MAXWELL WATER INTERTIE PROJECT

FINDING OF NO SIGNIFICANT IMPACT AND ENVIRONMENTAL ASSESSMENT

PREPARED FOR:

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FINDING OF NO SIGNIFICANT IMPACT

Maxwell Water Intertie Project

Colusa County, California

Rural Development

U.S. Department of Agriculture

Applicant: Sites Project Authority

Prepared by: Richard Brassfield

September 2018

A. INTRODUCTION

The Sites Project Authority (Authority) plans to submit a financing request to the U.S. Department of Agriculture (USDA), Rural Development (RD) to construct the proposed Maxwell Water Intertie Project (proposed Project) in Colusa County, California. USDA is considering this financing request. Prior to taking a federal action (i.e., providing financial assistance), USDA is required to complete an environmental impact analysis in accordance with the National Environmental Policy Act of 1969 (NEPA) (United States Code [U.S.C.] 4231 et seq.), the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and RD's NEPA implementing regulations, Environmental Policies and Procedures (7 CFR Part 1970). After completing an independent analysis of an environmental report prepared by the Authority and its consultant, USDA concurred with its scope and content. In accordance with 7 CFR § 1970.102, USDA adopted the report and issued it as the Agency's Environmental Assessment (EA) for the proposed Project. USDA finds that the EA is consistent with federal regulations and meets the standards for an adequate assessment. The Authority published a newspaper notice, announcing the availability of the EA for public review, in accordance with 7 CFR § 1970.102. In addition, USDA considers the proposed Project an undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA), 16 USC 470(f), and its implementing regulation, "Protection of Historic Properties" (36 CFR Part 800).

B. PURPOSE/NEED AND PROJECT DESCRIPTION

The overall purpose of the proposed Project is to increase the efficiency and reliability of water management in the western Sacramento Valley by adding to or improving existing facilities to facilitate greater flexibility in water conveyance, which would increase the drought resistance of rural communities. Rural development in California has frequently been limited by the availability and reliability of water to support the existing economic engines and the people of rural California. While rural water supplies appear to be plentiful, they are reliant on aging single-purpose water management facilities and winter storm precipitation. Water shortages during droughts and regulatory constraints on the operations of the Tehama-Colusa (TC) Canal and the Glenn Colusa Irrigation District (GCID) Main Canal have decreased the reliability of the water supplies to rural agencies in the Sacramento Valley and affected Central Valley Project deliveries. Some individual Tehama Colusa Canal Authority (TCCA) member districts have independently explored potential conveyance points between the GCID canal system and individual TCCA landowners and/or individual TCCA district facilities. The proposed Project comprehensively addresses this need and facilitates the flexibility of water conveyance to improve the resiliency of participants during dry years.

The Maxwell Water Intertie (MWI) pipeline would connect existing canal systems west of the Sacramento River (the GCID Main Canal and the TC Canal) to achieve this flexibility. The goals of the proposed Project are to:

- Improve the transfer of water between the TC Canal and GCID Canal systems.
- Improve water management facilities and activities for use by some participating water agencies for agriculture as a benefit to rural communities.

The proposed Project would include the following components. These components are described in detail under Section 2.2, Project Description, in the Final EA.

1. A 1,200-acre-foot capacity Terminal Regulating Reservoir (TRR) covering 130 acres with a spillway to the local irrigation ditch system and bottom drain, both of which ultimately connect to Funks Creek.

2. A TRR Pumping Plant with a 900-cfs maximum pumping capacity, a 1-acre electrical switchyard adjacent to the plant, and a 3.5-mile power line.

3. A GCID Main Canal Connection to TRR including a gated inlet control structure, short inlet channel, and concrete canal lining in the GCID Main Canal immediately upstream and downstream of the TRR connection.

4. A 3.5-mile MWI pipeline sized for 900 cubic feet per second (cfs) pumped capacity and 900 cfs gravity flow capacity, private access bridge over the GCID Main Canal for construction access and maintenance of the pipelines, and a 2.7-mile gravel access road that would run most of the length of the MWI pipeline alignment.

System requirements, consistent with the purpose and need, include the ability to convey water in both directions between the TC Canal and the GCID Main Canal and the ability to provide a regulating pool within the facilities operated by the TCCA for GCID use.

USDA has reviewed the purpose and need for the Project and determined that the proposal will meet the present and future needs of the Authority.

C. ALTERNATIVES EVALUATED

1. No Action

   Under the No Action Alternative, USDA would not provide financial assistance to the Authority, and the proposed Project would not be constructed. This alternative would not assist the Authority in providing improved transfer of water between the TC Canal and GCID Canal systems, and would not provide improved water management facilities and activities for agriculture as a benefit to rural communities.

2. Action Alternative (Preferred Alternative)

   Under the Action Alternative, USDA would consider financing the proposed project, and the Authority would construct the Project. The proposed project would include constructing the 3.5-miles MWI pipeline, the 1,200-acre-foot capacity TRR facility, a 3.5-mile power line, and a 2.7-mile gravel access road along the MWI pipeline alignment.

3. Alternatives Eliminated from Further Consideration

   An alternative considered was to provide financial assistance at an amount less than requested by the Authority. Less funding would result in an altered project design that would have less capacity and/or limited ability to convey water between the TCCA and GCID canal systems, which would provide reduced benefits to rural communities and would reduce the Authority's ability to meet the purpose and need of the project. However, the

project impacts to sensitive resources would only be slightly reduced despite the altered project design. Therefore, this alternative was not carried forward.

D. SUMMARY OF ENVIRONMENTAL EFFECTS

The analyses in the EA determined that the proposed Project would have no direct or indirect adverse effect on cultural resources; noise; transportation; human health and safety; public services and utilities; socioeconomics; and environmental justice. The proposed project would not contribute to significant cumulative effects on any of the resources evaluated in the EA. A summary of anticipated effects on the human environment is provided below, including any mitigation measures deemed necessary to reduce an adverse effect to a not adverse level. The Authority is responsible for implementing these measures.

Land Use

Construction of the proposed project would lead to conflicts with local land use and zoning plans. The Authority will work with Colusa County to request modifications or amendments to their general plans and zoning ordinances to ensure consistency with project land uses.

Mitigation Summary:

LU-MM-1: Prior to the start of construction, the Authority will work with Colusa County to request modifications or amendments to their general plans and zoning ordinances to ensure consistency with project land uses.

Geology and Paleontological Resources

Two geologic units underlying the resource study area (RSA) have the potential to contain paleontological resources or have undetermined sensitivity for paleontological resources. If fossils are present in the project area, they could be damaged during ground-disturbing construction activities, such as excavation for foundations for the pumping plants, trenching for the pipeline, and grading for road construction. The Authority would retain a qualified paleontological resource specialist and paleontological monitors prior to construction. The paleontological resource specialist would prepare a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) and conduct paleontological resources awareness training for construction personnel. In addition, site investigations would be performed to identify paleontological resources prior to construction, and employees would be trained to identify and protect paleontological resources if they are found during construction activities. The paleontological resource specialist would ensure that all components of the PRMMP are adequately performed during construction.

Mitigation Summary:

PALEO-MM-1a: At least 90 days prior to the start of construction, the Authority will retain a qualified Paleontological Resource Specialist, in addition to Paleontological Resource Monitors to monitor construction activities.

PALEO-MM-1b: At least 30 days prior to the start of and during construction, the Authority will consult with the Paleontological Resource Specialist. The Authority will provide maps or drawings to the Paleontological Resource Specialist that show the planned construction footprint and the locations of ground disturbances affecting paleontologically sensitive sediment.

PALEO-MM-1c: The Authority will ensure that the Paleontological Resource Specialist prepares a Paleontological Resources Monitoring and Mitigation Plan (PRMMP), which will be approved prior to ground disturbance. The PRMMP will function as the formal guide for paleontological resources monitoring, collecting, and sampling activities, and as the basis for discussion when on-site decisions or changes are proposed.

PALEO-MM-1d: Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the Paleontological Resource Specialist will prepare, and the Authority will conduct, weekly paleontological resources awareness training for project managers, construction supervisors, forepersons, and general workers involved with or who operate ground-disturbing equipment or tools.

PALEO-MM-1e: During construction, the Authority will ensure that the Paleontological Resource Specialist and Paleontological Resource Monitor(s) monitor construction excavations consistent with the PRMMP in areas where potential fossil-bearing materials have been identified, both at reservoir sites and along any constructed linear facilities associated with the proposed action. The Authority and USDA will ensure that the Paleontological Resource Specialist prepares and submits monthly summaries of monitoring and other paleontological resources management activities.

PALEO-MM-1f: The Authority, through the designated Paleontological Resource Specialist, will ensure that all components of the PRMMP are performed during construction.

Air Quality and Climate Variability

The primary emissions generated from construction and operation of the proposed project would include exhaust emissions from construction equipment and vehicles, as well as fugitive dust emissions from site disturbance during construction. Operation of the proposed project is anticipated to generate greenhouse gas emissions, which would represent a small fraction of state, national, and global emissions. Air pollutants would be minimized through implementation of a Fugitive Dust Control Plan and an Exhaust Reduction Plan. The Authority would further reduce emissions through the use of low-emission machinery and exhaust minimization measures. Construction and operation of the proposed project would not exceed any state or federal standards for air quality or conflict with applicable air quality plans, nor is a permit required for this activity.

Mitigation Summary:

AQ-MM-1: The project applicant will develop and implement a Fugitive Dust Control Plan to reduce fugitive dust and particulate matter generated during construction.

AQ-MM-2: The project applicant will develop and implement an Exhaust Reduction Plan to reduce equipment and vehicle exhaust emissions during construction of the proposed action.

Water Resources

Excavation activities during construction of the proposed project have the potential to expose the groundwater table. While standing water would be pumped out of excavated areas, contamination of groundwater could result from construction activities because heavy machinery could be used in wet soils or in adjacent areas where sheet flows could carry contaminants to soils in the groundwater table. In addition, inadvertent spills or leaks of fuels, oils, and solvents could occur from machinery and vehicle use during construction or from maintenance activities and equipment use during operation. Improper handling, storage, or disposal of these materials in the vicinity of excavated areas could cause degradation of groundwater quality. The development and implementation of a storm water pollution prevention plan would reduce, although not eliminate, the risk of contamination of groundwater resources. The Authority or its contractor will develop and implement a Spill Prevention, Control, and Countermeasure Plan (SPCCP) to further minimize the potential for and effects from spills of hazardous, toxic, and petroleum substances during construction and operation activities through establishment of plans for actions to take during accidental spills and releases and the installation and use of containment facilities. Excavation will take place in a 100 year Flood Plain however an engineered No-Rise certificate will be presented to the agency prior to the start of construction. No net loss of flood plain hydric capacity will be allowed by this construction project.

Mitigation Summary:

WR-MM-1: The Authority or its contractor will develop and implement a Spill Prevention, Control, and Countermeasure Plan to minimize the potential for and effects from spills of hazardous, toxic, and petroleum substances during construction and operation activities. The Authority will review and approve the SPCCP before onset of construction activities and routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained.

WR-MM-2: An engineered No-Rise certificated completed to FEMA standards will be prepared and submitted to Rural Development to insure there is not an impact to the 100 year flood plain.

WR-MM-3: Complete delineation of any potential wetlands in the APE will be completed by a qualified wetland expert. No construction in any wetland will be allowed that will result in the permanent loss of wetlands as restricted by the ConAct.

Biological Resources

Wildlife and Special-Status Species

Noise and dust generated during construction could directly affect adult valley elderberry longhorn beetle (VELB) or exposed larvae or eggs within 165 feet of the project footprint. Construction of the proposed action could result in potential disturbance or mortality of California red-legged frog and permanent and temporary removal of California red-legged frog upland habitat. Disturbance or degradation of suitable aquatic habitat for giant gartersnake in or adjacent to the project footprint could occur from fuel or oil leaks or spills during construction activities. Activities could result in direct mortality, injury, or disturbance of nests of giant

gartersnakes. During construction of the proposed project, temporary habitat loss, of which the majority is agriculture, annual grassland and reservoir, and permanent habitat loss, of which the majority is agriculture land, would occur. The effects of the proposed action on special-status wildlife habitat in the RSA are small in size due to the limited surface disturbance associated with the proposed action, and all temporarily affected habitat is expected to either passively reestablish (in the case of annual grassland habitat) or be actively restored (in the case of agriculture land). The Authority would implement practices to avoid or restore special-status wildlife species habitat, and employees would, in general, be trained to identify and avoid sensitive species and habitat prior to construction of these projects.

Vegetation and Special-Status Plants

The changes to vegetation from construction of the proposed action would include temporary removal of approximately 432.0 acres of vegetation and permanent removal of approximately 147.8 acres of vegetation. Construction would cause land disturbance that could increase the risk of the introduction of new invasive plant species or the spread of existing invasive plant populations into uninfected areas. The majority of vegetation removal during construction of the proposed action would occur on agricultural land, which is an area where the natural vegetation has already been removed and has little biological value. However, riparian communities are considered sensitive natural communities by CDFW and, although the riparian vegetation community in the RSA appears to be very sparse, it still provides some of the functions of riparian habitat and would be considered a sensitive natural community. The proposed project would avoid affecting large trees, and staging areas and vehicle travel routes would avoid riparian areas. However, it is still possible that construction activities could result in inadvertent effects on riparian vegetation, and because permanent or temporary effects on riparian vegetation are regulated by USFWS, any direct or indirect effects on riparian vegetation would be considered adverse. Biological resources awareness training would be provided to employees prior to construction. In addition, exclusion fencing would be installed around sensitive biological resources and BMPs would be implemented to reduce the spread or introduction of invasive plant species, which would reduce the risk of the proposed action to spread invasive plant species.

Wetlands

Potential jurisdictional wetlands within and immediately adjacent to the project footprint could be indirectly affected by water runoff, dust, and inadvertent release of pollutants. The proposed action would have no permanent effects on wetlands. Per mitigation measure WR-MM-3 above wetland areas will be delineated prior to construction. No construction is to be allowed inside the delineated areas that will permanently remove wetlands. Thus the proposed project facilities will avoid direct impacts on wetlands entirely. Any indirect effects from the proposed action would be nominal and short-term. There would be no adverse effects from the proposed action on the function and value of non- wetland waters, and the connectivity of non-wetland waters to the distribution system would be restored once construction is complete. The proposed action includes mitigation, as required by law under the CWA, to reduce or avoid indirect effects on wetlands and effects on non-wetland waters. These include the implementation of biological resources awareness training prior to construction, installation of exclusion fencing and avoidance of wetland during construction and operation activities, as well

as the preparation and implementation of a SWPPP to control effects on substrate of non-wetland waters.

Mitigation Summary:

BIO-MM-1: No less than 14 days prior to construction, the Authority will submit a request for USFWS approval of the project biologists. The request will include education and experience related to giant gartersnake, California red-legged frog, and valley elderberry longhorn beetle (VELB).

BIO-MM-2: The Authority Prior to the start of ground-disturbing work (including vegetation clearing, grading, and equipment staging), will retain a USFWS-approved biologist to conduct a mandatory biological resources awareness training for all construction personnel. This training will cover sensitive biological resources. The training will cover the natural history, appearance (using representative photographs), and legal status of species, regulatory protections, penalties for noncompliance, benefits of compliance, as well as the avoidance and minimization measures to be implemented. Participants will be required to sign a form that states they have received and understand the training. The Sites Authority will maintain the record of training and make it available to agencies, upon request. If new construction personnel are added to the proposed action, the contractor will ensure that the new personnel receive the mandatory training before starting work.

BIO-MM-3: Construction vehicles will observe the posted speed limit on hard-surfaced roads and a 10 mile-per-hour speed limit on unpaved roads during travel in the construction area. Construction vehicles and equipment will restrict off-road travel to the designated construction areas. Construction vehicles and equipment left on-site overnight will be thoroughly inspected each day for snakes (both underneath the vehicle and in open cabs) before they are moved. All construction equipment will be maintained to prevent leaks of fuels, lubricants, or other fluids. To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service or refuel vehicles, construction equipment, or motorized tools within 300 feet of potentially suitable California red-legged frog or giant garter snake aquatic habitat.

BIO-MM-4: The Authority will follow Service-approved decontamination protocols prior to any staff, equipment, tools, or vehicles enter Project area waters or moist soils associated with waters.

BIO-MM-5: All food-related trash will be disposed of in closed containers and removed from the construction area daily during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the construction site

BIO-MM-6: No pets or firearms will be allowed in the construction area.

BIO-MM-7: A USFWS-approved biologist will conduct a preconstruction survey for elderberry shrubs, host plant for the beetle, within 50 meters of the construction limits. All elderberry shrubs will be mapped and identified for avoidance with flagging or fencing.

BIO-MM-8: A site assessment and field surveys for the frog will be conducted prior to the start of Project activities using the methods described in USFWS (2015a). Site assessments and field surveys will be conducted by a USFWS-approved biologist.

BIO-MM-9: A Service-approved biologist will conduct surveys for the snake prior to the start of Project activities, following protocols approved by the USFWS. .

BIO-MM-10: All canals and aquatic areas to be dewatered will be surveyed for the snake by the Service-approved biological monitor immediately prior to dewatering. The biological monitor will oversee the dewatering activity until the channel is fully dewatered.

BIO-MM-11: If pumps are required for dewatering, intake screens will be placed on the pump intake to prevent entrainment of snakes.

BIO-MM-12: An USFWS-approved biologist will be present during all ground-disturbing activities and during any activities involving heavy equipment within 200 feet of potentially suitable Giant garter snake habitat and 300 feet of potentially suitable California red-legged frog habitat. The biological monitor shall permit the frog and snake to move out of the Project area on its own. Should a frog or snake need to be moved, a biologist with a 10(a)(1)(A) permit will trap and relocate the individual to the area designated in the relocation plan for the frog.

BIO-MM-13: Should a frog or snake move into the Project area, all personnel including the biological monitor will have the authority to stop construction activities until appropriate corrective measures have been completed or the biological monitor determines that the frog, beetle, or snake will not be harmed. Snakes, beetles, and frogs encountered during construction activities will be allowed to move away on their own.

BIO-MM-14: To avoid entrapment of wildlife, all steep-walled holes or trenches more than one foot deep will be excavated such that one side will have a 3:1 slope (3 feet horizontal:1 foot vertical). Having one side with a 3:1 slope is anticipated to allow most wildlife that enter or fall in to leave on their own. The biological monitor will inspect any holes or trenches prior to filling.

BIO-MM-15: All construction and staging areas for the proposed action will be located at least 50 meters away from elderberry shrubs. Signs will be posted along the fencing for the duration of construction indicating the presence of beetle habitat. The biological monitor will be responsible for ensuring the buffer area fences around elderberry shrubs are maintained throughout construction. The biological monitor also will monitor the condition of shrubs (including the presence of dust). Any elderberry shrubs inside the 50-meter buffer area that become stressed or die will be reported to USFWS. Biological inspection reports will be available to the USFWS. Gravel roadways, staging areas, and other applicable areas will be sprayed with water as needed to minimize dust moving onto elderberry shrubs.

BIO-MM-16: The Construction activities will take place no closer than 200 feet from the banks of snake aquatic habitat (Funks Creek and canals that hold water May 1 through October 1). Heavy equipment will be confined to existing roadways when within 200 feet of snake habitat to minimize habitat disturbance. Potential snake habitat within the Project area will be flagged and designated as Environmentally Sensitive Areas. These areas will be avoided by all construction personnel.

Construction activity within habitat will be conducted between May 1 and October 1.

The Project area will be surveyed for snakes no more than 24 hours prior to the start of construction activities. No exclusionary fencing will be utilized for the snake. A Service-approved biologist will remain on-site during ground-disturbing activities to ensure they do not encroach closer than 200 feet from potentially suitable snake habitat.

BIO-MM-17: A Service-approved biologist will be present when construction activities occur within 300 feet from the banks of Funk Reservoir and 200 feet from the banks of Funks Creek..

BIO-MM-18: The Authority will compensate for any permanent impacts (or temporary impacts that extend beyond one season) to snake habitat using the guidelines established in USFWS 1997. Direct impacts to the frog habitat will be compensated by applying a 3:1 ratio (3 acres created:1 acre lost) for permanent habitat loss.

BIO-MM-19: The Sites Authority must ensure compliance with the Terms and Conditions set forth in the Biological Opinion issued by the US Fish & Wildlife Service dated September 21, 2018.

BIO-MM-20: The Authority will implement the appropriate surveys and restrictions to avoid and minimize effects on nesting special-status and non–special-status migratory birds and raptors

BIO-MM-21: To clearly demarcate the project boundary and protect sensitive natural communities, the Authority or its contractor will install pin flags, flagging, or flagged stanchion fencing around sensitive habitat areas (e.g., riparian, active bird nests, special-status plant species) adjacent to the construction area, including staging and access roads. Before construction, the contractor will work with the USFWS-approved biologist to identify the locations for the flags or flagged stanchion fencing around the areas to be protected.

