Control levees would be located in zones protected from flooding by the State Plan of Flood Control and would not be exposed to flood hazards during the timing of construction activities. Therefore, there would be no impact.

References

Central Valley Regional Water Quality Control Board (CVRWQCB), 2018. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region; The Sacramento River Basin and the San Joaquin River Basin. May 2018.

3.2.11 Land Use and Land Use Planning

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
11. LAND USE AND LAND USE PLANNING — Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

Environmental Setting

The proposed project repair sites are located within Yolo, Sutter, Tehama, Butte, Colusa, Glenn, San Joaquin, and Sacramento counties. Land use character within the vicinity of the proposed project consists primarily of agricultural, grazing, open space, rural residential, urban, and industrial uses. According to the counties general plans, the proposed project sites are designated as primarily agriculture, rural residential, and public or open space. However, the levees are designated as public with some portions of open space.

Discussion

a) **No Impact.** The proposed project would include the repair and rehabilitation of levees. The proposed project would not include the construction of any buildings or other features that would create a new physical barrier between any existing communities, nor would it restrict access to any community. Although some temporary construction-related traffic disturbances affecting road access could occur, alternative routes are anticipated to be readily available and project-related activities would not restrict access to any community. Therefore, the proposed project would not physically divide an established community and no impact would occur.

b) **Less-than-Significant Impact.** Private properties in the vicinity of the proposed project levee repair sites are on land currently designated by the respective counties as agricultural land. Project activities would be limited to the existing levees, laydown areas, and associated infrastructure. Construction activities would be temporary and would not conflict with existing land use designations. There would be no conversion of existing land uses and the proposed project would not result in conflict with local or State regulations.

However, several regional habitat conservation plans including, Butte, Yolo, Yuba-Sutter, and Solano County Conservation Plans, encompass many of the proposed project levee repair sites. However, the proposed project construction activities would be limited to the existing levees, laydown areas, and roads. Although staging and vehicle movement would occur outside of the project repair sites, these activities would be temporary and would not conflict with existing regional habitat conservation plans. Further, as described in the project description conservation measures, disturbance to habitats or special status species would be avoided or replaced according to resource agencies' mitigation ratios

and would be consistent with local conservation plans and mitigation ratios, including those required by various local, State, and federal permits. Therefore, the proposed project would not conflict with any adopted habitat conservation plan, natural community conservation plan or any other approved local, regional, or State habitat conservation plan. Impacts related to habitat conservation plans would be less than significant.

References

California Department of Fish and Wildlife (CDFW), 2017. California Regional Conservation Plans. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline. Accessed October 26, 2018.

Colusa County, 2012. Colusa County General Plan – Land Use Element. Available: https://www.countyofcolusa.org/DocumentCenter/View/2725. Accessed October 26, 2018.

Sacramento County, 2011. General Plan Land Use Diagram. Available: www.per.saccounty.net/Documents/Maps/GPLU_2030_UPDATED_FINAL_120613_sm.pdf. Accessed October 26, 2018.

San Joaquin County, 2017. San Joaquin County – Land Use Element. Available: https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/General%20Plan%202035/Part%203.1a_Land%20Use_2017-03-13.pdf. Accessed October 26, 2018.

Sutter County, 2011. Sutter County General Plan - Land Use and Planning Element. Available: https://www.suttercounty.org/assets/pdf/cs/ps/gp/documents/deir/04.0%20Land%20Use.pdf. Accessed October 26, 2018.

Tehama County, 2009. Tehama County General Plan – Land Use Element. Available: http://www.tehamagp.com/documents/final_general_plan/2.0%20Landuse_032309.pdf. Accessed October 26, 2018.

Yolo County, 2009. Yolo County General Plan Land Use Designations: General Plan 2030. Available: http://www.yolocounty.org/Home/ShowDocument?id=10862. Accessed October 26, 2018.