BIO-MM-22: The Authority will avoid and minimize the spread or introduction of invasive plant species by having a qualified biologist conduct a survey for invasive plant species with a Cal-IPC rating of High or Moderate. Locations where large infestations of these species are identified will be flagged with pin flags for avoidance. If the invasive plant species cannot be avoided, the biologist will determine the best course of action to avoiding spreading the species throughout the RSA. In addition, BMPs will be implemented during construction to avoid and minimize the spread or introduction of invasive plant species such as worker education, minimization of surface disturbance, vehicle use and management, and use of erosion control.

Aesthetics and Visual Resources

Construction of the project would create direct long-term changes to visual resources. Construction and operation of the proposed project would affect sensitive viewers and result in the conversion of existing land uses. The project would also introduce discordant visual elements into the landscape and result in substantial degradation of existing form, line, color, and texture of the visual landscape and substantial degradation of scenic vistas and views from scenic highways. These changes would decrease the visual quality of the landscape and increase the amount of light and glare due to increased rural and suburban development, lighting of facilities and buildings, removal of vegetation, and increased water surfaces. Beneficial visual effects would result where restoration and enhancement activities improve existing visual conditions and increase visual diversity through the reintroduction of habitats lost through the original conversion of natural lands to agriculture. The Authority would ensure built structures

are receded into views and painted in a manner to prevent glare from light colors, and that appropriate lighting would be implemented to reduce nighttime light and glare.

Mitigation Summary:

AV-MM-1: The Authority will paint built structures to recede into view. Built structures such as the pump station building, bridge, switchyard, pump facility, spillway, creek outlet, the TRR inlet and GCID flow control structure, and ancillary project features such as catwalks, safety guardrails, and land-based signage will be designed to allow these features to blend with the surrounding built and natural environments to complement the visual landscape.

AV-MM-2: The Authority will apply minimum lighting standards. All artificial outdoor lighting will be limited to safety and security requirements, designed using Illuminating Engineering Society's design guidelines and in compliance with International Dark- Sky Association approved fixtures. LED lighting will avoid the use of BRWL lamps and use a correlated color temperature that is no higher than 3,000 K. Wherever possible and pragmatic, the lighting designer will select fixtures and lighting control systems that conform to International Dark-Sky Associations Fixture Seal of Approval program. In addition, LED lights will use shielding to ensure nuisance glare and that light spill does not affect sensitive residential viewers.

E. PUBLIC AND AGENCY INVOLVEMENT

A local newspaper advertisement with a public notice, announcing the availability of the EA and participation under Section 106 of the National Historic Preservation Act, was published on August 29 and September 5, 2018, in the Williams Pioneer Review (Colusa County, CA). A public meeting was held on September 5, 2018 with local landowners in Maxwell, CA. A copy of the EA was available for public review, at USDA's Visalia office (3530 West orchard Court, Visalia, California, 93277), USDA's Davis office (430 G Street, Agency 4169, Davis, California, 95616), and at the Authority's office (122 Old Highway 99 West, Maxwell, California, 95955). The 15-day comment period ended on September 13, 2018. USDA received no comments.

F. FINDING OF NO SIGNIFICANT IMPACT

Based on its EA, USDA has concluded that the proposed Project would have no significant effects to any resources. The proposed Project will have no known adverse effects on historic properties listed or eligible for listing on the National Register of Historic Places. In accordance with the July 2018 National Programmatic Agreement (NPA) between Rural Development and the AHCP further cultural studies will be completed. These studies will be initiated once final design is in place. The National Programmatic Agreement will be followed to fully comply with the National Historic Preservation Act. The agency in consultation with US Fish and Wildlife Service (USFWS) has determined that the project is not likely to jeopardize the continued existence of any species. Mitigation measures documented above will be put in place to adequately limit the effect to federally listed species and their designated critical habitat. The proposed Project would not disproportionally affect minority or low-income populations.

In accordance with NEPA, as amended (42 U.S.C. 4321 et seq.), CEQ Regulations (40 CFR 1500-1508), and RD's Environmental Policies and Procedures (7 CFR Part 1970), USDA has determined that the environmental impacts of the proposed Project have been adequately addressed and that no significant impacts to the quality of the human environment would result from

construction and operation of the proposed Project. Any final action by USDA related to the proposed Project will be subject to, and contingent upon, compliance with all relevant federal and state environmental laws and regulations. Because USDA's action will not result in significant impacts to the quality of the human environment, USDA will not prepare an Environmental Impact Statement for its potential federal action associated with the proposed Project.

G. USDA LOAN REVIEW AND RIGHT OF ADMINISTRATIVE REVIEW

This FONSI is not a decision on a loan application and therefore not an approval of the expenditure of federal funds. Issuance of the FONSI and its notices concludes USDA's environmental review process. The ultimate decision on loan approval depends upon conclusion of this environmental review process in addition to financial and engineering reviews. Issuance of the FONSI and publication of notices will allow for these reviews to proceed. The decision to provide financial assistance also is subject to the availability of loan funds for the designated purpose in USDA's budget. There are no provisions to appeal this decision (i.e., issuance of a FONSI). Legal challenges to the FONSI may be filed in Federal District Court under the Administrative Procedures Act.

H. APPROVAL

This Finding of No Significant Impact is effective upon signature.

Dated: 9/24/2018

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PETE YRIBARREN

Community Programs Director

Rural Development

U.S. Department of Agriculture

Contact Person

For additional information on this FONSI and EA, please contact Richard Brassfield by email at Richard.Brassfield@ca.usda.gov, by phone at (559)754-3149, or by mail at the address below.

U.S. Department of Agriculture, Rural Development
3530 W. Orchard Court
Visalia, CA, 93277

MITIGATION MEASURES SUMMARY AND IMPLEMENTATION SCHEDULE
SITES PROJECT AUTHORITY
MAXWELL WATER INTERTIE PROJECT

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
LAND USE			
LU-MM-1: Prior to the start of construction, the Authority will work with Colusa County to request modifications or amendments to their general plans and zoning ordinances to ensure consistency with project land uses.	Pre-construction	Sites Project Authority	
GEOLOGY AND PALEONTOLOGICAL RESOURCES			
PALEO-MM-1a: At least 90 days prior to the start of construction, the Authority and USDA will retain a qualified Paleontological Resource Specialist, in addition to Paleontological Resource Monitors to monitor construction activities.	Pre-construction	Sites Project Authority and USDA	
PALEO-MM-1b: At least 30 days prior to the start of and during construction, the Authority will consult with the Paleontological Resource Specialist. The Authority will provide maps or drawings to the Paleontological Resource Specialist that show the planned construction footprint and the locations of ground disturbances affecting paleontologically sensitive sediment.	Pre-construction and during construction	Sites Project Authority and USDA	
PALEO-MM-1c: The Authority will ensure that the Paleontological Resource Specialist prepares a Paleontological Resources Monitoring and Mitigation Plan (PRMMP), which will be approved prior to ground disturbance. The PRMMP will function as the formal guide for paleontological resources monitoring, collecting, and sampling activities, and as the basis for discussion when on-site decisions or changes are proposed.	Pre-construction	Sites Project Authority and USDA	
PALEO-MM-1d: Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the Paleontological Resource Specialist will prepare, and the Authority will conduct, weekly paleontological resources	Pre-construction and during construction	Sites Project Authority	

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
awareness training for project managers, construction supervisors, forepersons, and general workers involved with or who operate ground-disturbing equipment or tools.			
PALEO-MM-1e: During construction, the Authority will ensure that the Paleontological Resource Specialist and Paleontological Resource Monitor(s) monitor construction excavations consistent with the PRMMP in areas where potential fossil-bearing materials have been identified, both at reservoir sites and along any constructed linear facilities associated with the proposed action. The Authority and USDA will ensure that the Paleontological Resource Specialist prepares and submits monthly summaries of monitoring and other paleontological resources management activities.	During construction	Sites Project Authority and USDA	
PALEO-MM-1f: The Authority through the designated Paleontological Resource Specialist, will ensure that all components of the PRMMP are performed during construction.	During construction	Sites Project Authority and USDA	
AIR QUALITY AND CLIMATE VARIABILITY			
AQ-MM-1: The project applicant will develop and implement a Fugitive Dust Control Plan to reduce fugitive dust and particulate matter generated during construction.	Pre-construction	Sites Project Authority	
AQ-MM-2: The project applicant will develop and implement an Exhaust Reduction Plan to reduce equipment and vehicle exhaust emissions during construction of the proposed action.	Pre-construction	Sites Project Authority	
WATER RESOURCES			
WR-MM-1: The Authority or its contractor will develop and implement a Spill Prevention, Control, and Countermeasure Plan to minimize the potential for and effects from spills of hazardous, toxic, and petroleum substances during construction and operation activities. The Authority will review and approve the SPCCP before onset of construction activities and routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained.	Pre-construction and during construction	Sites Project Authority and Contractor	

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
WR-MM-2: An engineered No-Rise certificated completed to FEMA standards will be prepared prior to any excavation work being done in the 100 year flood plain	Prepared for RD review and approval prior to any excavation work being done in the 100 year flood plain	Sites Project Authority	
WR-MM-3: Complete delineation of any potential wetlands in the APE will be completed by a qualified wetland expert. No construction in any wetland will be allowed that will result in the permanent loss of wetlands as restricted by the ConAct.	All potential Wetlands will be delineated prior to the start of any construction.	Sites Project Authority	
BIOLOGICAL RESOURCES			
BIO-MM-1: No less than 14 days prior to construction, the Authority will submit a request for USFWS approval of the project biologists. The request will include education and experience related to giant gartersnake, California red-legged frog, and valley elderberry longhorn beetle (VELB).	Pre-construction	Sites Project Authority	
BIO-MM-2: Prior to the start of ground-disturbing work (including vegetation clearing, grading, and equipment staging), a USFWS-approved biologist will conduct a mandatory biological resources awareness training for all construction personnel. This training will cover sensitive biological resources. The training will cover the natural history, appearance (using representative photographs), and legal status of species, regulatory protections, penalties for noncompliance, benefits of compliance, as well as the avoidance and minimization measures to be implemented. Participants will be required to sign a form that states they have received and understand the training. The Sites Authority will maintain the record of training and make it available to agencies, upon	Pre-construction	Sites Project Authority and Contractor	

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
request. If new construction personnel are added to the proposed action, the contractor will ensure that the new personnel receive the mandatory training before starting work.			
BIO-MM-3: Construction vehicles will observe the posted speed limit on hard-surfaced roads and a 10 mile-per-hour speed limit on unpaved roads during travel in the construction area. Construction vehicles and equipment will restrict off-road travel to the designated construction areas. Construction vehicles and equipment left on-site overnight will be thoroughly inspected each day for snakes (both underneath the vehicle and in open cabs) before they are moved. All construction equipment will be maintained to prevent leaks of fuels, lubricants, or other fluids. To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service or refuel vehicles, construction equipment, or motorized tools within 300 feet of potentially suitable California red-legged frog or giant garter snake aquatic habitat.	Pre-construction and during construction	Sites Project Authority and Contractor	
BIO-MM-4: The Authority will follow Service-approved decontamination protocols prior to any staff, equipment, tools, or vehicles enter Project area waters or moist soils associated with waters.	Pre-construction and during construction	USDA	
BIO-MM-5: All food-related trash will be disposed of in closed containers and removed from the construction area daily during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the construction site.	Pre-construction and during construction	Sites Project Authority and Contractor	
BIO-MM-6: No pets or firearms will be allowed in the construction area.	Pre-construction and during construction	Sites Project Authority and Contractor	
BIO-MM-7: A USFWS-approved biologist will conduct a preconstruction survey for elderberry shrubs, host plant for the beetle, within 50 meters of the construction limits. All elderberry shrubs will be mapped and identified for avoidance with flagging or fencing.	Pre-construction	Sites Project Authority	

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
BIO-MM-8: A site assessment and field surveys for the frog will be conducted prior to the start of Project activities using the methods described in USFWS (2015a). Site assessments and field surveys will be conducted by a USFWS-approved biologist.	Pre-construction	Sites Project Authority	
BIO-MM-9: A Service-approved biologist will conduct surveys for the snake prior to the start of Project activities, following protocols approved by the USFWS.	Pre-construction	Sites Project Authority	
BIO-MM-10: All canals and aquatic areas to be dewatered will be surveyed for the snake by the Service-approved biological monitor immediately prior to dewatering. The biological monitor will oversee the dewatering activity until the channel is fully dewatered.	Pre-construction and during construction	Sites Project Authority and Contractor	
BIO-MM-11: If pumps are required for dewatering, intake screens will be placed on the pump intake to prevent entrainment of snakes.	During construction	Sites Project Authority and Contractor	
BIO-MM-12: An USFWS-approved biologist will be present during all ground-disturbing activities and during any activities involving heavy equipment within 200 feet of potentially suitable Giant garter snake habitat and 300 feet of potentially suitable California red-legged frog habitat. The biological monitor shall permit the frog and snake to move out of the Project area on its own. Should a frog or snake need to be moved, a biologist with a 10(a)(1)(A) permit will trap and relocate the individual to the area designated in the relocation plan for the frog.	During construction	Sites Project Authority	
BIO-MM-13: Should a frog or snake move into the Project area, all personnel including the biological monitor will have the authority to stop construction activities until appropriate corrective measures have been completed or the biological monitor determines that the frog, beetle, or snake will not be harmed. Snakes, beetles, and frogs encountered during construction activities will be allowed to move away on their own.	During construction	Sites Project Authority and Contractor	

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
BIO-MM-14: To avoid entrapment of wildlife, all steep-walled holes or trenches more than one foot deep will be excavated such that one side will have a 3:1 slope (3 feet horizontal:1 foot vertical). Having one side with a 3:1 slope is anticipated to allow most wildlife that enter or fall in to leave on their own. The biological monitor will inspect any holes or trenches prior to filling.	During construction	Sites Project Authority and Contractor	
BIO-MM-15: All construction and staging areas for the proposed action will be located at least 50 meters away from elderberry shrubs. Signs will be posted along the fencing for the duration of construction indicating the presence of beetle habitat. The biological monitor will be responsible for ensuring the buffer area fences around elderberry shrubs are maintained throughout construction. The biological monitor also will monitor the condition of shrubs (including the presence of dust). Any elderberry shrubs inside the 50-meter buffer area that become stressed or die will be reported to USFWS. Biological inspection reports will be available to the USFWS. Gravel roadways, staging areas, and other applicable areas will be sprayed with water as needed to minimize dust moving onto elderberry shrubs.	Pre-construction and during construction	Sites Project Authority and Contractor	
BIO-MM-16: Construction activities will take place no closer than 200 feet from the banks of snake aquatic habitat (Funks Creek and canals that hold water May 1 through October 1). Heavy equipment will be confined to existing roadways when within 200 feet of snake habitat to minimize habitat disturbance. Potential snake habitat within the Project area will be flagged and designated as Environmentally Sensitive Areas. These areas will be avoided by all construction personnel. Construction activity within habitat will be conducted between May 1 and October 1.	During construction During construction Pre-construction	Sites Project Authority and Contractor	

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
The Project area will be surveyed for snakes no more than 24 hours prior to the start of construction activities. No exclusionary fencing will be utilized for the snake. A Service-approved biologist will remain on-site during ground-disturbing activities to ensure they do not encroach closer than 200 feet from potentially suitable snake habitat.	During construction		
BIO-MM-17: A Service-approved biologist will be present when construction activities occur within 300 feet from the banks of Funk Reservoir and 200 feet from the banks of Funks Creek.	During construction	Sites Project Authority and Contractor	
BIO-MM-18: The Authority will compensate for any permanent impacts (or temporary impacts that extend beyond one season) to snake habitat using the guidelines established in USFWS 1997. Direct impacts to the frog habitat will be compensated by applying a 3:1 ratio (3 acres created: 1 acre lost) for permanent habitat loss.	Post-construction	Sites Project Authority and USDA	
BIO-MM-19: The Sites Authority must ensure compliance with the Terms and Conditions set forth in the Biological Opinion issued by the US Fish & Wildlife Service dated September 21, 2018	Pre-construction, during construction and post-construction	Sites Project Authority and USDA	
BIO-MM-20: The Authority will implement the appropriate surveys and restrictions to avoid and minimize effects on nesting special-status and non–special-status migratory birds and raptors.	Pre-construction	Sites Project Authority	
BIO-MM-21: To clearly demarcate the project boundary and protect sensitive natural communities, the Authority or its contractor will install pin flags, flagging, or flagged stanchion fencing around sensitive habitat areas (e.g., riparian, active bird nests, special-status plant species) adjacent to the construction area, including staging and access roads. Before construction, the contractor will work with the USFWS-approved biologist to identify the locations for the flags or flagged stanchion fencing around the areas to be protected.	Pre-construction	Sites Project Authority and Contractor	

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
BIO-MM-22: The Authority will avoid and minimize the spread or introduction of invasive plant species by having a qualified biologist conduct a survey for invasive plant species with a Cal-IPC rating of High or Moderate. Locations where large infestations of these species are identified will be flagged with pin flags for avoidance. If the invasive plant species cannot be avoided, the biologist will determine the best course of action to avoiding spreading the species throughout the RSA. In addition, BMPs will be implemented during construction to avoid and minimize the spread or introduction of invasive plant species such as worker education, minimization of surface disturbance, vehicle use and management, and use of erosion control.	Pre-construction and during construction	Sites Project Authority and Contractor	
CULTURAL RESOURCES			
CR-MM-01: The NHPA section 106 process will need to be fully concluded prior to ground disturbing action. The agency invoked the National Programmatic Agreement (NPA) on this project. All terms and conditions of the July 2018 NPA must be complied with prior to construction. The Authority signed the NPA Awareness Certificate on 8/17/2018.	Prior to ground disturbance.	Sites Project Authority	
AESTHETICS AND VISUAL RESOURCES			
AV-MM-1: The Authority will paint built structures to recede into view. Built structures such as the pump station building, bridge, switchyard, pump facility, spillway, creek outlet, the TRR inlet and GCID flow control structure, and ancillary project features such as catwalks, safety guardrails, and land-based signage will be designed to allow these features to blend with the surrounding built and natural environments to complement the visual landscape.	Pre-construction, during construction	Sites Project Authority	
AV-MM-2: The Authority will apply minimum lighting standards. All artificial outdoor lighting will be limited to safety and security requirements, designed using Illuminating Engineering Society's design guidelines and in compliance with International Dark- Sky Association approved fixtures. LED lighting will avoid the use of BRWL lamps and use a correlated	Pre-construction, during construction	Sites Project Authority	

Mitigation Measure	Timing	Monitoring Agency(s)	Verification (Date & Initial)[c]
color temperature that is no higher than 3,000 K. Wherever possible and pragmatic, the lighting designer will select fixtures and lighting control systems that conform to International Dark-Sky Associations Fixture Seal of Approval program. In addition, LED lights will use shielding to ensure nuisance glare and that light spill does not affect sensitive residential viewers.			

~~DRAFT~~ FINAL

ENVIRONMENTAL ASSESSMENT FOR THE MAXWELL WATER INTERTIE PROJECT

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~~August~~ September 2018

ICF. 2018. *Environmental Assessment for the Maxwell Water Intertie Project*. ~~Draft~~ Final. ~~August~~September. Sacramento, CA. Prepared for U.S. Department of Agriculture.

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Acronyms and Abbreviations

ADT	annual average daily traffic
APE	area of potential effects
API	American Petroleum Institute
Authority	Sites Project Authority or Sites Joint Powers Authority
AVE	area of visual effect
Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin River Basins
BEA	U.S. Bureau of Economic Analysis
bgs	below ground surface
BLM	Bureau of Land Management
BMP	best management practice
BRWL	blue-rich white light
CAAQS	California ambient air quality standards
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBD	Colusa Basin Drain
CBSC	California Building Standards Code
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DOC	California Department of Conservation
DOF	California Department of Finance
DOGGR	Department of Conservation, Division of Oil, Gas, and Geothermal Resources
DPM	diesel particulate matter

DPR	California Department of Parks and Recreation
DWR	California Department of Water Resources
EA	environmental assessment
EDD	California Employment Development Department
EFH	essential fish habitat
EMF	electromagnetic fields
EMI	electromagnetic interference
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	environmental site assessment
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FR	*Federal Register*
FTA	Federal Transit Administration
GCID	Glenn-Colusa Irrigation District
GHG	greenhouse gas
GIS	geographic information system
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
GWE	groundwater elevation
I-	Interstate
in/sec	inches per second
kV	kilovolt
L_{dn}	day-night sound level
LED	light-emitting diode
L_{eq}	equivalent sound level
LESA	Land Evaluation and Site Assessment
L_{max}	maximum sound level
LOS	level of service
MBTA	Migratory Bird Treaty Act
mg/L	milligrams per liter
MID	Maxwell Irrigation District
MRDS	Mineral Resources Data System
MS4	Municipal Separate Storm Sewer System
msl	mean sea level
MWI	Maxwell Water Intertie
NAAQS	national ambient air quality standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	naturally occurring asbestos
NPA	Nationwide Programmatic Agreement

NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PA	Programmatic Agreement
PFMC	Pacific Fisheries Management Council
PG&E	Pacific Gas and Electric Company
PPV	peak particle velocity
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
proposed project	Maxwell Water Intertie Project
RECDS	Rural Economic and Community Development Services
RSA	resource study area
RTP	Regional Transportation Plan
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Officer
SPCCP	spill prevention, control, and countermeasure plan
SR	State Route
SVAB	Sacramento Valley Air Basin
SVP	Society of Vertebrate Paleontology
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TC Canal	Tehama-Colusa Canal
TCCA	Tehama-Colusa Canal Authority
TCP	traditional cultural property
TDS	total dissolved solids
TRR	Terminal Regulating Reservoir
UCMP	University of California Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture, Rural Development
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	valley elderberry longhorn beetle
WAPA	Western Area Power Administration
WDR	waste discharge requirement

Chapter 1
Purpose and Need

1.1 Introduction

The Sites Project Authority (Authority or applicant) is proposing to apply to the U.S. Department of Agriculture, Rural Development (USDA) for a loan to assist in the financing of the Maxwell Water Intertie Project (proposed project). Following completion and approval of additional analyses to refine the size of the project, additional details of the financing and participation and any other details (including an analysis compliant with the California Environmental Quality Act (CEQA) and permit applications) the Authority would construct, own, and operate a water intertie between two regional canal systems.

The Authority, also known as the Sites Joint Powers Authority, was formed in 2010 as a result of the November 2009 enactment of the Safe, Clean, and Reliable Drinking Water Supply Act of 2010. This law permits the formation of joint powers authorities by local governments, irrigation and water districts, and agencies for the design and construction of water infrastructure facilities, water supply improvements, ecosystem restoration, and other water-related projects. The Authority's members, as of August 2018, include the City of Roseville, the City of Sacramento, Colusa County, Colusa County Water District, Glenn-Colusa Irrigation District (GCID), Glenn County, Maxwell Irrigation District (MID), Orland-Artois Water District, Placer County Water Agency, Proberta Water District, Reclamation District 108, Sacramento County, Tehama-Colusa Canal Authority (TCCA), Western Canal Water District, and Westside Water District.

1.2 Project Location and Existing Conveyance

The proposed project would be located in unincorporated Colusa County, California, approximately 4.5 miles northwest of the town of Maxwell. A map of the proposed project facilities is provided in Figure 1-1. Funks Reservoir, located at the western end of the project area, is in an area surrounded by land classified as "agricultural upland" (Colusa County 2012). The remainder of the project area is classified as "agricultural general".

Water supply for the west side of the Sacramento River Valley is currently provided by two major, existing canal systems. The GCID owns and operates the Glenn-Colusa Main Canal (GCID Main Canal). To the west, the Tehama-Colusa Canal (TC Canal) is owned by the U.S. Bureau of Reclamation (USBR) and operated by the TCCA.

Much of the GCID system was constructed in the early 1900s, and today it is the largest irrigation district in the Sacramento Valley. The GCID has a service area of approximately 175,000 acres, of which approximately 140,000 acres are farmed. It extends from northeastern Glenn County near Hamilton City to south of Williams in Colusa County (GCID 2017) and also conveys water to three National Wildlife Refuges (Sacramento, Delevan, and Colusa). The western portion of the GCID service area is adjacent to several TCCA member districts. GCID facilities include a 3,000 cubic feet per second (cfs) pumping plant and fish screen structure, a 65-mile Main Canal, and nearly 1,000 miles of laterals and drains. Rice is the predominant crop throughout GCID, representing in typical

years more than 75 percent of the irrigated acreage. Other crops include sunflowers, prunes, almonds, and walnuts.

The TCCA provides irrigation water to 17 member districts from the TC and Corning Canals with a service area of approximately 150,000 acres (TCCA 2018). The TC Canal is approximately 110 miles long, stretching from the Red Bluff to approximately 2 miles south of Dunnigan. The canal crosses Tehama, Glenn, and Colusa Counties, and ends in Yolo County. The diverted water is primarily used for agriculture, with a small portion used for nonagricultural purposes. Principal crops include almonds, olives, rice, corn, wheat, alfalfa, irrigated pasture, vine seeds, beans, sugar beets, tomatoes, grapes, and orchards. The water supplied by the TCCA supports the production of over $250 million in crops per year and contributes $1 billion to the regional economy annually (TCCA 2018).

The TCCA service area has frequently experienced water shortages due to Central Valley Project (CVP) allocations. These shortages could be diminished if water supply and excess capacity made available by GCID could be conveyed into the TC Canal through an intertie. GCID could benefit from regulatory storage within the TC Canal system. Funks Reservoir and storage within the TC Canal provide a significantly larger volume of storage (approximately 2,500 acre-feet) than is available in the GCID Main Canal. Making this storage available through an intertie system would improve the transfer of water between the TC Canal and the GCID Main Canal.

1.3 Purpose and Need

USDA, Rural Development (herein referred to as "USDA") is a mission area that includes three federal agencies—Rural Business-Cooperative Service, Rural Housing Service, and Rural Utilities Service. The agencies have in excess of 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities with a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants to accomplish program objectives.

The Authority is seeking direct loans through the USDA's Rural Development program to construct and implement the proposed project. USDA providing discretionary approval of federal financial assistance for the proposed project triggers the requirement for USDA to comply with the National Environmental Policy Act (NEPA). This environmental assessment (EA) has been prepared to fully assess the effects of the granting of such loans including the constructing and operating the proposed project, as required under NEPA.

Rural development in California has frequently been limited by the availability and reliability of water to support the existing economic engines and the people of rural California. While rural water supplies appear to be plentiful, they are reliant on aging single-purpose water management facilities and winter storm precipitation. Water shortages during droughts and regulatory constraints on the operations of the TC Canal and the GCID Main Canal have decreased the reliability of the water supplies to rural agencies in the Sacramento Valley and affected CVP deliveries. Some individual TCCA member districts have independently explored potential conveyance points between the GCID system and individual TCCA landowners and/or individual TCCA district facilities. The proposed project comprehensively addresses this need and facilitates the flexibility of water conveyance to improve the resiliency of project participants during dry years.

Legend

Project Impacts

- Terminal Regulating Reservoir (TRR)
- TRR Pumping Plant
- TRR Switchyard
- GCID Main Canal Connection to TRR
- MWI Pipeline Connection
- Transmission Line Work Area
- New Bridge
- Soil Stockpile
- Work Area
- Access Road

N

0 0.25 0.5 Miles

1:24,000

Noel Evan Rd

Delevan Rd

Tehama Colusa Canal

Glenn-Colusa Canal

Mcdermott Rd

To Maxwell Sites Rd

Funks Reservoir

Funks Creek

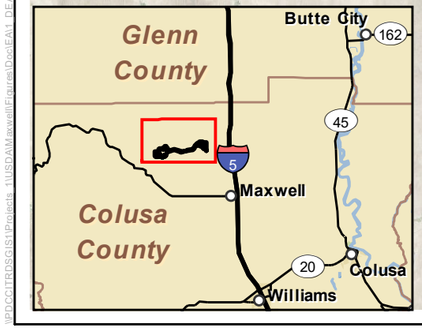


Figure 1-1
Maxwell Water Intertie Project Overview

The proposed project would increase the efficiency and reliability of water management in the western Sacramento Valley by adding to or improving existing facilities to facilitate greater flexibility in water conveyance, which would increase the drought resistance of rural communities. The Maxwell Water Intertie (MWI) pipeline would connect existing canal systems west of the Sacramento River (the GCID Main Canal and the TC Canal) to achieve this flexibility. The goals of the MWI project are to:

1. Improve the transfer of water between the TC Canal and GCID Canal systems
2. Improve water management facilities and activities for use by some participating water agencies for agriculture as a benefit to rural communities.

System requirements, consistent with the purpose and need, include the ability to convey water in both directions between the TC Canal and the GCID Main Canal and the ability to provide a regulating pool within the facilities operated by the TCCA for GCID use.

Chapter 2
Project Description

2.1 Project Alternatives

This chapter describes the alternatives considered but eliminated from further analysis, the No Action Alternative, and the proposed action, which was developed to achieve the project's purpose and need. Chapter 3, *Methods, Affected Environment, and Environmental Consequences*, of this EA includes an in-depth analysis of the effects of the proposed action and the No Action Alternative.

2.1.1 Alternatives Considered but Eliminated

An alternative considered by the USDA was to provide financial assistance at an amount less than requested by the Authority. Less funding would result in an altered project design that would have less capacity and/or limited ability to convey water between the TCCA and GCID canal systems, which would provide reduced benefits to rural communities and would reduce the Authority's ability to meet the purpose and need of the project. However, the project impacts to sensitive resources would only be slightly reduced despite the altered project design. Therefore, this alternative was not carried forward.

2.1.2 No Action Alternative

NEPA requires the evaluation of a "No Project" alternative to determine comparative impacts. The No Action Alternative would consist of continuation of limited water supply reliability conditions, as described in Chapter 1, *Purpose and Need*, and assumes that the USDA would not provide financial assistance for construction of the proposed action. Because of uncertainties in local, state, and federal funding, it is not reasonable to predict future construction of the proposed action. Implementation of the No Action Alternative would not meet the Authority's purpose and need of improving the transfer of water between the TCCA and GCID canal systems, and improving water management facilities as a benefit to rural communities, as there would be no conveyance to connect the two canal systems. Furthermore, the TCCA would continue to experience water shortages due to decreased CVP water supply allocations, which could affect agricultural production and therefore reduce economic output in rural communities on the west side of the Sacramento Valley.

2.1.3 Proposed Action

The proposed action (the granting of a loan from the USDA to assist in the financing of the Maxwell Water Intertie Project) would have no direct physical effects as defined within NEPA or USDA regulations. However, after the completion of additional analyses and the approval of the project by the Authority, the project would include the following components. These components are described in detail under Section 2.2, *Project Description*.

1. A 1,200-acre-foot capacity Terminal Regulating Reservoir (TRR) covering 130 acres with a spillway to the local irrigation ditch system and bottom drain, both of which ultimately connect to Funks Creek.

2. A TRR Pumping Plant with a 900-cfs maximum pumping capacity, a 1-acre Electrical Switchyard adjacent to the plant, and a 3.5-mile power line.
3. A GCID Main Canal Connection to TRR including a gated inlet control structure, short inlet channel, and concrete canal lining in the GCID Main Canal immediately upstream and downstream of the TRR connection.
4. A 3.5-mile MWI pipeline sized for 900 cfs pumped capacity and 900 cfs gravity flow capacity, private access bridge over the GCID Main Canal for construction access and maintenance of the pipelines, and a 2.7-mile gravel access road that would run most of the length of the MWI pipeline alignment.

2.2 Project Description

2.2.1 Overview

The proposed project is comprised of a set of new project features or facilities that would allow for the efficient bi-directional exchange of water from two existing, large water management systems in the western portion of the Sacramento Valley of California. For the purposes of the NEPA analysis, the terms *proposed project* and *proposed action* are used synonymously and interchangeably in discussing the potential effects.

2.2.2 Site Access

The project area would be accessed by taking Delevan Road west from Interstate (I-) 5, then going south on McDermott Road, which runs along the eastern edge of the proposed TRR Complex. A gravel access road from McDermott Road would be constructed prior to excavation activities for the TRR Complex and MWI pipeline to provide access for construction personnel and equipment. This access road would become part of the permanent access road to the TRR, TRR Pumping Plant, and the MWI pipeline maintenance road. There are no public access roads between the proposed TRR Complex and Funks Reservoir. The proposed action is not expected to cause road closures during construction, although there could be traffic hold times when large equipment is accessing the project area, and temporary lane closures during power line installation along McDermott Road, Dirks Road, and Noel Evan Road.

There is limited access to the pipeline corridor from public roads. In addition, the GCID Main Canal presents a barrier to accessing the pipeline corridor. There are no suitable existing bridges or public roads convenient to the project area that can be used during construction or for maintenance access. For this reason, a new bridge would be included to span the GCID Main Canal within the pipeline corridor in the vicinity of the northwest corner of the TRR. This bridge would be private and would connect by gravel road to the TRR access road from McDermott Road and to the pipeline corridor road west of the GCID Main Canal. The bridge would minimize construction effects on local farming operations and farm roads, and would not require fill in the GCID Main Canal. It would be used during construction to access the pipeline corridor west of the GCID Main Canal to import pipe and construct the pipeline. After construction is completed, it would provide access to the pipeline corridor for inspection and maintenance.

2.2.3 GCID Terminal Regulating Reservoir Complex

The GCID TRR Complex includes the project features that are geographically or functionally associated with the TRR. This complex would include the TRR, including the inundation area and the berm that would form the reservoir; the TRR Pumping Plant; the GCID Main Canal connection to the TRR; a private bridge across the GCID Main Canal to provide access from the TRR to the MWI pipeline corridor; and the MWI pipeline and pipeline maintenance gravel access road.

2.2.3.1 TRR, TRR Pumping Plant, and GCID Main Canal Connection

Water conveyed down the GCID Main Canal would be directed into the proposed TRR (Figure 1-1) via a proposed inlet. A new pump station (the proposed TRR Pumping Plant) would then convey the water from the TRR via the proposed MWI pipeline to Funks Reservoir. The TRR adds regulating capability to the GCID Main Canal that does not currently exist and would significantly improve the reliability of water operations in the canal system. The TRR would also serve as the forebay for the TRR Pumping Plant, which is a key component of the project. The TRR would be required to provide operational regulation to balance normal and emergency flow variations between the upstream GCID Main Canal Pump Station, the 40 miles of connecting canal, and the TRR Pumping Plant.

The TRR would be located along McDermott Road approximately 3 miles northeast of Funks Reservoir, adjacent to the GCID Main Canal. It would be constructed using a combination of below-grade excavation and a perimeter earthen berm constructed above existing grade. The TRR would be composed of the perimeter earthen berm, concrete emergency overflow spillway, and an irrigation release outfall standpipe leading to an existing irrigation ditch adjacent to TRR along McDermott Road. A drain pipe would also be constructed to Funks Creek to allow the reservoir to be drained for operation and maintenance and for emergency purposes. The irrigation ditch would be lined with concrete to stabilize the slopes, and the existing pipe connecting the ditch to Funks Creek would be upgraded and adapted to the operation of the TRR. A gravel access road up to 20-feet wide would be constructed on top of the TRR berm to provide access around the TRR perimeter for operation and maintenance.

A private bridge would be constructed across the GCID Main Canal to provide access from the TRR to the MWI Pipeline corridor for operation and maintenance. The new bridge would be a single-span bridge made of precast beams that is approximately 140 feet long and 24 feet wide. On the east side of the road the bridge would tie into the crown of the TRR berm road within the pipeline footprint. On the west side, the bridge would be built just above the crown road and a ramp down from the bridge would be built. Culverts would be installed at the drainage ditches on the landside toes of the GCID Main Canal berms to maintain hydrology.

The embankment materials would be earthen material from the reservoir excavation compacted to California Division of Safety of Dams specifications. The reservoir would be lined with a polyethylene liner (or equivalent material) on sand bedding to limit the potential for seepage to adjacent agricultural lands. A seepage collection system tied to the sand bedding would also be installed under the liner to protect the integrity of the liner when the reservoir is dewatered for inspection and maintenance. Perimeter monitoring wells would also be installed to ensure that the liner is intact and not allowing seepage.

The TRR would be approximately 15 feet deep, with a maximum water depth of 12 feet, leaving 3 feet of freeboard. The maximum excavation depth of the TRR would be approximately 9 feet, and the maximum berm height would be approximately 6 feet above existing grade. The total capacity of the

TRR would be divided into three operational components: (1) 2 feet of dead storage beneath the lower operating limit of the pump station; (2) 5 feet of normal operational storage for the canal; and (3) 5 feet of pump station operational storage below the canal operational storage zone. The maximum water surface elevation in the TRR could not exceed the water surface elevation in the GCID Main Canal because the inlet into the TRR is a gravity flow system. The plan area of the TRR would be approximately 130 acres (including the reservoir and embankments), and the reservoir would have a maximum capacity of 1,200 acre-feet.

The TRR Pumping Plant would be located on the north side of the TRR where the proposed MWI pipeline would enter the new reservoir (Figure 1-1). The TRR Pumping Plant would be capable of pumping up to 900 cfs into the MWI pipeline to Funks Reservoir. The plant would also be capable of returning up to 900 cfs from Funks Reservoir back to TRR by gravity. Return flow would be regulated and controlled using energy dissipation valves in the structure connected to the MWI pipeline. The proposed electrical switchyard for the pumping plant would also be located on the north side of the TRR, east of where the MWI pipeline would enter the TRR, and would occupy approximately 1 acre. Included within the switchyard footprint is an approximately 40-foot by 60-foot electrical control building. The building would house electrical power and control equipment needed to operate the pumping plant, supervisory control and data acquisition equipment for remote plant operation, and office and storage areas for spare parts and tools. In addition, surge control tanks and compressors to protect the MWI pipeline, a gravel parking area, and lighting for security would be constructed. The pumping plant and electrical switchyard would be constructed to be protected from 100-year rain event flood flows or with a base elevation above the 100-year flood elevation.

A temporary concrete batch plant would be set up in close proximity to the pumping plant, which would also serve the concrete needs for the MWI pipeline and inlet/outlet structure at Funks Reservoir.

An existing Pacific Gas and Electric Company (PG&E) power line would be upgraded to 69 kilovolt (kV) to provide power to the TRR Pumping Plant. The power line would tie directly into a new substation that would be located adjacent to an existing 230-kV PG&E transmission line just west of the GCID Main Canal where it intersects with Noel Evan Road. The power line would follow the existing power lines from the substation east on Noel Evan Road and Dirks Road to McDermott Road, and south on McDermott Road to the access road to the TRR. The power line would terminate at the TRR Pumping Plant switchyard. The substation would include transformers and other equipment as required by PG&E to provide the 69-kV connection. Existing power poles would be replaced wherever required to allow over-under placement of power lines; existing lines be placed below new 69-kV line that would be at the top of the poles.

Major connection features between the GCID Main Canal and TRR would include a short connecting channel from the GCID Main Canal to the TRR, and a gated flow control structure at the head end of the connecting channel.

A gravel road would provide access to the TRR Pumping Plant from McDermott Road. Parking for construction personnel and staging areas for equipment would be within the defined working limits for the pumping plant and the TRR. This access road would continue west from the vicinity of the TRR Pumping Plant on the crown of the TRR dike and would connect to the bridge over the GCID Main Canal, providing construction access to the MWI pipeline corridor and post construction access to the pipeline maintenance road. The GCID Main Canal would also be lined with concrete

approximately 100 feet upstream and downstream of the centerline of the inlet to the TRR to provide scour protection, as the GCID Main Canal is unlined.

Construction

The total construction disturbance area would be approximately 150 acres. The proposed TRR site is currently in agricultural production (rice crops, annual row crops, and orchards). The total construction disturbance area would include the footprint of the facilities, the materials and equipment staging area, the temporary construction area needed to accommodate construction of the facilities, and access roads. The construction disturbance area would be kept to the minimum needed for construction to minimize effects on high-value agricultural lands and other sensitive environmental resources, such as riparian vegetation and irrigation ditches.

Anticipated major construction activities for the GCID TRR complex include:

- Staking work limits and providing ~~orange exclusionary fencing~~flagged stanchion fencing along the working limits
- Installing silt fencing wherever required
- Clearing and grading the construction workspace within defined work limits
- Stockpiling topsoil
- Placing necessary construction materials at staging areas
- Transporting materials and equipment to the project area
- Excavation for the TRR Pumping Plant and construction of the plant
- Excavation and berm construction for the reservoir and connection channel
- Reservoir lining
- Trenching/excavation along the pipeline route
- Dewatering for all excavations
- Performing bedding preparation
- Receiving pipe deliveries
- Installing pipe and valves, and air/vac valve facilities
- Installing concrete lining at the GCID Main Canal inlet to the TRR
- Addressing crossings of roads and utilities
- Backfilling and compacting trench
- Replacing topsoil
- Revegetating and restoring pipeline route, the earthen berm around the TRR, and other disturbed areas
- Constructing ancillary features associated with the TRR and Pumping Plant
- Constructing a gravel maintenance road
- Constructing a private single-span bridge

- Upgrading an existing power line to 69 kV

Operation

In coordination with GCID Main Canal operations and when needed to facilitate water exchanges, water would be diverted into the proposed TRR by gravity from the GCID Main Canal. Flow into the TRR would be controlled by the TRR inlet control gates. GCID has a supervisory control and data acquisition system in place for controlling and coordinating operation of the upstream GCID Main Pump Station and the GCID Main Canal, and the proposed TRR, TRR Pumping Plant, and Funks Reservoir would be connected to this system. Flow to Funks Reservoir and the water surface in the TRR would be regulated by the TRR Pumping Plant and the TRR inlet control gates. TRR pump operators would need continuous communication with GCID Main Canal and Pump Station operators to coordinate water allocations for GCID irrigation demands and TCCA deliveries. TRR operation would be controlled remotely and would not require daily on-site personnel. Should flow mismatches into or out of the reservoir occur for any reason, the TRR is equipped with an emergency spillway to pass flows safely out of the reservoir to the adjacent irrigation channel to avoid overtopping. Automatic level monitoring equipment would be provided in the reservoir that would alarm if the spillway becomes active so that corrective measures can be quickly taken for public safety. The alarm system would include the capability to shut down pumping or return flow operations should the reservoir level rise above a preset level over the spillway weir. Release flows from the spillway would be controlled by a downstream energy dissipater.