3.2.12 Mineral Resources

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
12. MINERAL RESOURCES — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

The majority of Tehama County's mineral wealth is derived from the extraction of non-metallic sand, gravel, and volcanic cinder, which are used primarily by local paving and construction industries (Tehama County 2008). Butte County's predominant mining products are aggregate resources and stone (Butte County 2010). Notable mineral resources in Glenn County include natural gas and construction grade aggregate material (Glenn County 1993). Construction aggregate is currently the main market for mining resources produced in Sutter County and consists predominantly of sand, gravel, soil for construction projects, and crushed stone (Sutter County 2010). The primary resources identified in Colusa County include chromium, copper, mercury, sand/gravel, and stone with the majority of the records indicating no known efforts of mineral extraction (Colusa County 2011). A variety of minerals were once mined in Yolo County. The chief minerals presently mined are aggregate and natural gas. A repair site is located in an area known to have natural gas (Yolo County 2009). The primary mineral resource in San Joaquin County are sand and gravel aggregate. Limited extraction of peat, gold, and silver is also known to occur. In San Joaquin County, the proposed project repair sites are located in areas with a potential for aggregate resources (San Joaquin County, 2014). Mineral resources in Sacramento County include sand, gravel, clay, gold, silver, peat, topsoil, lignite, natural gas and petroleum (Sacramento County 2017).

a - b) **No Impact.** As identified in the general plans of the counties where the repair sites are located, there are no active or planned mines in the vicinity, and although some of the repair sites are in areas known to have mineral resources, the repair sites are located at existing levees and adjacent rural agricultural, and a few urban land uses. Therefore, implementation of the proposed project would not result in the loss of availability of a known mineral resource and would not result in the loss of availability of a locally-important mineral resource recovery site.

References

Butte County, 2010. Butte County General Plan Draft Environmental Impact Report. April 8, 2010.

Colusa County, 2011. Public Draft Environmental Impact Report for the 2030 Colusa County General Plan Update. November 2011.

Sacramento County Repair Sites. Repair sites 46, 47, 58, 59, 60 and 77 are located in Sacramento County. As stated in Section 2.3 in the project description, all work would occur during daylight hours with a maximum work day of 6 a.m. to 5 p.m. These hours would be consistent with the restrictions of Sacramento County Code Section 6.68.090 (e) and Policy NO-9 of the County General Plan Noise Element which exempts construction noise from its exterior noise standards provided that it does not occur between the hours of 8:00 p.m. and 6:00 a.m. weekdays. Therefore, proposed construction work for repair sites within Sacramento County would be less than significant with respect to generation of noise levels in excess of standards established in the local general plan or noise ordinance.

Yolo County Repair Sites. Repair sites 42, 48 through 53, 61, 63, 65, and 67 are located within Yolo County. As stated in Section 2.3, all work would occur during daylight hours with a maximum work day of 6 a.m. to 5 p.m. These hours would be consistent with the Yolo County Code and General Plan which have yet to establish construction noise limits or time limits. Therefore, proposed construction work for repair sites within Yolo County would be less than significant with respect to generation of noise levels in excess of standards established in the local general plan or noise ordinance.

Sutter County Repair Site. Repair site 54 is located within Sutter County. As stated in Section 2.3, all work would occur during daylight hours with a maximum work day of 6 a.m. to 5 p.m. These hours would be consistent with the restrictions of Policy N 1.6: Construction Noise, of the Sutter County General Plan. Therefore, proposed construction work for the repair site within Sutter County would be less than significant with respect to generation of noise levels in excess of standards established in the local general plan or noise ordinance.

Colusa County Repair Site. Repair site 44 is located within Colusa County. As stated in Section 2.3, all work would occur during daylight hours with a maximum work day of 6 a.m. to 5 p.m. Work between the 6 a.m. to 7 a.m. hour would not be consistent with the restrictions of Colusa County Code Section 11A-3. Consequently, a mitigation measures is identified to require work at repair site 44 to not commence until 7 a.m. With implementation of this mitigation measure, proposed construction work for the repair site within Colusa County would be less than significant with respect to generation of noise levels in excess of standards established in the local general plan or noise ordinance.