Maintenance

Typical maintenance of the proposed TRR would include clearing vegetation from the slopes of the embankments, and maintaining the gravel service road atop the embankment. Clearance of vegetation will be done through mechanical means when vegetative growth obscures observation of the landside toe for seepage and will be conducted during the active season for giant gartersnake (May 1 through October 31). Draining the TRR for maintenance would be accomplished by a standpipe and drain structure at the invert of the reservoir. Drained water would be conveyed to Funks Creek. Annual maintenance is expected to require up to four personnel at the pump station for a 2 to 4 week planned outage period. Draining of the TRR would likely be required every 7 to 10 years for inspection of the liner. All of the water sources connected to the TRR are clean water sources and sediment accumulation in the reservoir is not expected. When draining of the reservoir is needed, a large portion of the stored water can be transferred to the TC Canal and Funks Reservoir by the TRR Pumping Plant to minimize loss of water from the system.

2.2.3.2 Maxwell Intertie Pipeline and Pipeline Road

Once constructed, the proposed 3.5-mile-long MWI pipeline would convey water between the proposed TRR on the GCID system to the existing Funks Reservoir on the TC Canal system (Figure 1-1). The MWI pipeline would be bi-directional, allowing water to be pumped from the TRR to Funks Reservoir for reregulation and allowing water to flow by gravity from Funks Reservoir to the TRR for release to the GCID Main Canal and Funks Creek.

The proposed MWI pipeline would convey up to 900 cfs of water pumped from the TRR to Funks Reservoir. The capacity of the MWI pipeline to convey water by gravity flow from Funks Reservoir to the TRR would also be up to 900 cfs. The MWI pipeline would consist of a single 12-foot-diameter reinforced concrete steel cylinder pipe to convey the pumping flow. It would be buried a minimum

of 10 feet (to top of pipe) below the ground surface. Facilities associated with the MWI pipeline would include blow-off and air/vac valve structures. It is likely that dewatering of the pipe excavation would be needed during construction.

The proposed alignment of the MWI pipeline would cross beneath the existing GCID Main Canal, Funks Creek, and a primary PG&E natural gas transmission line. At these locations, a bore-and-jack construction method would be used. Bore-and-jack construction would entail excavating jacking and receiving pits on each side of the existing infrastructure (gas transmission line, canal, or Funks Creek) and then jacking a carrier pipe between the two pits horizontally under the structure. The MWI pipeline would be then installed in the carrier pipe and the annular space between the two pipes would be grouted. This construction method would require that the area be dewatered. All additional work required for bore-and-jack construction would be conducted within the construction disturbance area and would not require the disturbance of additional land. A bridge would be constructed over the GCID Main Canal north of the pipeline crossing in order to provide access to the pipeline, and the bridge would be maintained by the Authority. Bore-and-jack construction would also be required to place the pipeline below Funks Creek near the western end of the pipeline, and no riparian vegetation would be disturbed along Funks Creek.

The MWI pipeline would also cross the easements of an existing PG&E 230-kV transmission line and the Western Area Power Administration's (WAPA) Maxwell-Orinda 500-kV transmission line. It is expected the pipeline alignment would be set so that there is adequate overhead clearance to the lines so that the pipeline can be trenched across the utility easement, these activities would be coordinated with PG&E and WAPA so that boring and jacking would not be required. Other than a 20-foot-wide, 2.7-mile-long gravel maintenance road (the proposed MWI pipeline road) from the bridge to Funks Reservoir, the only other surface facilities along the pipeline would be several air/vac relief valve and access manhole vaults at the bore and jack locations and at any topographic high points along the pipeline profile from the GCID Main Canal to the existing Funks Reservoir.

Crossing of other existing minor utilities such as gas lines, water lines, sewer lines, and communications lines would be accomplished by protecting these facilities in place during construction or working with the utility owner to relocate the utility as determined most appropriate. Disruptions to these utilities would be minimized to the extent possible, and the ground surface would be restored to preconstruction conditions after installation of the MWI pipeline.

Several irrigation and drainage ditches would be crossed by the proposed MWI pipeline. During construction temporary bypass pumping would be set up to maintain service.

Construction

The construction disturbance corridor for the proposed MWI pipeline would be up to approximately 150 feet wide from the TRR to the existing Funks Reservoir (3.5 miles). Permanent utility easements would be obtained for the pipeline and the pipeline maintenance gravel access road. The pipe would be installed in an open trench approximately 25 feet deep. This allows for 10 feet of cover over the backfilled pipe. Excavated side slopes would be 1 horizontal to 1 vertical, unless flatter slopes are dictated by geotechnical conditions. Bedding for the pipe can be pea gravel or controlled low-strength material. The nominal location could vary during final design. The construction disturbance area would be reduced if a smaller-capacity pipeline is selected for the final design.

Based on available geotechnical data from other projects in the area, the material excavated from the pipe trench would be suitable as pipe backfill. Most of the estimated 680,000 cubic yards of soil from the trench excavation area would be stockpiled and replaced to backfill the trench. Excess excavated material from pipeline trenching would either be hauled to a permitted facility off-site or would be stockpiled at a 2-acre soil stockpile area at the west end of the pipeline alignment for reuse in future projects and/or maintenance (Figure 1-1). All disturbed construction areas not requiring gravel surfacing, or returned to agricultural production, or soil stockpiles remaining after construction would be seeded with a native seed mix and stabilized to prevent erosion and sediment transport to surface waters.

Dewatering of the trench excavation would be required. Well point systems or dewatering wells may be required in sandier, more permeable areas. Water from dewatering operations would be treated in baker tanks or elevated tanks to control sediment and water would be used for dust control, watering and blending into fills for compaction, vehicle washdown, or other construction uses. Water may also be made available for agricultural irrigation needs, or released to irrigation drainage channels that are present along the pipeline alignment.

Other facilities associated with the pipeline would include access manholes, air/vac valve assemblies at high points in the profile, and at least one blow-off valve facility to drain the pipeline. Depending on studies completed during geotechnical investigations for design, a cathodic protection system could be required. Parking for construction personnel would be within the 150-foot-wide disturbance area and would move along the pipeline as installation progresses.

Anticipated major construction activities for the MWI pipeline and pipeline road include the following:

- Staking work limits and providing ~~orange exclusionary fencing~~flagged stanchion fencing along the working limits
- Installing silt fencing wherever required
- Clearing and grading the construction workspace
- Stockpiling topsoil within the corridor or at the 2-acre soil stockpile area
- Placing necessary construction materials at staging areas
- Transporting materials to the project site
- Trenching/excavation of pipeline route
- Dewatering
- Performing bedding preparation
- Hauling prefabricated reinforced concrete pipe to the construction site from an off-site supplier
- Installing pipe and valves, and air/vac facilities
- Addressing crossings of roads and utilities
- Backfilling and compacting trench
- Replacing topsoil
- Revegetating and restoring pipeline route and construction disturbed areas
- Constructing a gravel maintenance road and bridge over the GCID Main Canal

Following the completion of construction activities for the pipeline, agricultural land affected by pipeline construction would be returned to agricultural use. However, a permanent 30-foot-wide maintenance corridor (40 feet wide and 50 feet long where manholes are located) would be maintained for the length of the pipeline, which would include a 20-foot-wide gravel maintenance road, and space for manholes and pressure relief structures. Design of the turnaround for the maintenance road at the Funks Creek crossing would be designed to avoid environmentally sensitive resources. The exception to the maintenance road is on the east side of the GCID Main Canal. There would be a 30-foot easement above the pipeline east of the GCID Main Canal, but no road. Agricultural production would be allowed over the MWI pipeline east of the GCID Main Canal, with the exception of orchards.

Operation

Operation of the proposed MWI pipeline would not require daily workers at the site. Access to the pipeline corridor would only be required for infrequent long-term maintenance. During active operations, workers would operate pumping and valve controls at TRR and/or at Funks Reservoir.

Maintenance

Periodic inspection and maintenance of the proposed MWI pipeline facilities would likely occur once per year. Two personnel would be required for maintaining pipeline appurtenances during annual maintenance. Annual inspections would not ~~necessarily~~ be expected to ~~include~~ require dewatering of the pipelines. Dewatering for inspection may occur on a 5-year cycle, or when an unexpected problem with the pipeline occurs. Clearance of vegetation would be conducted during the active season for giant garter snake (May 1 through October 31). Permanent rights-of-way for the land overlying the pipeline would be maintained to provide future access. The proposed gravel maintenance road would be graded, as needed.

2.2.4 Funks Reservoir

2.2.4.1 MWI Pipeline Connection to Funks Reservoir

A concrete inlet/outlet structure would be installed at the terminus of the MWI pipeline within Funks Dam on the south side of the existing Funks Reservoir spillway structure. Stop logs or slide gate would be provided to facilitate dewatering of the pipeline when needed. Since the structure would be located on the existing dam, the final design would require coordination with and approval by USBR prior to construction.

2.3 Construction Schedule

Construction of the proposed action would be expected to begin in April 2022, and take approximately 2 years to construct. Construction activities would occur 6 days per week (Monday through Saturday) throughout construction, with a 10-hour work day between April 1 and October 31, and an 8-hour work day between November 1 and March 31, weather permitting. All construction activities would be conducted during daylight hours. All disturbed and stockpiled soils would be stabilized prior to any forecasted rain event in accordance with the stormwater pollution prevention plan (SWPPP) developed for the project.

2.4 Environmental Protection Measures

The proposed action contains environmental commitments, which are measures proposed as project elements that are considered during the environmental analysis for the determination of effects and findings. The purpose of environmental commitments is to reflect and incorporate best management practices (BMPs) into the proposed action that would avoid, minimize, or offset potential environmental effects. These BMPs tend to be standardized and compulsory; they represent sound and proven methods to reduce the potential effects of an action. These commitments are generally based on adopted rules and regulations; regulatory plans, policies, or programs; or accepted industry standards.

2.4.1 Environmental Site Assessment

Federal and state regulations and policies, including the Comprehensive Environmental Response, Compensation and Liability Act, All Appropriate Inquiry, California Public Resources Code Section 21151.4, and the Certified Unified Program, would require environmental site assessment (ESA) procedures for future development on or near any potentially hazardous or contaminated sites. A Phase I ESA would be completed as appropriate for any property considered for purchase, transfer, retirement, or sale in fee or easement for the proposed action. The Phase I ESA would assess the potential for hazardous material contamination in accordance with all applicable federal, state, and local statutes and regulations. Subsequent actions, such as Phase II ESA and III ESA, would be completed as needed based on the results of the Phase I ESA. If needed, a Phase II ESA would involve sample collection and analysis to identify and characterize contamination. If needed, a Phase III ESA would provide a plan for design and implementation of mitigation or remediation, and would identify the proper storage, handling, transport, and disposal of designated and hazardous waste as needed.

2.4.2 Construction Management Procedures

All required construction management measures and procedures would be included in construction plans and specifications to avoid construction-related effects in accordance with applicable federal, state, and local requirements. The Authority would notify the adjacent property owners at least 30 days in advance of construction activities. Construction contractor's approved work plans would include, but not be limited to, the following standard requirements and procedures:

- Locating all overhead and underground utilities prior to excavation activities, including contacting USA before beginning any excavation
- Obtain all contractor required encroachment permits for all work on or adjacent to public roads; notify utility owners before working on or in the vicinity of utility lines
- Stage power line replacements and upgrades in coordination with the utility owner and in a manner that minimizes service interruptions
- Site all approved access routes
- Provide all procedures for staging and stabilizing of stockpiled materials
- Comply with all terms and conditions of all project approvals and permits obtained by the Agency

- Include contact information for local emergency response entities in an emergency action plan specific to the project
- Provide information on construction hours and parking to all construction workers. Ensure all workers complete required environmental training.

2.4.3 Preparation and Implementation of a Stormwater Pollution Prevention Plan

Because ground disturbance would be greater than 1 acre, the Authority will obtain coverage under the U.S. Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) general construction activity stormwater permit. The Central Valley Regional Water Quality Control Board (CVRWQCB) administers the NPDES stormwater permit program in Colusa County. Obtaining coverage under the NPDES general construction activity permit generally requires that the project applicant prepare a SWPPP that describes the BMPs that will be implemented to control accelerated erosion, sedimentation, and other pollutants during and after project construction. The basic SWPPP will be prepared by the Authority to obtain the project number and be updated by the construction contractor to reflect his planned work approach prior to commencing earth-moving construction activities.

The specific BMPs that will be incorporated into the erosion and sediment control plan and SWPPP will be site-specific and will be prepared by the Authority or the construction contractor in accordance with the CVRWQCB Field Manual. However, the plan likely will include, but not be limited to, one or more of the following standard erosion and sediment control BMPs.

- **Timing of construction**. The construction contractor will conduct all construction activities during the typical construction season to avoid ground disturbance during the rainy season.
- **Staging of construction equipment and materials**. To the extent possible, equipment and materials will be staged in areas that have already been disturbed.
- **Minimize soil and vegetation disturbance**. The construction contractor will minimize ground disturbance and the disturbance/destruction of existing vegetation. This will be accomplished in part through the establishment of designated equipment staging areas, ingress and egress corridors, and equipment exclusion zones prior to the commencement of any grading operations. Construction work limits will be fenced with ~~orange exclusionary~~flagged stanchion fencing.
- **Stabilize grading spoils**. Grading spoils generated during the construction will be temporarily stockpiled in staging areas. Silt fences, wattle, or similar devices will be installed around the base of the temporary stockpiles to intercept runoff and sediment during storm events. If necessary, temporary stockpiles may be covered with an appropriate geotextile to increase protection from wind and water erosion.
- **Install sediment barriers**. The construction contractor may install silt fences, silt curtains, wattle, or similar devices to prevent sediment-laden runoff from leaving the construction area.
- **Permanent site stabilization.** The construction contractor will install Agency-designed structural and vegetative methods to permanently stabilize all graded or otherwise disturbed areas once construction is complete. Structural methods may include the installation of biodegradable fiber rolls and erosion control blankets. Vegetative methods may involve the application of organic mulch and tackifier and/or the application of an erosion control native

seed mix. Implementation of a SWPPP will substantially minimize the potential for project-related erosion and associated adverse effects on water quality.

2.4.4 Groundwater Supply

If well owners/users experience temporary effects on groundwater supply from their wells during construction of the proposed action due to dewatering activities such that the well(s) no longer provides suitable supply, an alternate water supply will be provided to the owner of the well during dewatering activities.

2.4.5 Construction Equipment, Truck, and Traffic Management

The Authority or its contractors will include and implement the measures below as part of the contract documents to avoid and minimize potential road and traffic effects in and near the project area during construction of the proposed action.

- Install traffic control devices in accordance with the California Department of Transportation (Caltrans) *Manual of Uniform Traffic Control Devices* where needed to maintain safe driving conditions, including the use of traffic signage to alert motorists of construction activities, potential hazards, and lane closures, and use flaggers to control traffic where necessary, or required by the county.
- Lane closures will be kept as short as possible and detour signage, if detours are available, will be posted around construction sites.

Prior to construction, the Authority or its contractors will assess existing roadway conditions for all roads to be used for site access to the project area. Within 30 days of the completion of construction the Authority or its contractors will conduct a follow-up assessment to determine what damage, if any, has occurred. Damaged roads will be repaired to at least preconstruction condition.

Chapter 3
Methods, Affected Environment, and Environmental Consequences

3.1 Introduction

The following sections describe the methods used to analyze resource conditions, existing resource conditions in the affected environment, and potential effects on existing resources under the No Action Alternative and proposed action. Mitigation measures are provided, where appropriate. The regulatory setting for the resource areas is provided in Appendix A, *Regulatory Setting*.

There are no formally classified lands[1], forest lands, active faults, mineral resources of local importance, critical habitat for threatened or endangered fish species, mines, coastal resources, waterways used for navigation, scenic routes designated for protection, public transit, bicycle and pedestrian facilities, recreational facilities, hazardous waste sites within or near the project area that would be affected by the proposed action. Therefore, these resources are not discussed further.

3.2 Land Use

3.2.1 Methods

3.2.1.1 Definition of Resource Study Area

The land use resource study area (RSA) is Colusa County. This RSA was chosen because it represents the area in which potential direct and indirect effects on land use would occur.

3.2.1.2 Method for Effects Analysis

Potential effects associated with the proposed project were evaluated by determining potential changes to existing land use conditions from the construction and operation of the project that would conflict with applicable land use plans or result in incompatible land uses, zoning, or land use designations. Existing land use conditions and land use conditions expected under the No Action Alternative were assumed to be the same given the generally rural nature of the area and limited potential for growth and development in Colusa County.

[1] Formally Classified Lands are properties administered either by federal, state, or local agencies or have been given special protection through formal legislative designation. Formally Classified Lands include: National Parks, National Monuments, National Reserves, Recreation Areas, Battlefields and Military Parks, National Seashores, National Lakeshores, National Natural Landmarks, National Parkways, Cooperative Management and Protection Areas, National Conservation Areas, Outstanding Natural Areas, Forest Reserves, Wilderness, Wilderness Study Areas, National Scenic and Historic Trails, Wild and Scenic Rivers, National Forest, National Grasslands, National Wildlife Refuges, Coordination Areas, Waterfowl Production Areas, Coastal Zones, Areas of State and Local Interest, and Coastal Barriers Resource System.

The methodology used for assessing changes to land use, compatibility with zoning and Farmland Mapping and Monitoring Program (FMMP) land use designations; and Williamson Act contract, Agricultural Conservation Easement Program, including Agricultural Land Easements and Wetland Reserve Easements, and California Farmland Conservancy Program easement status of parcels that would be potentially affected by the proposed action was a multi-step process, as described by the following steps:

1. The Colusa County General Plan and geographic information system (GIS) were used to determine the land use, zoning, and FMMP designations in the RSA, and to determine the presence or absence of formally classified lands, Williamson Act contracts, and conservation easements.
2. The consistency of the proposed action construction and operation, including maintenance activities, with the land use, zoning, and FMMP designated land uses and the General Plan's policies was evaluated.
3. The compatibility of the proposed action construction and operation activities with existing land uses at and near those facility locations was evaluated.
4. Effect acreages were calculated using GIS to determine the area of temporary and permanent acquisitions per land use, zoning, and FMMP designation in the RSA.

In addition, the Natural Resources Conservation Service (NRCS) Land Evaluation and Site Assessment (LESA) was completed as a step in implementing farmland protection policies specified by the Farmland Protection Policy Act (NRCS n.d.a). LESA combines a score for land evaluation (i.e., value of the land with respect to agriculture) based on soil type, with a score for site assessment (i.e., value of a specific site for agriculture) considering factors such as proximity to urban developed areas or whether the agricultural land is protected under an established program. Form AD-1006 was completed for the proposed action (NRCS n.d.b). For projects that have a combined score over 160 points, alternative actions, such as alternative sites, modifications, or mitigation, must be considered. The methods and results of the analysis are presented in Appendix B, *Land Evaluation and Site Assessment Documentation*. Completed Form AD-1006 is presented in Appendix B, Attachment 1.

Key Terminology

This section defines key terminology, which are used in the discussions below.

- **Prime Farmland**: FMMP farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Farmland of Statewide Importance**: FMMP farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland**: FMMP farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

- **Farmland of Local Importance**: FMMP farmland of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
- **Grazing Land**: FMMP land on which the existing vegetation is suited to the grazing of livestock.
- **Other Land**: FMMP land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and waterbodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.
- **Williamson Act**: The California Land Conservation Act of 1965—commonly referred to as the Williamson Act—enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value.
- **Conservation Easements**: Conservation easements are a legal restriction placed on land that limits certain types of uses while the land remains in private ownership, in order to maintain certain land characteristics, for example agricultural land or wetland, through legal agreement and financial benefit to the landowner. Various conservation easement programs exist to help landowners. The NRCS administers the Agricultural Conservation Easement Program, including the Agricultural Land Easements and the Wetland Reserve Easements. The DOC administers the California Farmland Conservancy Program.

3.2.2 Affected Environment

This section discusses land use within the plan area. The plan area is located in Colusa County, California, west of I-5 and northeast of the census designated place of Maxwell. Colusa County is located in the western portion of the Sacramento Valley. The county is approximately 740,000 acres in size, with approximately 76 percent in agriculture, 23 percent considered “other land,” and less than 1 percent in urban (i.e., residential commercial, and/or industrial land uses) in 2010 (DOC 2016a). The only land use present within the RSA is agricultural farmlands.

3.2.2.1 Agricultural Farmlands

The RSA is located in Colusa County on lands that have a General Plan designation of Agriculture General[2], Agriculture Upland[3], and are zoned Exclusive Agriculture (E-A)[4] and Foothill Agriculture

[2] Agriculture General has a minimum parcel size of 40 acres, a maximum of one dwelling unit per 40 acres, and allows a range of uses including cultivated agriculture, livestock and animal keeping, agricultural industrial, agricultural commercial, agricultural-based tourism, low-intensity recreation, energy production, single family residential, and farmworker housing.

[3] Agriculture Upland has a minimum parcel size of 80 acres, a maximum of one dwelling unit per 80 acres, and allows a range of uses including cultivated agriculture, livestock and animal keeping, agricultural industrial, agricultural commercial, agricultural-based tourism, low-intensity recreation, resource production, energy production, single family residential, and farmworker housing.

[4] Exclusive Agriculture has a minimum parcel size of 40 acres, a maximum of one dwelling unit per 40 acres, and allows a range of uses including but not limited to agricultural processing, animal grazing, animal raising and keeping, apiaries, accessory structures, crop production and cultivation, stables, energy generation, and forestry and logging.

(F-A)[5], with an FMMP designation of Prime Farmland, Unique Farmland, and Other Land (Colusa County 2012, 2014; DOC 2016b). Additionally, there are lands categorized in both the General Plan and Zoning Code as State, Federal, Other Agency Lands, which indicates land owned by other agencies. This includes the Funks Reservoir. There are no WRP easements or Williamson Act lands within these improvements (DOC 2013).

In 2014, Colusa County had 549,096 acres of Important Farmlands (including Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance), and an additional 13,861 acres of grazing land. Between 2012 and 2014, Important Farmlands decreased by 5,749 acres and grazing land increased by 4,709 acres in Colusa County (DOC 2016a). See Table 1 for the 2012–2014 land use conversion totals for Colusa County.

Land use in the RSA is guided by the Colusa County General Plan. The following goals, policies, and objectives apply to land use and agricultural lands:

- Goal LU-1: Maintain the Efficient and Harmonious use of Land in the County, Promoting a Well Organized and Orderly Development Pattern, Avoiding Random, Haphazard Growth, Protecting Public Health and Safety, and Accommodating the Orderly and Sustainable Growth of Employment and Population
- Goal LU-2: Maintain Agriculture as the Paramount Land Use in the County and Ensure Land Use and Planning Decisions Support a Strong Agricultural Economy
- Objective LU-2A: Conserve and Protect Agricultural Land through a Variety of Strategies, including General Planning, Zoning, Taxation, and Easements
- Policy LU 2-1: Agriculture, upland, and resource conservation are the primary land use designations to be used outside of the communities and any adjacent Urban Reserve Areas.
- Policy LU 2-2: Ensure that future development and land use decisions protect the integrity of agriculture and do not in any way create a hardship for the county's farmers.
- Policy LU 2-3: Ensure that lands presently in agricultural uses that do not adjoin existing communities continue to be designated for agricultural uses and are protected through the county's land use regulations.
- Objective LU-2A: Only Permit Development on Agricultural Land that will Not Interfere with Viable Agricultural Operations
- Policy LU 2-5: Require lands designated Agriculture General, Agriculture Transition, or Agriculture Upland to remain designated for agricultural use, including businesses or uses that directly support County agricultural activities, for at least the duration of the planning period, with the exception of lands redesignated consistent with the requirements of Policy LU 1-7.
- Policy LU 2-6: Discourage the division of land in agricultural areas if the division is not for the purpose of farming or other agricultural activities or if the division precludes the future opportunity to farm the land.
- Goal AG-1: Preserve and Protect Agricultural Land

[5] Foothill Agriculture has a minimum parcel size of 80 acres, a maximum of one dwelling unit per 40 acres, and allows a range of uses including but not limited to agricultural processing, animal grazing, animal raising and keeping, apiaries, accessory structures, crop production and cultivation, stables, energy generation, and forestry and logging.

- Objective AG 1-A: Recognize that Agricultural Land is the County's Greatest Natural Asset and Take Appropriate Measures to Restrict the Conversion of Agricultural Lands to Non-Agricultural Use
- Goal AG-2: Maintain and Enhance Agriculture as the County's Most Critical Land Use, Economic Sector, and Resource
- Objective AG 2-B: Allow Limited Recreation and Resource Production Uses on Agricultural Lands While Ensuring that Such Uses Do Not Adversely Affect Agricultural Activities

Table 1. Colusa County 2012–2014 Land Use Conversion

PART I
County Summary and Change by Land Use Category

Land Use Category	Total Acreage Inventoried 2012	Total Acreage Inventoried 2014	2012-14 Acreage Changes: Acres Lost (-)	Acres Gained (+)	Total Acreage Changed	Net Acreage Changed
Prime Farmland	196,828	196,404	1,465	1,041	2,506	-424
Farmland of Statewide Importance	2,191	2,465	13	287	300	274
Unique Farmland	120,878	120,344	1,227	693	1,920	-534
Farmland of Local Importance	234,948	229,883	11,601	6,536	18,137	-5,065
Important Farmland Subtotal	554,845	549,096	14,306	8,557	22,863	-5,749
Grazing Land	9,152	13,861	5,152	9,861	15,013	4,709
Agricultural Land Subtotal	563,997	562,957	19,458	18,418	37,876	-1,040
Urban and Built-up Land	5,157	5,227	13	83	96	70
Other Land	169,320	170,290	437	1,407	1,844	970
Water Area	1,911	1,911	0	0	0	0
Total Area Inventoried	740,385	740,385	19,908	19,908	39,816	0

PART II
Land Committed to Nonagricultural Use

Land Use Category	Total Acreage 2014
Prime Farmland	Data Not Available
Farmland of Statewide Importance	
Unique Farmland	
Farmland of Local Importance	
Important Farmland Subtotal	
Grazing Land	
Agricultural Land Subtotal	
Urban and Built-up Land	
Other Land	
Water Area	
Total Acreage Reported	

PART III
Colusa County Land Use Conversion from 2012 to 2014

Land Use Category		Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-up Land	Other Land	Water Area	Total Converted to Another Use
Prime Farmlanda	to:	--	0	1	1,263	1,264	1	1,265	3	197	0	1,465
Farmland of Statewide Importance	to:	1	--	0	11	12	0	12	1	0	0	13
Unique Farmland	to:	1	0	--	179	180	129	309	35	883	0	1,227
Farmland of Local Importanceb	to:	904	283	420	--	1,607	9,730	11,337	4	260	0	11,601
Important Farmland Subtotal		1,529	906	283	421	1,453	3,063	9,860	12,923	43	1,340	0
Grazing Land	to:	0	0	103	4,982	5,085	--	5,085	0	67	0	5,152
Agricultural Land Subtotal		906	283	524	6,435	8,148	9,860	18,008	43	1,407	0	19,458
Urban and Built-up Landc	to:	13	0	0	0	13	0	13	--	0	0	13
Other Land	to:	122	4	169	101	396	1	397	40	--	0	437
Water Area	to:	0	0	0	0	0	0	0	0	0	--	0
Total Acreage Converted	to:	1,041	287	693	6,536	8,557	9,861	18,418	83	1,407	0	19,908

a Conversion to Farmland of Local Importance is primarily due to land left idle for three or more update cycles.
b Conversions between Farmland of Local Importance and Grazing Land are due to incorporating 2014 zoning data into the assessment of land qualifying for Farmland of Local Importance.
c Conversion from Urban and Built-up Land is due to a lack of sufficient infrastructure and the use of detailed digital imagery to delineate more distinct urban boundaries as well as a new orchard on former Urban and Built-up Land near Hamilton City.
Source: DOC 2016a

3.2.3 Environmental Consequences

This section describes the potential changes to land use during construction of the proposed action. There are no potential changes to land use from operation of the proposed action. As a result, effects on land use during operation would not occur and are not discussed further.

3.2.3.1 No Action Alternative

There would be no effects on land use or agricultural farmland under the No Action Alternative because the project would not be constructed, avoiding incompatible land uses, zoning or land use designations, or changes to land use and agricultural land. Changes to land use and agricultural farmland are not anticipated to continue due to the rural nature of the RSA.

3.2.3.2 Proposed Action

Agricultural Farmlands

Effect LU-1: Conflict with an Applicable Land Use Plan, Policy, or Regulation from Construction of the Proposed Project

The goals, objectives, and policies included in the land use and agricultural elements of the Colusa County General Plan place an emphasis on the preservation of agricultural land uses. The proposed action may not be considered completely compatible with the existing lands in Colusa County that are zoned for agricultural uses and would result in conversion of lands to support construction that result in changes from agricultural land uses to land uses that would support the proposed action, which is a public facility. The proposed action would temporarily convert approximately 429 acres of agricultural farmland and permanently convert approximately 147 acres of agricultural farmland during construction.

For the proposed action to be fully consistent with the Colusa County General Plan and Zoning Ordinance, Colusa County would need to process a General Plan Amendment and Zoning Amendment to address the changes to land use under the proposed action. The more appropriate General Plan Land Use Designation would be Public/Semi-Public Services (PS) and the more appropriate zoning classification would be Public Facilities (P-F) for the infrastructure associated with the proposed action. Because some elements of the proposed action may not be compatible with properties in the County that are zoned for agricultural uses, the effect would be adverse. Mitigation Measure LU-MM-1 will be implemented and will require the Authority to work with Colusa County to request modifications or amendments to their general plans and zoning ordinances to ensure consistency with project land uses. With the implementation of mitigation, the effect would be not adverse.

Effect LU-2: Changes to the Existing Environment that Result in Conversion of Farmland to Nonagricultural Use during Construction

Construction of the proposed action would result in the conversion of Farmland to nonagricultural uses, specifically lands in Colusa County that are zoned Exclusive Agriculture, Foothill Agriculture, and State, Federal, Other Agency Lands. Under the proposed action, approximately 147 acres in Colusa County would be permanently converted to nonagricultural uses. The conversion represents

0.06 percent of the agricultural lands in the county. Table 2 provides a summary of existing zoning within the RSA, and the total acreages of temporary and permanent conversion of land from existing land uses.

Table 2. Conversion of Farmland under the Proposed Action Per County Zoning

County Zoning	Temporary Acquisition (acres)	Permanent Acquisition (acres)
Exclusive Agriculture	82	146
Foothill Agriculture	49	0
State, Federal, Other Agency Lands	298	1

Source: Colusa County 2016.

Because the proposed action would support agricultural land uses by providing a secure source of water during dry and critically dry water years, and because the total conversion of farmland to nonagricultural use does not represent a substantial amount of the agricultural lands in Colusa County, the effect on land use would be not adverse. No mitigation is required.

Effect LU-3: Changes in Land Use Incompatible with the Existing Land Uses during Construction

The majority of the proposed action would be consistent with adjacent land uses. The construction activities of the proposed action would be temporary, and the temporary actions to build the structures would not result in permanent changes to land use or agricultural lands in the RSA. While the permanent presence of new structures under the proposed action would introduce different land uses in the vicinity of the proposed action, water storage and conveyance facilities are a common element within agricultural lands and are necessary for agricultural operations. The additional of these structures would not create incompatible land uses. This would result in no effect on land use. No mitigation is required.

Effect LU-4: Conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance to Nonagricultural Use during Construction

Table 3 shows the FMMP designations and acreage of effects for the proposed action in Colusa County. Construction of the proposed action would result in the permanent loss of approximately 145 acres of Prime Farmland, 2 acres of Farmland of Local Importance, and less than 1 acre of Farmland of Statewide Importance and Unique Farmland. Additionally, temporary loss of 77 acres of Prime Farmland, 2 acres of Unique Farmland, 124 acres of Farmland of Local Importance, and less than 1 acre of Farmland of Statewide Importance would result. The permanent loss represents approximately 0.03 percent of the total Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance in Colusa County. Once construction is completed, however, temporarily affected agricultural lands would be returned to productivity.

Table 3. Conversion of Farmland under the Proposed Action Per FMMP Designations

FMMP Designations	Temporary Acquisition (acres)	Permanent Acquisition (acres)
Prime Farmland	77	145
Farmland of Statewide Importance	<1	<1
Unique Farmland	2	<1
Farmland of Local Importance	124	2
Grazing Land	3	0
Other Land	2	<1

Source: DOC 2016b

The proposed action would support agricultural land uses by providing a secure source of water during dry and critically dry water years, and the loss of Prime Farmland and Unique Farmland under construction of the proposed project does not represent a substantial amount of the total Prime Farmland and Unique Farmland in Colusa County. Therefore, effect from the conversion of Prime Farmland and Unique Farmland during construction would be not adverse. No mitigation is required.

As discussed in Section 3.2.1, *Methods*, another way of determining the severity of agricultural land conversion is through the NRCS LESA process. The combined LESA score for the project is 159, under the threshold of 160. Therefore, no consideration of alternative actions is required. The methods and results of the LESA process are documented in Appendix B.

3.3 Geology and Paleontological Resources

3.3.1 Methods

3.3.1.1 Definition of Resource Study Area

The RSA for geology and paleontological resources is the project area.

3.3.1.2 Method for Effects Analysis

Evaluation of the geology, soils, seismicity, mineral resources, and paleontological resources effects in this section is based on information from published maps, reports, and other documents that describe the existing geologic, soil, seismic, mineral, and paleontological resources conditions of the RSA. The analysis assumes that the project would conform to the latest California Building Standards Code (CBSC) standards, county general plan seismic safety standards, and NPDES requirements.

The paleontological database at the University of California, Berkeley was the primary source of information used to collect information on existing paleontological resources. Effects on paleontological resources were analyzed qualitatively, based on professional judgment and the Society of Vertebrate Paleontology (SVP) guidelines below.

SVP's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* provides standard guidelines that are widely followed (SVP 2010). These guidelines reflect the accepted standard of care for paleontological resources. The SVP guidelines identify two key phases in the process for protecting paleontological resources from project effects.

- Assess the likelihood that the area contains significant nonrenewable paleontological resources that could be directly or indirectly affected, damaged, or destroyed as a result of the project.
- Formulate and implement measures to mitigate potential adverse effects.

The SVP's approach provides a standardization for assessing potential effects on paleontological resources through the evaluation of paleontological sensitivity. Paleontological sensitivity is a qualitative assessment based on the paleontological potential of the stratigraphic units present, the local geology and geomorphology, and other factors relevant to fossil preservation and potential yield. According to the SVP (2010), standard guidelines for sensitivity are (1) the potential for a geological unit to yield abundant or significant vertebrate fossils or to yield a few significant fossils, large or small, vertebrate, invertebrate, or paleobotanical remains; and (2) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecological, or stratigraphic data (Table 4).

Table 4. Paleontological Sensitivity Ratings

Potential	Definition
High	Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources…Paleontological potential consists of both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data.
Undetermined	Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources.
Low	Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule.
No	Some rock units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require neither protection nor mitigation measures relative to paleontological resources.

Source: SVP 2010.

In evaluating a proposed project's potential to disturb or damage significant paleontological resources, it is important to keep two points in mind. First, most vertebrate fossils are rare and are therefore considered important paleontological resources. Second, unlike archaeological sites, which are narrowly defined, paleontological sites are defined by the entire extent (both areal and

stratigraphic) of a unit or formation. In other words, once a unit is identified as containing vertebrate fossils, or other rare fossils, the entire unit is a paleontological site (SVP 2010).

Table 5 summarizes SVP's recommended treatments to avoid adverse effects in each sensitivity category.

Table 5. Society of Vertebrate Paleontology's Recommended Treatment for Paleontological Resources

Sensitivity Category	Mitigation Treatment
High or Undetermined	An intensive field survey and surface salvage prior to earthmoving, if applicable. Monitoring by a qualified paleontological resource monitor of excavations. Salvage of unearthed fossil remains and/or traces (e.g., tracks, trails, burrows). Screen washing to recover small specimens, if applicable. Preliminary survey and surface salvage before construction begins. Preparation of salvaged fossils to a point of being ready for curation (i.e., removal of enclosing matrix, stabilization and repair of specimens, and construction of reinforced support cradles where appropriate). Identification, cataloging, curation, and provision for repository storage of prepared fossil specimens. A final report of the finds and their significance.
Low or no	Rock units with low or no potential typically will not require mitigation measures to protect fossils.

Source: SVP 2010.

3.3.2 Affected Environment

3.3.2.1 Geology

Topography

The topography of the RSA changes from west to east. The west side of the RSA in the vicinity of Funks Reservoir is characterized by low rolling foothills of the Coast Ranges, and elevations range from approximately 300 feet above mean sea level (msl) at the western edge of the RSA to 200 feet above msl at the Funks Dam. From the dam, the valley gently slopes to the RSA's lowest point, which is approximately 100 feet above msl at the eastern edge of the RSA.

Geologic Setting

The RSA is in two geomorphic provinces: the Great Valley geomorphic province and the Coast Ranges geomorphic province (CGS 2002: 2–3). Most of the RSA is in the Great Valley geomorphic province, on the northwestern edge of the Sacramento Valley. The Great Valley, also called the Central Valley, is a nearly level alluvial plain that lies between the Sierra Nevada on the east and the Coast Ranges on the west. Its south end is defined by the Tehachapi Mountains north of Los Angeles, and its north end is defined by the Klamath Mountains. Subdivided into the Sacramento Valley to the

north and the San Joaquin Valley to the south, the valley has an average width of about 50 miles and is about 400 miles long overall (Norris and Webb 1990:412; Bartow 1991:2).

The western edge of the RSA is in the Coast Ranges geomorphic province. The Coast Ranges province is characterized by an echelon (i.e., parallel to subparallel) northwest-trending mountain ranges formed by active uplift related to complex tectonics of the San Andreas fault/plate boundary system (Norris and Webb 1990: 359–380; CGS 2002: 3). The eastern Coast Ranges are broadly antiformal (i.e., fold is convex, with oldest geologic units in the core).

The major geologic units exposed in the RSA are shown in Table 6.

Table 6. Major Geologic Units Exposed in the Resource Study Area

Unit	Age	Description	Location
Quaternary alluvium	Holocene	Alluvial sediment deposited by modern rivers and streams; made up of unweathered gravel, sand, and silt	Western portion of RSA near Funks Reservoir
Quaternary basin deposits	Holocene	Alluvial sediment made up of fine-grained silt and clay	Widespread
Riverbank Formation	Pleistocene	Alluvial sediment made up of semiconsolidated gravel, sand, and silt	Much of central and eastern portion of RSA
Red Bluff Formation	Pleistocene	Alluvial sediment made up of highly weathered bright red gravels	Western portion of RSA near Funks Reservoir
Great Valley Sequence	Cretaceous	Marine sedimentary and metasedimentary rocks made up of sandstone, shale, and conglomerate	Western edge of RSA

Source: Helley and Harwood 1985; CGS 2010a

Seismic Setting and Ground Failure

Primary and secondary seismic hazards occur within the RSA. *Primary seismic hazards* refers to surface fault rupture (i.e., disruption at the ground surface because of fault activity) and seismic ground shaking. The RSA is located in a region of California characterized by moderate ground-shaking potential (CGS and USGS 2016). *Secondary seismic hazards* refers to seismically induced landslides, liquefaction, and related types of ground failure. Although the RSA is not in a designated landslide hazard area (CGS 2016), moderate to steep slopes occur in the area around the Funks Reservoir, so there could be potential for landslides. The portion of the RSA in the valley is gently sloping, so the risk of landslides is likely low.

Liquefaction could occur in the RSA. *Liquefaction* is the process in which soils and sediments lose shear strength and fail during seismic ground shaking. The susceptibility of an area to liquefaction is determined largely by the depth to groundwater and the properties (e.g., texture and density) of the

soil and sediment within and above the groundwater. The sediments most susceptible to liquefaction are saturated, unconsolidated sand and silt soils with low plasticity within 50 feet of the ground surface (CGS 2008: 35, 36). Holocene deposits are most likely to be unconsolidated, so the geologic units in the RSA that could be susceptible to liquefaction are the Quaternary alluvium and basin deposits. The depth to groundwater in some locations in the RSA is less than 20 feet. Because unconsolidated sediments and shallow groundwater occur in the RSA, the risk of liquefaction could be high.

Soils

The dominant soils in the RSA are the Hillgate clay loam, 0 to 2 percent slopes; Capay clay loam, 0 percent slopes; Capay clay, 5 to 9 percent slopes; Alcapay clay, 0 to 1 percent slopes; and Corval clay loam, 0 to 3 percent slopes. The physical properties of these soils are described in Table 7.