San Joaquin County Repair Sites. Repair sites 55, 62 and 69 through 74 are located within San Joaquin County. As stated in Section 2.3, all work would occur during daylight hours with a maximum work day of 6 a.m. to 5 p.m. These hours would be consistent with the restrictions of San Joaquin County Code Section 9-1025.9 (c)(3) which exempts construction noise from its exterior noise standards provided that it does not occur between the hours of 9 p.m. and 6 a.m. weekdays. Therefore, proposed construction work for repair sites within San Joaquin County would be less than significant with respect to generation of noise levels in excess of standards established in the local general plan or noise ordinance.

Tehama County Repair Site. Repair site 76 is located within Tehama County, which has not established noise level or time limit restrictions to construction activity. Implementation Measure N-2.4b of the County General Plan requires all internal combustion engines that are used in conjunction with construction activities to be muffled according to the equipment manufacturers requirements. Such a requirement is consistent with DWR standard BMP's. Therefore, proposed construction work for the repair sites within Tehama County would be less than significant with respect to generation of noise levels in excess of standards established in the local general plan or noise ordinance.

Butte County Repair Site. Repair site 79 is located within Butte County. As stated in Section 2.3, all work would occur during daylight hours with a maximum work day of 6 a.m. to 5 p.m. Work between the 6 a.m. to 7 a.m. hour would not be consistent with the restrictions of Butte County Code Section 41A-9 (f).

Policy HS-P1.9 of the County General Plan Noise Element requires the specific noise control measures at construction sites. Consequently, a mitigation measure is identified to require work at repair site 79 to include County-specific noise control measures. With implementation of this mitigation measure, proposed construction work for the repair site within Butte County would be less than significant with respect to generation of noise levels in excess of standards established in the local general plan or noise ordinance.

> **Mitigation Measure NOI-1: Work Hour Restriction for Repair Site 44.** To ensure consistency with the restrictions of the Colusa County Code, work hours at repair site 44 shall be restricted to between 7 a.m. and 7 p.m.
>
> **Mitigation Measure NOI-2: Noise control Measures for Repair Site 79.** To ensure consistency with the restrictions of Policy HS-P1.9 of the County General Plan Noise Element, DWR and its contractors shall implement the following construction-related noise control measures at repair site 79:
>
> - Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
> - Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area; and
> - Utilize quiet air compressors and other stationary noise-generating equipment where appropriate technology exists and is feasible.

None of the jurisdictions of the repair sites have established quantitative standards in terms of noise exposure or incremental increases in noise with respect to construction. Simultaneous operations of a crane, a dozer, a loader and an excavator generates a noise level of approximately 76 dBA at 100 feet based on the Roadway Construction Noise Model of the Federal Highway Administration.

Most repair sites are located in rural areas that are generally distant from noise-sensitive land uses such as residences. Specifically repair sites 44, 47, 48, 52, 61, 71 and 79 have a single rural residence approximately 400 feet away as the closest receptor. Repair sites 50, 58, 59 and 63 have a single rural residence approximately 200 feet away as the closest receptor. Repair sites 60, 65 and 67 have a single rural residence approximately 100 feet away as the closest receptor. All other repair sites are distant from sensitive receptors. As such, while construction noise may be audible at the nearest receptors, the temporary nature of the work which would generally be 4 weeks in duration at each site would render temporary noise increases to be less than significant.

Once constructed, the repair sites would require an equal or lesser degree of maintenance as currently exists. Consequently, construction work for the repair sites would be less than significant with respect to creation of substantial permanent increases in noise levels.

b) **Less-than-Significant Impact.** Ground-borne vibration from construction activities at the repair site would produce negligible vibration. The types of construction equipment associated with repair activities include excavators, loaders and trucks. This type of equipment is not identified by Caltrans (2013) or the Federal Transit Administration (FTA 2018) as associated with generation of notable vibration. Additionally, remediation activities would take place 100 feet or more from the nearest residential development which would provide ample separation for attenuation if any vibration were to occur. For example, FTA identifies a reference vibration level of 87 vibration decibels at 25 feet from operations of a large bulldozer. Using vibration attenuation equations, the resultant vibration at 1,000 feet would be 40 vibration decibels. This is a vibration level of 50 to 55 vibration decibels which is considered to be typical background levels. Therefore, vibration associated with proposed remediation activities would be a less than significant impact.

c) **No Impact.** The proposed project would not establish new noise sensitive land uses that could be exposed to noise from local airports. Most repair sites are located in rural areas that are generally distant from commercial or general aviation airports. Therefore, there would be no impact in relation to airports and the project exposing people residing or working in the project area to excessive noise levels.