Table 7. Properties of Dominant Soils

Map Unit Name	K Factor*	Water Erosion Potential	Shrink/ Swell Potential	Corrosion of Steel Potential	Corrosion of Concrete Potential
Capay clay loam, 0 percent slopes and 5 to 9 percent slopes	.37	Moderate	High	High	Moderate
Hillgate clay loam, 0 to 2 percent slopes	.28	Moderate	High	High	Moderate
Alcapay clay, 0 to 1 percent slopes	.32	Moderate	High	High	Moderate
Corval clay loam, 0 to 3 percent slopes	.37	Moderate	Moderate	Moderate	Low

Source: NRCS 2018

* Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to erosion.

3.3.2.2 Paleontological Resources

Two geologic units in the RSA have potential to contain paleontological resources. The paleontological sensitivity of the geologic units in the RSA is described in Table 8. The University of California Museum of Paleontology (UCMP) database contains 350 records of vertebrate fossils in the Riverbank Formation and 2 records of fossils in the Red Bluff Formation (UCMP 2018). Although none of the records is from Colusa County, deposits such as the Riverbank and Red Bluff Formations represent sediment eroded from the uplifting Sierra Nevada. California's Pleistocene sedimentary units, especially those that, like the Riverbank and Red Bluff Formations, record deposition in continental settings, are typically considered highly sensitive for paleontological resources because of the large number of recorded fossil finds in such units throughout the state. The paleontological sensitivity of the Great Valley Sequence is unknown because many geologic units make up this unit and they have varying paleontological sensitivity.

Table 8. Paleontological Resources by Geologic Unit

Geologic Unit	Age	Fossils in Unit	Sensitivity for Paleontological Resources
Quaternary alluvium	Holocene	None matching age and depositional environment	Low because likely too young to contain fossils.
Quaternary basin deposits	Holocene	None matching age and depositional environment	Low because likely too young to contain fossils.
Riverbank Formation	Pleistocene	Include ground sloth, dire wolf, horse, rabbit, birds, wood rat, bison, camel, coyote, antelope, deer, and mammoth, as well as clams, fish, turtles, frogs, snakes	High
Red Bluff Formation	Pleistocene	Horse fossils	High
Great Valley Sequence	Cretaceous	Unknown (numerous geologic units in the sequence and not all contain fossils)	Undetermined (some units in the sequence contain vertebrate fossils and others do not)

Source: UCMP 2018.

3.3.3 Environmental Consequences

3.3.3.1 No Action Alternative

Under the No Action Alternative, no structures or infrastructure would be built, and there would be no ground disturbance. Therefore, there would be no effects on geology, seismicity, soils, or paleontological resources.

3.3.3.2 Proposed Action

Geology

Effect GEO-1: Effects on a Geologic Unit or Soil Unit from Construction

Construction in areas with potential to experience strong seismic shaking could expose people or structures to safety risks or physical harm. If structures such as the pumping/generating plant, the GCID Main Canal Connection, TRR pipeline, and perimeter berm were not properly designed and sited for the local seismic conditions, these structures could fail and cause harm to people or property in the immediate area. Although the RSA is located in a region of California characterized by a generally moderate ground-shaking hazard compared to other regions of the state, there is a risk of liquefaction. However, all structures and infrastructure would be designed and built to comply with CBSC and Colusa County building standards and would incorporate the recommendations of the project-specific geotechnical study completed for this project. Adherence to the building codes and geotechnical recommendations would ensure all structures and infrastructures would be designed in compliance with CBSC and Colusa County building standards to withstand ground-shaking hazards or the risk of liquefaction. Therefore, the effect would be not adverse, and mitigation is not required.

Effect GEO-2: Effects on a Geologic Unit or Soil Unit from Operation

Operation would not modify existing structures so there is no geology effect related to operation and maintenance of the proposed action are anticipated.

Soils

Effect GEO-3: Construction Effects on Soil Erosion and Loss of Topsoil

Construction actives could cause loss of topsoil because vegetation would be cleared and soil would be disturbed. Construction activities that could disturb topsoil include construction of the pumping plants and electrical switchyard and excavation for the TRR pipeline, power line installation, GCID Main Canal Connection, construction of the bridge, and perimeter berm. However, during construction, the project would comply with the requirement of the SWPPP, as described in Environmental Commitment 3.5.4, Stormwater Pollution Prevention Plan, Erosion Control, Management, and Dewatering. The project would also stockpile excavated topsoil material separately and replace it to support native grass and plant growth. As a result, the proposed action would not result in the loss of topsoil, and the effect on soil during construction would be not adverse. No mitigation is required.

Effect GEO-4: Operation Effects on Soil Erosion and Loss of Topsoil

During operation, reservoir water surface elevations would fluctuate and shoreline erosion would occur along the zone of reservoir water elevation fluctuation and from wave action. Sediment delivery into the reservoir resulting from shoreline erosion would be retained in the reservoir and not discharged. Therefore, the effect on soils during operation would be not adverse. No mitigation is required.

Effect GEO-5: Risks to Life and Property from Construction on Expansive Soils

Expansive soils occur in the RSA. Placement of structures and infrastructure in areas with expansive soils could result in the cracking of foundations and breaking of pipelines as the soil expands and contracts, causing the foundations and pipelines to shift and move. However, all structures and infrastructure would be designed and built to comply with CBSC and Colusa County building standards and would incorporate the recommendations of the project-specific geotechnical study. Therefore, the effect on expansive soils would be not adverse. No mitigation is required.

Paleontological Resources

Effect GEO-6: Construction Effects on Paleontological Resources

Three geologic units underlying the RSA are highly sensitive for paleontological resources or have undetermined sensitivity for paleontological resources. These units are the Riverbank and Red Bluff Formations, which are highly sensitive for paleontological resources, and the Great Valley Sequence, which is of undetermined sensitivity for paleontological resources. If fossils are present in the project area, they could be damaged during ground-disturbing construction activities, such as excavation for foundations for the pumping plants, trenching for the pipeline, and grading for road construction. The greatest amount of ground disturbance would be associated with trenching for the pipeline, which could be up to 25 feet deep. Excavation for the reservoir and berm construction would likely occur in previously disturbed sediments or in Holocene sediments too young to contain

fossils. Substantial damage to or destruction of significant paleontological resources as defined by the SVP (2010) would be an adverse effect.

However, mitigation measures would require that the Authority retain a qualified paleontological resource specialist and paleontological monitors. The paleontological resource specialist would prepare a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) and conduct paleontological resources awareness training for construction personnel. Implementation of these mitigation measures during excavation in the geologic units highly sensitive for paleontological resources (i.e., Riverbank and Red Bluff Formations) or of unknown sensitivity (i.e., Great Valley Sequence) would reduce prevent damage or destruction of paleontological resources. As a result, the effect on paleontological resources during construction would be not adverse.

3.4 Air Quality and Climate Variability

3.4.1 Methods

3.4.1.1 Definition of Resource Study Area

The RSA for the analysis of localized air quality effects is the area immediately surrounding and within 1,000 feet of the construction fenceline. The effects on air quality is also looked at on a regional basis, which includes northern Colusa County and the larger Sacramento Valley Air Basin (SVAB). The climate variability RSA is the global atmosphere due to the broad nature of climate variability. While the greenhouse gas (GHG) analysis focuses on emissions generated at the project site because of construction and operation, the analysis considers potential regional and global GHG effects.

3.4.1.2 Method for Effects Analysis

Existing air quality conditions were compared with the potential changes in air quality or contributions to climate variability from the proposed action. The proposed action would have an adverse air quality or climate variability effect if it would result in any of the following conditions:

- Conflict with applicable air quality plans, violate existing or projected air quality standards, or contribute to a cumulative air quality effect.
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.
- Generate a significant amount of GHG emissions, either directly or indirectly, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The EPA enacted the Federal General Conformity regulation (40 Code of Federal Regulations [CFR] 5, 51, and 93) to ensure that federal actions do not generate emissions that interference with state and local agencies' State Implementation Plans and emission-reduction strategies to ensure attainment of the national ambient air quality standards (NAAQS). As discussed in the affected environment for existing air quality conditions, the air quality RSA is not in a federally classified nonattainment or maintenance area for any criteria pollutant under the NAAQS. Accordingly, the General Conformity rule does not apply, and a conformity analysis is not required for the proposed action.

3.4.2 Affected Environment

This section describes the existing air quality conditions in the air quality RSA, identifies sensitive land uses, defines climate variability and defines the principle GHGs of concern, and summarizes the overall regulatory framework for air quality and GHG management.

3.4.2.1 Air Quality

The primary factors that determine air quality conditions are the locations of air pollutant sources and the amount of pollutants emitted from those sources. Meteorological and topographical conditions are also important factors. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The air quality RSA and SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. In general, the prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north. The average yearly temperature range for Colusa County is 35°F to 95°F. Precipitation is greatest in the winter months, with November through March often receiving more than 2 inches of rainfall.

Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, lead, and particulate matter (PM10 and PM2.5) are commonly used as indicators of ambient air quality conditions. These pollutants are known as *criteria pollutants* and are regulated by the EPA and California Air Resources Board (CARB) through NAAQS and California ambient air quality standards (CAAQS). The NAAQS and CAAQS limit criteria pollutant concentrations to protect human health and prevent environmental and property damage. Other pollutants of concern in the RSA are nitrogen oxides and reactive organic gases, which are precursors to ozone, and diesel particulate matter (DPM) and can cause cancer and other human health ailments.

Criteria pollutant concentrations in Colusa County and the SVAB are measured at several monitoring stations. The nearest station to the proposed action is the Colusa-Sunrise Boulevard station, which is approximately 15 miles southeast of the project site. Monitoring data collected at the Colusa-Sunrise Boulevard station show that the station has not experienced any violations of the CAAQS or NAAQS in the past 3 years for which monitoring data are available (2014 and 2016) (CARB 2018).

The EPA uses ambient air quality monitoring data collected at the Colusa-Sunrise Boulevard station and throughout the region to determine whether geographic areas achieve the NAAQS. Areas with pollutant concentrations within the NAAQS are designated as attainment areas, whereas areas that do not meet the NAAQS are designated as nonattainment or maintenance areas. The air quality RSA is currently designated as unclassified[6] or attainment for all criteria pollutants under the NAAQS (EPA 2018a).

Sensitive land uses are defined as locations where human populations, especially children, seniors, and sick persons, are located and where there is reasonable expectation of continuous human exposure according to the averaging period for the air quality standards (i.e., 24-hour, 8-hour). Typical sensitive receptors are residences, hospitals, schools, and parks. The air quality RSA primarily consists of farmland. The nearest sensitive receptor is a farmhouse located about 420 feet southeast of the RSA near the intersection of Funks Creek and McDermott Road.

[6] Assigned to areas where data are insufficient to determine whether a pollutant is violating the standard in question.

3.4.2.2 Climate Variability

Climate variability is a complex phenomenon that has the potential to alter local climatic patterns and meteorology. Increases in anthropogenic GHG emissions have been unequivocally linked to recent warming and climate shifts (Intergovernmental Panel on Climate Change 2007). Although modeling indicates that climate variability will result globally and regionally, there remains uncertainty about characterizing the precise *local* climate characteristics and predicting precisely how various ecological and social systems will react to any changes in the existing climate at the local level. Regardless of this uncertainty in precise predictions, it is widely understood that some degree of climate variability is expected because of past and future GHG emissions.

The key GHGs resulting from human activity are carbon dioxide, methane, nitrous oxide (N_2O), perfluorinated carbons, sulfur hexafluoride, and hydrofluorocarbons. Unlike criteria air pollutants, which occur locally or regionally, the long atmospheric lifetimes of these GHGs allow them to be well mixed in the atmosphere and transported over distances. The transportation and electric power sectors each represent 28 percent of the national GHG inventory (EPA 2018b). Within California, transportation is the largest source of GHG emissions (39 percent), followed by industrial sources (23 percent) (CARB 2017).

There is no federal overarching law specifically related to climate variability or the reduction of GHGs. California has adopted statewide legislation addressing various aspects of climate variability and GHG emissions mitigation. Much of this legislation establishes a broad framework for the state's long-term GHG reduction, including Assembly Bill 32 and Senate Bill 32, which outline statewide goals to reduce GHG emissions back to 1990 levels by 2020 and 40 percent below 1990 levels by 2030, respectively.

3.4.3 Environmental Consequences

The analysis discusses the potential for future individual activities in the RSA to result in air quality or climate variability effects and identifies, where necessary, minimization measures that are available to reduce those emissions.

3.4.3.1 No Action Alternative

Under the No Action Alternative, neither construction nor operation of the proposed action would occur. Therefore, there would be no adverse air quality or climate variability effects under the No Action Alternative.

3.4.3.2 Proposed Action

Air Quality

Effect AQ-1: Conflict with Air Quality Plans or Violate Air Quality Standards during Construction and Operation

Implementation of the proposed action would generate traffic and associated vehicle emissions on roads and highways in the RSA. Activities that require physical changes or heavy-duty equipment would also generate construction emissions through earthmoving activities and heavy-duty diesel-powered equipment. Emissions may originate from the following sources:

- Vehicles used for employee access to the site, inspections, patrols, and materials delivery.
- Off-road equipment (e.g., bulldozers) used for minor new construction.
- Earthmoving activities (e.g. stockpiling and replacing topsoil, excavation of the TRR Pumping Plant, dewatering, trenching of the pipeline route).

Emissions would vary substantially depending on the level of activity, length of the activity, specific operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content. Construction emissions would be short-term (approximately 30 months) and widely dispersed across the approximately 4-mile project site. Operational activities typically include remote monitoring and inspecting, dewatering the land overlying the pipeline, and grading of the gravel maintenance road. These activities would occur on an as-needed basis, once annually, or on a 5-year cycle, depending on the type of maintenance.

Emissions generated during construction and operation of the proposed action would be minimized through compliance with air district rules and regulations. For example, Rule 2.16 limits fugitive dust and particulate matter emissions. An Authority to Construct would also be required prior to ground breaking, pursuant to Rule 3.1. However, the effect on air quality from construction activities would remain adverse after compliance with rules and regulations. Mitigation Measures AQ-MM-1 and AQ-MM-2 would further reduce criteria pollutants through implementation of a fugitive dust control plan and exhaust minimization measures. Therefore, construction and operation of the proposed action would not violate any air quality standards or conflict with applicable air quality plans. Following mitigation, the effect on air quality would be not adverse.

Effect AQ-2: Expose Sensitive Receptors to Substantial Pollutant Concentrations during Construction and Operation

Emissions generated during construction and operation may exposure adjacent receptors to DPM, naturally occurring asbestos (NOA), and locally concentrated CO (hot spots). However, construction-related DPM emissions would be short-term, dispersed across the project site, and minimized with implementation of exhaust minimization measures (AQ-MM-2). Activities that may generate DPM during routine operations and maintenance (e.g., truck trips) would be infrequent and limited to just weeks or months per year, which is significantly lower than the 70-year exposure period typically associated with chronic cancer health risks (OEHHA 2015). The proposed action is not located in an area known to contain NOA. CO hot spots are not expected to result from construction-related changes in local traffic patterns, due to the rural nature of construction. Maintenance trips would not alter or worsen the current congestion or level of service (LOS) of streets in the project vicinity. Accordingly, neither construction nor operation of the proposed action is expected to expose sensitive populations to substantial pollutant concentrations. The effect on sensitive receptors would be not adverse. No mitigation is required.

Effect AQ-3: Create Objectionable Odors Affecting a Substantial Number of People during Construction

The proposed action does not include any land uses typically associated with odor complaints (e.g., wastewater treatment facilities). Construction-related odors from diesel-powered equipment would be temporary and dissipate as a function of distance. Accordingly, nuisance odors during construction of the proposed action would be not adverse. No mitigation is required.

Climate variability

Effect AQ-4: Generate a of GHG Emissions or Conflict with Emissions Plans, Policies, or during Construction and Operation

Implementation of the proposed action would generate GHG emissions from construction and operational vehicles and heavy-duty equipment. In addition, long-term pumping operation at the TRR Pumping Plant would result in indirect GHG emissions from increased electricity consumption. As part of the implementation of the proposed action, a 69-kV power line would be installed to power the pumps at the TRR Pumping Plant. No diesel-powered stationary equipment (e.g., generators) would be required.

Emissions generated during construction would be short-term and cease once construction is complete. Likewise, most operational activities would be temporary, involving few vehicle trips. Indirect pumping emissions would occur annually, although would be relatively minor. Specific effects thresholds under NEPA for GHG emission have not been established by regulatory agencies. Given the global and complex nature of climate variability, it is not possible at present to predict the degree of effect that any single emitter of GHGs may have on global climate. The additional GHG emissions anticipated from implementation of the proposed action would represent a small fraction of state, national, and global emissions, and in this context, would have a negligible but adverse incremental effect on global climate variability.[7] Mitigation Measures AQ-MM-1 and AQ-MM-2 would further reduce emissions through the use of low-emission machinery and exhaust minimization measures. Therefore, construction and operation of the proposed action would not violate any air quality standards or conflict with applicable air quality plans. Following mitigation, the effect on air quality would be not adverse.

3.5 Water Resources

3.5.1 Methods

3.5.1.1 Definition of Resource Study Area

The hydrology and water resources RSA consists of a direct RSA and indirect RSA. The direct RSA for hydrology and water resources is the project footprint (Figure 1-1). The indirect RSA is the area beyond the direct RSA's boundary and includes water resources downstream that could receive runoff and sediment from project disturbance. The limits of the indirect RSA include the direct RSA and the following additional elements:

- Surface Water: Watersheds and receiving waters of project runoff
- Groundwater: Aquifer(s) underlying the project footprint
- Floodplains: Federal Emergency Management Agency (FEMA)-mapped flood-hazard areas within receiving waters of the disturbance area, as well as any areas that could affect flood frequency, extent, and duration

[7] In 2010, global GHG emissions totaled 46 billion metric tons carbon dioxide equivalent (CO_2e) (EPA 2018c). In 2016, national and state GHG emissions totaled 6,511 million metric tons CO_2e and 440 million metric tons CO_2e, respectively (EPA 2018b; CARB 2017).

3.5.1.2 Method for Effects Analysis

This analysis focuses on surface water hydrology and quality, groundwater quantity and quality, and flood hazards. Potential effects on hydrology and water resources were identified and evaluated qualitatively, based on the physical characteristics of the project site and the magnitude, intensity, location, and duration of activities.

Surface Water

The evaluation of effects on surface water hydrology considers potential changes in the physical characteristics of waterbodies, impervious surfaces, and drainage patterns throughout the RSA as a result of implementation of the proposed action.

Effects on surface water quality were analyzed by comparing existing surface water quality conditions, surface water quality standards and requirements such as waste discharge requirements (WDRs), and potential surface water quality conditions or degradation during construction and operation of the proposed action. The potential for water quality objectives to be exceeded and beneficial uses to be compromised is also considered.

Groundwater

Effects on groundwater supply and recharge are analyzed by comparing existing groundwater use and recharge capabilities with conditions expected under the proposed project during construction and operation. Recharge is determined by the ability of water to infiltrate into the soil.

Effects on groundwater quality were analyzed by comparing existing groundwater quality conditions, groundwater quality standards and requirements such as WDRs, and groundwater quality conditions or degradation during construction and operation. Potential project-related sources of water contaminants generated by industrial and project operational activities, such as vehicle use, building maintenance, pesticide use, trash generation, and the storage or inadvertent release of hazardous materials during project construction and operation, were also considered. The potential for groundwater quality objectives to be exceeded and beneficial uses to be compromised is also considered.

Floodplains

FEMA flood risk maps were used to determine the existing flood zone. Effects on flooding are analyzed by comparing existing flood hazard conditions within the 100-year flood hazard area and potential flood risks during construction of the proposed project. Potential flood risks may result during construction from impeding flood flows, placing structures within a 100-year flood hazard area, or exposing people or structures to a significant risk of loss, injury, or death involving flooding.

3.5.2 Affected Environment

This section describes existing hydrology and water resource conditions, including surface water hydrology and quality, groundwater quantity and quality, and floodplains and flood management systems in the RSA.

Surface Water Hydrology

Regional

The proposed action would be located in the Funks Creek sub-watershed (Hydrologic Unit Code 180201040602) within the larger Sacramento-Stone Corral basin. Within the basin, the project site is located within the Lower Sacramento Watershed. The basin drains the eastern slopes of the Coast Ranges and Mount Shasta, the western slopes of the southernmost region of the Cascades, and the northern portion of the Sierra Nevada. The Sacramento Valley Watershed is approximately 5,500 square miles (Sacramento River Watershed Program n.d.). The Sacramento River is the primary water source for the GCID. Other surface water diversions of the GCID include Stoney Creek, Hunter Creek, Stone Corral Creek, Tributary to Funks Creek, and the Colusa Basin Drain (CBD). The climate within the RSA is characterized as Mediterranean, which includes damp to wet mild winters and hot, dry summers. The rainy season generally occurs between October and April, with the watershed receiving rainfall during the winter months and being influenced by tributary stream runoff from snowmelt during the spring.

Local

Surface water features within the RSA include the Funks Reservoir on the TC Canal system, Funks Creek, GCID canals, and irrigation ditches. Water in the RSA is entirely human influenced and used for agriculture production. The proposed project would be located approximately 11 miles west of the Sacramento River. Stone Corral Creek is approximately 2 miles south of Funks Creek, outside of the RSA.

The TC Canal is a concrete-lined canal that is approximately 110 miles long. Water from the Sacramento River enters the TC Canal Intake at Red Bluff Diversion Dam. The canal capacity is 2,530 cfs at the start and 1,700 cfs at the terminus. Water in the TC Canal flows into Funks Reservoir approximately 66 canal miles downstream of the TC Canal Intake. The canal capacity at Funks Reservoir is 2,100 cfs.

Funks Reservoir is located approximately 7 miles northwest of the town of Maxwell, and has a storage capacity of approximately 2,300 acre-feet and a surface area of 232 acres. Water from the TC Canal enters Funks Reservoir at the northeast end and leaves the reservoir at the southeast end. Typical summer releases from Funks Reservoir to the lower portions of TC Canal range from 500 cfs to 1,000 cfs. Total flows of 50 cfs to 200 cfs for off-peak limited agricultural releases are needed between November and February (DWR 2003). West of Maxwell is the headwaters of Funks Creek, which flows into Funks Reservoir at the TC Canal. The drainage area of Funks Creek at Funks Dam is 43 square miles, with peak winter flows of approximately 2,000 cfs (Weathers 2005).

Located approximately 5 miles northwest of Hamilton City is the GCID Main Canal Intake, which diverts water into the existing GCID Main Canal for distribution to over 130,000 acres of irrigated lands within the GCID service area. The channel is approximately 65 miles long and terminates at the CBD near Williams. The GCID Main Canal is an unlined earthen channel with capacity varying from 3,000 cfs at the upstream end to 300 cfs at its terminus.

Surface Water Quality

The Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) specifies the beneficial uses that apply to the RSA. Beneficial uses form the cornerstone of water

quality protection under the Basin Plan. Once beneficial uses are designated, appropriate water quality objectives can be established, and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses. The designated beneficial uses, together with water quality objectives, form water quality standards. Numeric and/or narrative water quality objectives developed for inland surface waters include but are not limited to: bacteria, color, dissolved oxygen, mercury, pH, salinity, sediments, temperature, and turbidity. Existing beneficial uses of CBD include Agricultural Supply (AGR) water contact recreation (REC-1), warm freshwater habitat (WARM), warm migration of aquatic organisms (MIGR), warm spawning, reproduction, and/or early development (SPWN), wildlife habitat (WILD), and potential cold freshwater habitat (COLD) (CVRWQCB 2016).

Impaired Waters, as described under Section 303 of the Clean Water Act (CWA), are those waterbodies that do not meet water quality standards. The CVRWQCB has listed the CBD as an impaired waterbody for azinphos-methyl (guthion), carbofuran, dichlorodiphenyltrichloroethane (DDT), diazinon, dieldrin, group A pesticides, indicator bacteria, low dissolved oxygen, malathion, mercury, and toxicity, while Stone Corral Creek is impaired for dissolved oxygen (SWRCB 2018).

3.5.2.2 Groundwater

Groundwater Quantity

Regional

The project site is within the Colusa Subbasin, within the larger Sacramento Valley Groundwater Basin. The Colusa Subbasin is bounded on the east by the Sacramento River, on the west by the Coast Range and foothills, on the south by Cache Creek, and on the north by Stony Creek. Groundwater within the Colusa Subbasin generally flows from the recharge areas in the west to the east/southeast toward the Sacramento River. Recharge of the subbasin occurs through infiltration from precipitation and seepage from surface water. Annual precipitation ranges from 17 to 27 inches with higher precipitation occurring to the west.

Basin deposits overlie much of the flat alluvial plains in the area between Willows and Williams. Permeability of the near-surface soils are extremely low. The inter-stream areas of the westside creeks are underlain by a poorly pervious, occasionally alkaline, claypan soil. The Tehama Formation is not an important water-bearing material in this region.

Long-term comparison of groundwater levels indicates a slight decline in groundwater levels associated with the 1976–77 and 1987–94 droughts, followed by recovery to pre-drought conditions. Recent depth to groundwater was generally less than 10 to 40 feet below ground surface (bgs) across much of the subbasin during fall 2017, and generally 10 to 20 feet bgs during spring 2017 (DWR 2017a). Along the northwestern and southwestern basin margins, greater depths to groundwater (up to 200 feet bgs) are found. Groundwater levels, particularly in these areas, have declined over the last decade. A combination of recent multi-year drought conditions (decreasing groundwater recharge) and an increase in permanent, groundwater-supplied agricultural areas (increasing groundwater extraction) is likely related to this decline in groundwater levels (Davids Engineering 2016). Groundwater and surface water are hydraulically connected within the Sacramento Valley Groundwater Basin, with reductions in water quantities along tributary streams at the basin margin, transitioning to increases in water volumes along the major trunk streams

draining the valley. However, local conditions may vary depending primarily on groundwater use in particular areas.

Local

Groundwater data collected from two wells near Funks Reservoir determined that depths to water were 17 and 20 feet bgs. Groundwater resources in the TC Canal area are limited because of the poor water-bearing and water-quality characteristics. The GCID Main Canal crosses Riverbank Formation and basin deposits. Permeability of the Riverbank Formation is moderate to high, and yields of domestic wells are moderate, while permeability of basin deposits is generally low, with groundwater occurring in limited amounts. The TRR and GCID Main Canal Connection to the TRR would overlie Riverbank Formation and basin deposits. Permeability of the Riverbank Formation is moderate to high, and yields of domestic wells are moderate, while permeability of basin deposits is generally low, with groundwater occurring in limited amounts.

Groundwater Quality

The Central Valley Basin Plan specifies water quality standards for groundwater. Water quality standards comprise of designated beneficial uses and numeric and/or narrative water quality objectives developed to be protective of designated beneficial uses. At a minimum, groundwater shall not contain concentrations of bacteria, chemical constituents, radioactivity, substances that produce taste and odor, or toxicity in excess of the objectives described in the Basin Plan. For groundwater, water quality objectives are relevant to the protection of designated beneficial uses, but do not require improvement over naturally occurring background water concentrations. Groundwater in the RSA is considered suitable or potentially suitable for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO) (CVRWQCB 2016).

Generally, the Sacramento Valley groundwater basin has high quality groundwater, however some localized areas of concern occur. Naturally occurring constituents in higher concentrations result in local impairments. Calcium-magnesium bicarbonate and magnesium-calcium bicarbonate are the predominant groundwater types in the subbasin. Total dissolved solids (TDS) values range from 120 to 1,220 milligrams per liter (mg/L), averaging 391 mg/L. High electrical conductivity, TDS, adjusted sodium absorption ratio, nitrate, and manganese impairments occur near Colusa (DWR 2006). Groundwater quality problems exist between Maxwell and Arbuckle due to high concentrations of sodium, chloride, and sulfate, which are often related to salinity concerns. TDS in this region averages approximately 500 mg/L, but concentrations exceeding 1,000 mg/L have been reported. The source of salinity in the Maxwell and Putah Creek areas is associated with mineral springs in the hills to the west (CH2MHILL 2014).

3.5.2.3 Floodplains

Primary watercourses in the RSA include the CBD, Funks Reservoir, and Funks Creek. The CBD is a designated floodway according to the Central Valley Flood Protection Board. Runoff from stream systems draining the foothill and valley floor watersheds contribute flow to the CBD. An extensive levee system has almost entirely cut off the natural historic drainage system of the Colusa Basin from receiving floodwaters of the Sacramento River. Generally, the CBD conveys flood flows from November through March and agricultural irrigation and drainage flows from April through October.

Funks Reservoir is not operated for flood-control purposes. During a 100-year flood event, Funks Creek overflows its bank downstream of the TC Canal and Funks Reservoir. Flood waters flow to the north along the creek and to the south where they join with Stone Corral Creek. The floodplains of both Funks and Stone Corral Creeks are intersected by the GCID Main Canal, which has levees along each bank.

A portion of Funks Reservoir, the western and eastern portions of the proposed MWI, and the majority of the TRR are within 100-year Flood Zone A (FEMA 2003). This zone is identified by FEMA as a Special Flood Hazard Area, an area subject to flooding during the 100-year storm event (1 percent annual chance of flooding). The 100-year floodplain delineations (Figure 3.5-1) for the RSA depict areas subjected to flooding and areas with undetermined flood hazards.[8] However, the remaining areas are within Zone X (unshaded), areas of minimal flood hazard, depicted on Flood Insurance Rate Maps as above the 500-year flood level and defined by FEMA as an area outside the 0.2 percent annual chance floodplain.

3.5.3 Environmental Consequences

This section describes potential effects on surface water hydrology and quality during construction and operation, groundwater quantity and quality during construction and operation, and flooding during construction of the proposed project. The proposed action would not result in effects on floodplains during operation because there would be no changes to these resources. The discussion identifies the effects of the proposed action to the extent that they are reasonably foreseeable, given the general level of project detail that is available at this time.

3.5.3.1 No Action Alternative

Under the No Action Alternative, the proposed action would not be constructed and no effects on water resources would occur. The area is generally rural and there is limited potential for growth and development in Colusa County. As a result, it is anticipated that existing conditions would remain or would not substantially change. As a result, the No Action Alternative does not alter existing conditions, and there would be no effect on surface water hydrology and quality, groundwater quantity and quality, and floodplains under the No Action Alternative.

3.5.3.2 Proposed Action

Surface Water

Effect WR-1: Changes to Drainage Patterns and Surface Water Hydrology during Construction

The proposed action would construct the 3.5-mile- long underground MWI pipeline, which would convey water between the proposed TRR on the GCID system to the existing Funks Reservoir on the TC Canal system (Figure 1-1). The existing Funks Reservoir is a regulating reservoir that balances water level operations of the TC Canal upstream and downstream of Funks Creek. The 900- cfs-capacity MWI pipeline would be bi-directional, allowing water to be pumped from the TRR to Funks Reservoir for storage, re-regulation and/or conveyance in the TC Canal system, and allowing water to flow by gravity from Funks Reservoir for release to the TRR/GCID Main Canal, Funks Creek, and

[8] Neither peak flow nor base flood elevations are available from the FEMA Flood Insurance Study. Instead, areas subject to flooding are depicted.

Legend

Project Area

FEMA Flood Zones

100-Year Floodplain (Zone A)

100-500-Year Floodplain (Zone X Unshaded)

Source: National Flood Hazard Layer, FEMA 2017

0 0.25 0.5 Miles

1:24,000

N

Noel Evan Rd

Delevan Rd

Delevan Rd

Tehama Colusa Canal

Glenn-Colusa Canal

Mcdermott Rd

Mcdermott Rd

Funks Reservoir

Funks Creek

DOC:\TDSSIS\Projects_1\USDA\Maxwell\Data\Resource\Data\WSWIP\Resource\2_FEMA_FloodZones\Fig3_5_1_FEMA_Floodzones_20160916.mxd User: 19524 Date: 9/16/2016

ICF

Figure 3.5-1
FEMA Flood Zones within the Project Area
Maxwell Water Intertie Project Overview

other canals. Flows in Funks Creek would remain the same. Currently, occasional diversions occur into Funks Creek, which would continue after construction of the proposed project.

Construction of the new TRR reservoir would result in inundation of new land within the RSA. The TRR would be a shallow reservoir with a capacity of 1,200 acre-feet covering 130 acres. An existing ditch adjacent to the TRR and pipe connecting the ditch to Funks Creek would be upgraded to supply release water from TRR to Funks Creek. A spillway to the local ditch system and bottom drain to Funks Creek would also be constructed. The GCID Main Canal Connection to TRR includes an energy dissipation bay/check structure, TRR inlet channel, and inlet control structure with canal lining immediately upstream and downstream of the TRR.

Project construction activities may alter existing drainage patterns and result in temporary increases in the rate or amount of local surface runoff (on-site) and temporary flooding. In addition, impervious cover will increase due to construction of new facilities including the pump station, electric switchyard at the TRR, the lined portion of the TRR, and addition of approximately 200 feet of concrete lining to the GCID Main Canal where the TRR connects to the canal. As a result, the rate and amount of runoff may increase slightly. However, runoff from the pumping plant would drain into the TRR and the GCID Main Canal would accommodate the negligible increase in runoff from the concrete lining. Although drainage patterns on the project site would be altered, drainage would ultimately be improved because project implementation would result in construction of a new reservoir where runoff may drain into by sheet flow. Preparation and implementation of the SWPPP would reduce the potential for erosion, surface runoff, and flooding on-site/off-site as a result of altering existing drainage patterns or substantially increasing the rate or amount of runoff.

The proposed project would be required to comply with the Colusa County General Plan and the NPDES Construction General Permit requirements. Discharges covered under the Construction General Permit are required to comply with the run-off reduction requirements. The objective of the requirement is to match post-construction runoff to preconstruction runoff for the 85th-percentile storm event, which reduces the risk of impact to the receiving water's channel morphology and provides some protection of water quality. In addition, the SWPPP is required to include a description of all post-construction BMPs. Preparation and implementation of the grading plan and the SWPPP would reduce the potential for a substantial increase in the rate or amount of runoff. Therefore, the effect on changes to drainage patterns and surface water hydrology during construction would be not adverse. No mitigation is required.

Effect WR-2: Water Quality Effects from Sediment Runoff during Construction

Construction of the proposed action would involve land-disturbing activities, stockpiling, equipment use and storage, and potential spills that could result in temporary effects on surface water quality within the RSA or nearby. These activities have the potential to violate water quality standards or WDRs if sediment- or contaminant-laden runoff from disturbed work areas enters storm drains or other pathways leading to receiving waters, or if fuel or other construction chemicals are accidentally spilled or leaked into the water. Land-disturbing activities in proximity to nearby surface waters may result in a temporary increase in sediment loads in waterways. Sources of sediment include earthwork, excavation, uncovered or improperly covered stockpiles, unstabilized slopes, and construction equipment not properly cleaned or maintained.

Materials removed by excavation could be used as part of earthwork construction, placed near the construction site, or removed off-site for disposal at permitted locations. Materials stockpiled on or near the construction site and disturbed earth would be designed with temporary and long-term

erosion control measures in accordance with SWPPP criteria. The SWPPPs for excavation sites would include methods to reduce the amount of soil on trucks before they enter roads adjacent to the construction site and methods to reduce soil in the excavated materials from leaving the trucks as the materials are transported on the road.

During construction, drainage patterns may be temporarily altered and result in erosion on-site or off-site. However, construction would be completed in accordance with the SWPPP issued by the CVRWQCB. The SWPPP includes erosion control measures to minimize sediment from entering waterbodies such as installation of geotechnical fabric, silt fences, or rapid-grow grass seeds. Temporary erosion control measures (e.g., silt fencing, weed-free straw bale barriers, fiber rolls, storm drain inlet protection, hydraulic mulch, and stabilized construction entrances) would be employed for all disturbed areas. Stockpiled soil would also be protected from erosion using standard BMPs and construction management procedures.

Post-construction measures such as the placement of erosion control measures such as silt fencing, weed-free straw bale barriers, fiber rolls, hydraulic mulch/seeding, and vegetative plantings would be implemented and monitored to ensure minimization of water quality degradation and associated effects. In addition, stormwater runoff control measures and BMPs are included in the project design. Site-specific structural and operational BMPs would be implemented to prevent and control effects on runoff water quality. Therefore, the effect on surface water quality from sediment runoff during construction would be not adverse. No mitigation is required.

Effect WR-3: Water Quality Effects from Accidental Spills during Construction and Operation

The SWPPP would include measures to avoid spills of chemicals used during construction such as grout, concrete, or paint and during operation such as fuels, oils, and solvents for equipment and maintenance vehicles to protect nearby surface water quality. Further, the SWPPP may include a monitoring and reporting program to the CVRWQCB that would address anticipated construction activities, including measures to contain construction materials in a manner to avoid discharge of these materials into the waterways. The monitoring programs would include rapid response and cleanup activities to address spills and accidents. Therefore, the effect on water quality from the use of chemicals during construction and operation would be not adverse. No mitigation is required.

Effect WR-4: Water Quality Effects from Dewatering Activities during Construction

If dewatering occurs during excavation activities, it would occur on a temporary, short-term basis. Water from dewatering activities would be collected in Baker Tanks or other suitable containers for sediment control, then either used for dust control or released to local farm canals, the GCID Main Canal, or Funks Creek. The Construction General Permit includes dewatering activities as authorized non-stormwater discharges, provided that dischargers prove the quality of water to be adequate and not likely to affect beneficial uses. Water would be discharged in accordance with the WDRs of CVRWQCB General Order 5-00-175. If more stringent requirements are needed, appropriate environmental mitigations will be applied. Water removed during dewatering activities could be required to flow through sediment basins or filters to remove the sediment before discharging the flows into Funks Creek. Pumped groundwater may be treated to reduce turbidity and concentrations of suspended sediments if turbidity exceeds CVRWQCB effluent limitations as defined in General Order 5-00-175. Further, groundwater/dewatering would be handled so as to avoid effects on non-stormwater discharges. If contamination is suspected, testing water collected during dewatering for contamination prior to disposal.

The proposed action is subject to construction-related stormwater permit and dewatering requirements of the federal CWA and NPDES program. The Authority would obtain required permits through the CVRWQCB before any ground-disturbing construction activity occurs. As required by the Construction General Permit, a SWPPP would be prepared and implemented before and throughout the construction period and identify BMPs to prevent and minimize the introduction of contaminants into surface waters. BMPs would be implemented to address soil stabilization, sediment control, non-stormwater management, and good housekeeping practices based on the best available technology. Implementation of these measures will ensure that stormwater runoff would reduce or avoid permanent effects on water quality. The proposed action would also operate in compliance with the County's Phase II Small Municipal Separate Storm Sewer System (MS4) General Permit and the Northern Sacramento Valley Integrated Regional Water Management Plan. As a result, there would be no violations of water quality standards. Therefore, the effect on surface water quality during construction would be not adverse. No mitigation is required.

Groundwater

Effect WR-5: Changes to Groundwater Volume and Recharge during Construction

Construction of the new TRR would result in an increase of impervious cover. The GCID Main Canal would be lined with concrete 100 feet upstream and downstream from where the TRR connects to the canal, the TRR would be lined with plastic, and construction of the pump station, electric switchyard at the TRR would require new impervious surfaces. These impervious surfaces would not allow infiltration of water for recharge into the underlying aquifer system. However, there would be aggregate base surfacing for access roads (approximately 12 acres), and parking areas (approximately 1 acre) and roads would not be paved with concrete or asphalt. Although the proposed MWI pipeline would also be lined, it would be buried below ground, allowing water to infiltrate. Changes in groundwater recharge due to new impervious areas and construction of the lined reservoir would be minimal compared to the size of the entire Colusa Subbasin, where precipitation would continue to infiltrate into the ground. The addition of impermeable surfaces could slightly diminish groundwater recharge but not to an extent that would be expected to affect existing uses of nearby wells. Therefore, the effects on groundwater recharge during construction would be not adverse. No mitigation is required.

Effect WR-6: Changes to Groundwater Resources during Construction

Other activities that may affect groundwater resources include excavation requiring dewatering during construction of project facilities. Groundwater in the RSA were found at depths of 17 and 20 feet bgs. During construction, maximum depth of excavation would be 24 feet for the pipeline, 8 feet for the TRR facilities. Groundwater would only be affected by temporary dewatering at specific sites (e.g., where the pipeline would go under the GCID Canal) where jack-and-bore tunneling would be needed. As discussed above, water from dewatering activities would be collected in Baker Tanks or other suitable containers, then used for dust control (where it would subsequently percolate into the groundwater table), or released to local farm canals, GCID Main Canal, or Funks Creek, in compliance with dewatering requirements of the Construction General Permit and the appropriate WDR. If necessary, pumped groundwater may be treated to reduce turbidity and concentrations of suspended sediments prior to discharge. Therefore, the effects on groundwater resources due to excavation or dewatering during construction would be not adverse. No mitigation is required.

Effect WR-7: Changes to Groundwater Quantity during Construction

The proposed action increases flexibility in water conveyance and does not affect surface water or groundwater supplies. Improvements in surface water supply reliability for agricultural use as a result of the proposed action could result in stabilization or modest increases in groundwater resources because of a reduced need for groundwater extraction. Water used during construction would come from the GCID Main Canal, and groundwater would not be used during construction with the possible exception of using groundwater from dewatering activities for dust control. No water would be used during operation activities.

Colusa County is involved with planning and implementation of the Sustainable Groundwater Management Act (SGMA). The SGMA establishes a structure for providing sustainable management of groundwater basins, including use of groundwater in a manner that can be maintained during planning and implementation without causing undesirable results. It requires development of projects and programs to achieve long-term basin sustainability. The formation of groundwater sustainability agencies (GSAs) is required for all basins that the California Department of Water Resources (DWR) has designated as high or medium priority. GSAs manage basins sustainably and requires adoption of groundwater sustainability plans (GSPs) for crucial groundwater basins in California. The Colusa Groundwater Authority and the Glenn Groundwater Authority formed a GSA and submitted the Colusa Basin GSP, which the proposed action is within, for review February 28, 2018. Implementation of the GSP would maintain sustainable yield and avoid "undesirable results," including chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply or significant and unreasonable reductions in groundwater storage, water quality, subsidence, or seawater intrusion (California Water Code § 10721(x)).