References

Butte County, 2012. *Butte County General Plan, Health and safety Element*, November 2012.

California Department of Transportation (Caltrans), 2013. *Transportation and Vibration Guidance Manual*, September 2013; p. 37.

Colusa County, 2012. *2030 General Plan, Noise Element*, July 2012.

Glenn County, 2015. *Glenn County General Plan, Public Safety Element*, June 2015.

Sacramento County, 2017. *County of Sacramento General Plan, Noise Element*, December 2017.

San Joaquin County, 2016. *San Joaquin County General Plan Public Health and Safety Element*, December 2016.

Sutter County, 2011. *2030 General Plan, Policy Document*, March 2011.

Tehama County, 2009. *Tehama County General Plan Noise Element*, March 2009.

U.S. Department of Transportation, Federal Transit Administration (FTA), 2018. *Transit Noise and Vibration Impact Assessment*, September 2018.

Yolo County, 2009. *2030 Countywide General Plan Health and Safety Element*, November 2009.

3.2.14 Population and Housing

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
14. POPULATION AND HOUSING — Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting

The nearest cities to the proposed project levee repair sites are the cities of Sacramento, Rio Vista, Chico, Elk Grove, and Stockton, which have populations of: 484,530; 8,055; 89,377; 163,634, and 301,443 residents in 2016, respectively (U.S. Census Bureau 2016). Housing types near the proposed project levee repair sites include rural ranch houses and single family houses.

Discussion

a) **No Impact.** The proposed project would include the repair and rehabilitation of levees. No new homes, businesses, road extensions, or other infrastructure for development are proposed as part of the proposed project. The proposed project would employ existing DWR staff and regionally sourced contractors. Accordingly, the proposed project would not induce population growth in the area and would not affect nearby cities or towns. Therefore, no impact would occur.

b) **No Impact.** Construction for the proposed project would be limited to existing levee infrastructure; however, for landside and certain waterside repairs, staging areas may require construction easements from adjacent landowners. Although the project may be located within easements of these homes, it would not result in displacement or the need for construction of replacement housing elsewhere as the. In addition, it would not displace or increase the number of residents or permanent workers and there would be no impact.

References

United States Census Bureau, 2016. Total Population. Available: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B01003&prodType=table. Accessed November 2, 2018.

3.2.15 Public Services

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less-than-Significant Impact*	*No Impact*
15. PUBLIC SERVICES — Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government 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 following public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Environmental Setting

Fire protection and emergency services are provided by each of the counties within the project area's respective fire districts. All fire stations in the vicinity of the project are adequately staffed to respond to emergency calls in the area and equipped to provide medical aid at the basic life support level.

Each of the counties within the projects area's respective Sheriff's Department has the responsibility for providing law enforcement services to the project area. Additionally, the California Highway Patrol (CHP) provides traffic enforcement on all highways and roadways in the unincorporated area.

Discussion

a.i-v) **No Impact.** The proposed project would not result in the construction of any new facilities or increase of population that would generate a need for new or physically altered public services facilities.

Given the nature of proposed activities, the proposed project is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, there would be no change in the demand for police and fire protection and community amenities such as schools and parks or that which currently exists and no impact would occur.

3.2.16 Recreation

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
16. RECREATION:				
a) Would the project 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?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Environmental Setting

As described in Chapter 2, Project Description, the proposed project occurs along 30 levees located in Yolo, Sutter, Tehama, Butte, Colusa, Glenn, San Joaquin, and Sacramento counties. There are no parks or wildlife refuges within or adjacent to the project area.

Discussion

a, b) **No Impact.** There are no federal, State, regional or other parks within the proposed project area. The proposed project would not result in the construction of any new facilities or population increase; therefore, there would be no increased use of parks or recreational facilities over that which currently occurs. In addition, there would be no recreational facility expansion or construction as a result of the proposed project. Therefore, no impact would occur.