Construction of the proposed action would be in compliance with policies and requirements of the SGMA, the Colusa Basin GSP, and regional groundwater protection programs such as the policies, actions, and basin management objectives contained in the Colusa County Groundwater Management Plan. The proposed action would not consume groundwater supply or affect groundwater resources. As a result, there would be no effect on groundwater volume and recharge during construction. No mitigation is required.

Effect WR-8: Changes to Groundwater Quality from Contaminants during Construction and Operation

Excavation activities during construction of the proposed project have the potential to expose the groundwater table. While standing water would be pumped out of excavated areas, contamination of groundwater could result from construction activities because heavy machinery could be used in wet soils or in adjacent areas where sheet flows could carry contaminants to soils within the groundwater table. In addition, spills or leaks of petroleum products and other pollutants related to machinery could occur during vehicle operation during construction travel, refueling and parking, and from maintenance activities and equipment, including fuels, oils, and solvents. Improper handling, storage, or disposal of these materials in the vicinity of excavated areas could cause degradation of groundwater quality. However, the Authority or its contractor would prepare and implement a SWPPP, as described in Section 2.4, *Environmental Protection Measures*. Although the SWPPP would reduce the risk of contamination of groundwater resources, it would not eliminate it. Therefore, the effect on groundwater quality during construction and operation would be adverse. Mitigation Measure WR-MM-1 would be implemented to include implementation of a spill prevention, control, and countermeasure plan (SPCCP) prior to construction to minimize the

potential for and effects from spills through compliance with state and federal water quality regulations, actions to take during accidental spills and releases, and the installation and use of containment facilities. This mitigation measure would reduce the risk of contamination of groundwater quality during construction and operation. Therefore, the effect on groundwater quality during construction and operation would be not adverse after mitigation.

Floodplains

Effect WR-9: Changes to Flood Risks within the Floodplains during Construction

A portion of the facilities to be constructed under the proposed action, including the majority of the TRR, has been identified as being within a 100-year flood area. Disturbances in the floodplain would be limited to the area needed for construction of the 3.5-mile MWI pipeline and new facilities associated with and including the TRR, such as the TRR Pumping Plant, access bridge, TRR switchyard, and TRR inlet and GCID flow control structures. During construction, groundcover and soils would be temporarily disturbed. Removal of groundcover and soils in floodplains and changes to surface elevations would be temporary and the area not occupied by the TRR structures would be reclaimed to preconstruction conditions. Potential floodwater displacement could occur where structures are placed in floodplains. However, the MWI pipeline would be buried below ground. As a result, effects of groundcover disturbance due to the pipeline would be temporary and flood flows would not be impeded or redirected.

Final site grading would provide surface drainage away from all structures and would direct flood flows toward appropriate surface drainage devices without flooding or ponding. In addition, the proposed action would not include additional stormwater discharges or other discharges that would increase the frequency or severity of flooding. Surface water features including the TC Canal system, Funks Creek, GCID canals, irrigation ditches, and the proposed TRR could convey or store flood flows and reduce flood hazards. The TRR would be approximately 15 feet deep, with a maximum water depth of 12 feet, leaving 3 feet of freeboard. In addition, the pumps and other equipment at the TRR Pumping Plant would be located above the 100-year flood elevation.

While a portion of the project site is located in the 100-year floodplain, the proposed action would not exacerbate the frequency or severity of flooding, impede or redirect flood flows within an existing 100-year flood zone, or cause flooding in areas that otherwise would not be subject to flooding without the proposed action. ~~Furthermore, t~~The electrical switchyard, TRR Pumping Plant, and access bridge would be ~~either be~~ designed to be protected from flood flows or would be constructed with a base elevation above the 100-year flood elevation. While the TRR berms and electrical switchyard would displace a portion of the 100-year floodplain that may receive flood flows from Funks Creek, excavation of the area within the TRR would greatly increase the flood storage capacity of that area. This increase in flood storage capacity would offset any loss of floodplain capacity that would result from construction of the proposed project. Therefore, the effect would be not adverse. Mitigation is not required. ~~For the switchyard, such a minute volume (2 feet * 1 acre compared to x acres of floodplain) it will not effect the hydric value of the floodplain.~~

3.6 Biological Resources

3.6.1 Wildlife and Special-Status Species

3.6.1.1 Methods

Definition of Resource Study Area

The RSA for special-status and other wildlife species encompasses a 1-mile buffer around the western portion of the project footprint and a 200-foot buffer around the eastern portion of the project footprint. This buffer was designed to account for potential direct and indirect effects related to construction based on the range and habitat of species with the potential to occur in the area. The project footprint includes the GCID TRR Complex, the private bridge, the pipeline and associated 150-foot wide construction disturbance area (i.e., construction work area) that could serve as both a staging and work area, and the conversion of an existing power line to a 69-kV power line alignment. The RSA is intended to capture all of the project elements that could directly or indirectly affect wildlife and special status species during construction, operations, and maintenance of the proposed action.

Method for Effects Analysis

This evaluation of wildlife is based on professional standards and information cited throughout the section. The key effects were identified and evaluated based on the environmental characteristics of the RSA and the expected magnitude, intensity, and duration of activities related to the construction and operation of the proposed action.

Effects on special-status and other wildlife species were quantitatively and qualitatively evaluated based on the potential for species occurrence in suitable habitat/land cover types located in the RSA. The proposed action was overlaid onto a map showing land cover types using GIS applications. Acreages of direct effects were then calculated and are presented in Table 14. The analysis of potential indirect effects on wildlife is qualitative in nature (e.g., noise disturbance, dust accumulation) and was determined based on the proximity of project activities to known species locations or potential habitat (e.g., giant gartersnake habitat or nesting areas). Wildlife species could be directly and indirectly affected by the proposed action. The following types of activities could cause varying degrees of effects on wildlife.

- Vegetation removal and clearing and grading for construction of the gravel maintenance road, the pipeline, the TRR, and staging areas.
- Channel dewatering and installation of temporary water-pumping and storage structures.
- Trenching and excavation of the pipeline route
- Excavation and berm placement for the TRR Pumping Plant, reservoir, and connection channel.
- Grading and fill placement during construction and installation of the project features.
- Temporary stockpiling and sidecasting of soil, construction materials, or other construction wastes.

- Permanent and temporary disturbance from the construction of a new bridge and temporary disturbance from the installation of the 69-kV power line.
- Dust and water runoff from the construction site into adjacent areas.
- Runoff of herbicides, fertilizers, diesel fuel, gasoline, oil, raw concrete, or other toxic materials used for construction, operations, and maintenance into sensitive biological resource areas (e.g., riparian habitat, drainages).

Method Used to Identify Affected Environment

The methods used to identify wildlife resources in the RSA consisted of a prefield investigation, reconnaissance-level site visit, and review of project maps depicting current vegetation cover types.

Prefield Investigation

Prior to conducting the reconnaissance-level site visit, a wildlife biologist reviewed existing resource information related to the project to evaluate whether sensitive species or other protected wildlife could occur in the RSA and region. The sources listed below were reviewed.

- A list of sensitive species from the California Natural Diversity Database (CNDDB) records search for two U.S. Geological Survey (USGS) 7.5-minute quadrangles, which form an approximate 5-mile buffer around the RSA: Sites and Maxwell (CDFW 2018) (Appendix C, *Biological Resources Information*).
- A list of threatened and endangered species for the RSA from the U.S. Fish and Wildlife Service (USFWS) website (USFWS 2018) (Appendix C).
- Aerial maps of the RSA accessed on Google Earth Pro (Google Earth 2018).

This information, coupled with professional judgment, was used to develop lists of special-status species that could be present in the RSA and region. Species from the lists were considered if they were known to occur within an approximately 5-mile radius of the RSA. No federal, state, or local regulatory agencies were contacted prior to conducting the prefield investigation.

Reconnaissance-Level Site Visit

A biologist conducted a reconnaissance-level site visit on July 5, 2018 to evaluate existing vegetation and wetland resources, to map vegetation communities, and to identify suitable giant gartersnake (*Thamnophis gigas*) habitat in the RSA. The field visit was conducted in the accessible parts of the RSA (i.e., not private property).

3.6.1.2 Affected Environment

Wildlife Habitat–Land Cover Type Associations

This section describes the relationship between land cover types and wildlife habitats and identifies common and special-status wildlife species associated with each land cover type. Although land cover types emphasize floristic composition, structure, and other physical attributes, each land cover type provides a specific function and value for wildlife species.

The RSA is mostly agricultural, primarily consisting of orchards and row crops. Annual grassland surrounds Funks Reservoir, as well as undeveloped areas at the western end of the proposed MWI

pipeline route. A total of seven land cover types were identified in the RSA. Table 11 provides the mapped acreages for each land cover type.

Two of the land cover types are considered natural communities: annual grassland and riparian woodland. The other five land cover types—agriculture, reservoir/open water, riverine, canal/drainage ditch, and developed—are associated with human activities. Each of the land cover types is discussed in the following subsections.

Annual Grassland

Annual grassland is located primarily north of the pipeline alignment and in the western portion of the RSA. Annual grassland provides foraging habitat for species such as golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), and white-tailed kite (*Elanus leucurus*), and nesting habitat for species such as western burrowing owl (*Athene cunicularia*), western meadowlark (*Sturnella neglecta*) and savannah sparrow (*Passerculus sandwichensis*). If the species is present in the RSA, annual grassland also provides upland and dispersal habitat for California red-legged frog.

Riparian Woodland

Riparian woodland and shrubs occur along Funks Creek. Overstory riparian trees may be used for nesting and roosting by numerous raptors, including red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*) and special-status species such as white-tailed kite and Swainson's hawk (*Buteo swainsoni*). Riparian woodland provides suitable nesting habitat for a variety of non-raptor bird species, including green heron (*Butorides virescens*), yellow-rumped warbler (*Dendroica coronata*), and white-breasted nuthatch (*Sitta carolinensis*), and important cover and foraging habitat for resident, migratory, and wintering birds. If the species is present in the RSA, riparian woodland also provides upland habitat for California red-legged frog.

Agriculture

Agriculture accounts for the majority of the land cover in the RSA and consists of orchards, rice fields, and row and field crops.

Orchard is one of the dominant land cover types in the RSA and has limited value for wildlife, although birds such as red-shouldered hawk, American crow (*Corvus brachyrhynchos*), yellow-billed magpie (*Pica nuttalli*), mourning dove (*Zenaida macroura*), European starling (*Sturnus vulgaris*), and rock pigeon (*Columba livia*) may nest or forage in these areas.

Rice fields are located along the southern edge of the TRR footprint and along the power line bordering McDermott Road and Dirks Road. Rice fields provide foraging habitat for species such as tricolored blackbird (*Agelaius tricolor*), white-faced ibis (*Plegadis chihi*), and migratory and wintering shorebirds. Rice fields also provide aquatic habitat for giant gartersnake.

Row and field crops are located primarily in the western portion of the RSA and in the footprint of the TRR. Row and field crops provide foraging opportunities for a variety of raptors, including red-tailed hawk, Swainson's hawk, white-tailed kite, American kestrel (*Falco sparverius*), western burrowing owl (*Athene cunicularia*), northern harrier (*Circus cyaneus*), great-horned owl (*Bubo virginianus)*, barn owl (*Tyto alba*), and other migratory and resident birds such as sandhill crane (*Grus canadensis tabida*), Brewer's blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeniceus*), tricolored blackbird, American crow, yellow-billed magpie, western meadowlark, mourning dove, and rock pigeon. Similar species are known to use irrigated pastures

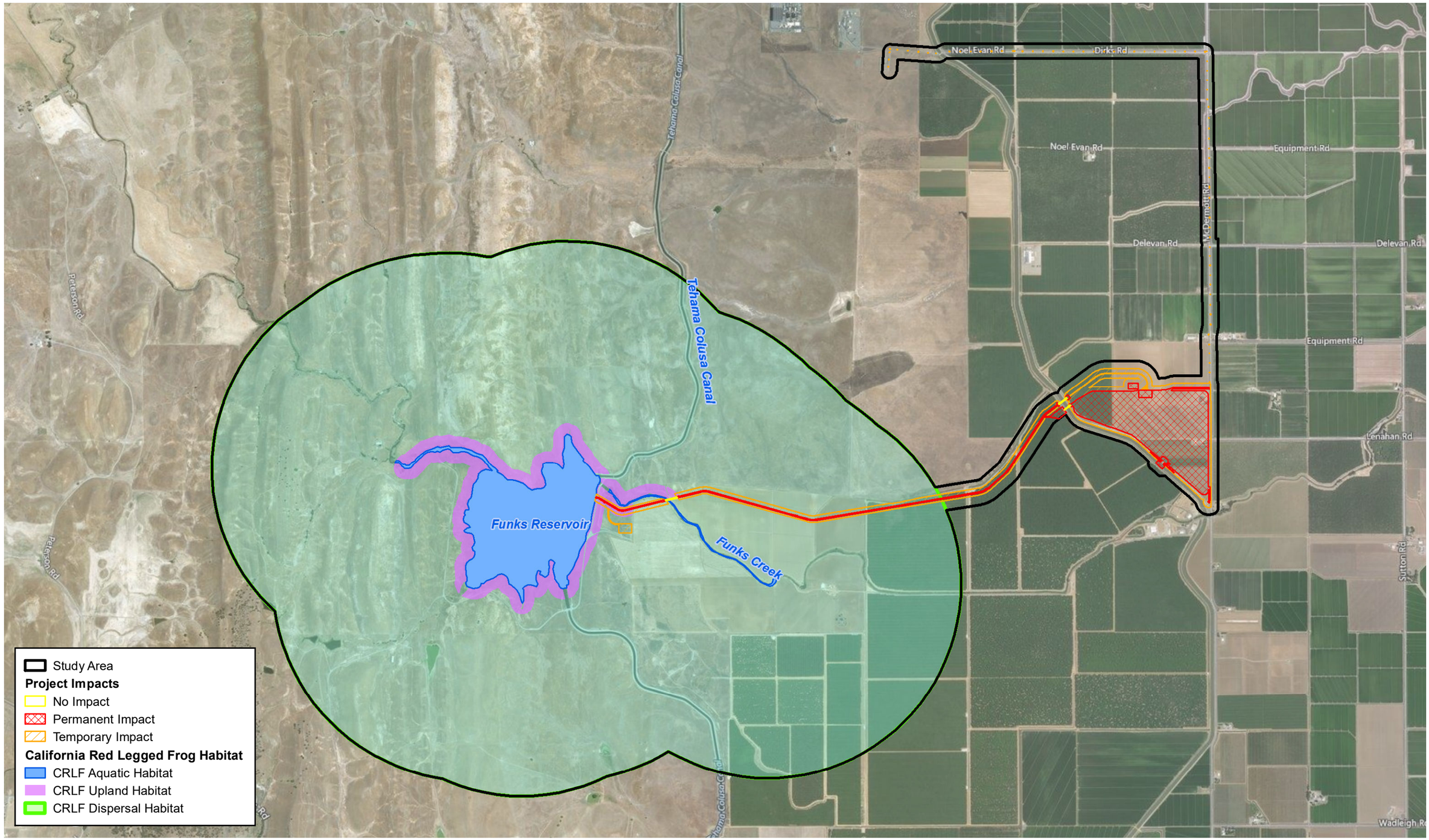


Figure 3.6-1
Potential California Red-Legged Frog Habitat and Project Footprint Maxwell Water Intertie Project

for foraging, and birds such as burrowing owl, northern harrier, and western meadowlark are known to nest in these areas.

Reservoir/Open Water

Open water areas such as Funks Reservoir provide essential foraging habitat for a variety of birds, including waterfowl such as northern shoveler (*Anas clypeata*), northern pintail (*Anas acuta*), common goldeneye (*Bucephala clangula*), mallard (*Anas platyrhynchos*), common merganser (*Mergus merganser*), ruddy duck (*Oxyura jamaicensis*), gadwall (*Anas strepera*), and cinnamon teal (*Anas cyanoptera*); other water birds such as eared grebe (*Podiceps nigricollis*), double-crested cormorant (*Phalacrocorax auritus*), and American white pelicans (*Pelecanus erythrorhynchos*); and land birds such as bald eagle (*Haliaeetus leucocephalus*), bank swallow (*Riparia riparia*), and belted kingfisher (*Megaceryle alcyon*). Multiple cliff swallow nests were observed on the Funk Reservoir Dam and connection to Funks Creek during the reconnaissance site visit. If the species is present in the RSA, Funks Reservoir may also provide aquatic habitat for California red-legged frog.

Riverine

Funks Creek is located in the RSA. Streams and creeks with well-vegetated areas provide food, water, and migration and dispersal corridors, as well as escape, nesting, and thermal cover for many wildlife species (Mayer and Laudenslayer 1988). Funks Creek provides aquatic habitat for giant gartersnake. Other wildlife species associated with stream and riparian habitats include Anna's hummingbird (*Calypte anna*), and black phoebe (*Sayornis nigricans*). Multiple cliff swallow nests were observed on the Funk Reservoir Dam and connection to Funks Creek during the reconnaissance site visit. If the species is present in the RSA, Funks Creek may also provide aquatic habitat for California red-legged frog.

Canals and Ditches

Wildlife use of canals and ditches is dependent on several factors including the extent of vegetation within and along the canal or ditch, whether or not the canal or ditch is concrete lined, the period of time that water remains within the canal or ditch, and the velocity of flow. Concrete-lined canals or ditches or those with high flow velocities typically have low value for wildlife, although large canals or ditches with slower flows can be used by waterfowl. Canals and ditches with vegetation within and along the banks and adequate duration of water can provide food, water, cover, and dispersal corridors for various wildlife species, such as great egret (*Ardea alba*), raccoon (*Procyon lotor*), and striped skunk. Banks of canals and ditches could be used by California ground squirrel (*Spermophilus beecheyi*). Canals and ditches that contain water through mid-fall, have suitable prey, and adequate cover and foraging habitat have the potential to support giant gartersnake.

Developed/Unvegetated

Developed and vegetated areas in the RSA consist of paved, dirt, and gravel roads and provide primary habitat for ground-nesting habitat for common avian species such as killdeer (*Charadrius vociferus*).

Special-Status Wildlife Species

Special-status wildlife species are defined for the purpose of this EA as animals that are listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA)

(50 CFR 17.11 for listed animals, and various notices in the *Federal Register* [FR] for proposed species), bald and golden eagles that are protected under the Bald and Golden Eagle Protection Act, and birds and raptors that are protected under the Migratory Bird Treaty Act (MBTA).

Based on the USFWS (2018) species list and CNDDB (CDFW 2018) records search for the quadrangles overlapping the RSA, 13 special-status wildlife species were identified as having potential to occur in the RSA and surrounding region (Table 9). Of these 13 species, five were excluded from further consideration either because the RSA is outside the species' known range or suitable habitat is minimal to absent—vernal pool fairy shrimp (*Branchinecta lynchi*), conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool tadpole shrimp (*Lepidurus packardi*), northern spotted owl (*Strix occidentalis caurina*), and western yellow-billed cuckoo (*Coccyzus americanus*). Three additional species were added as having at least a moderate potential to occur in the affected area based on species habitat requirements and professional judgment—white-tailed kite (*Elanus leucurus*), loggerhead shrike (*Lanius ludovicianus*), and northern harrier (*Circus cyaneus*). Although Funks Reservoir is heavily managed and the nearest recorded occurrence of California red-legged frog (*Rana draytonii*) is greater than 50 miles away from the RSA, USFWS has indicated that California red-legged frogs may be potentially present in the reservoir and associated suitable uplands, therefore, the species was included in the analysis. All wildlife species considered are listed in Table 9, which contains their regulatory status, distribution, habitat requirements, and a rationale for their potential to occur in the RSA.

Table 9. Special-Status Wildlife Species Potentially Occurring in the Vicinity of the Maxwell RSA

Common Name Scientific Name	Status[a] (Fed/State/ Other)	Distribution	Habitat Requirements	Potential for Occurrence
Invertebrates				None—no suitable habitat present.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/–/–	Streamside habitats below 3,000 feet throughout the Central Valley.	Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	Moderate—suitable conditions for elderberry shrubs present throughout the RSA; no CNDDB occurrences within 5 miles of the RSA.
Conservancy fairy shrimp *Branchinecta conservatio*	E/–/–	Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, and Glenn Counties.	Large, deep vernal pools in annual grasslands.	None—no suitable habitat present.
Vernal pool fairy shrimp *Branchinecta lynchi*	T/–/–	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County.	Common in vernal pools; also found in sandstone rock outcrop pools.	None—no suitable habitat present.
Vernal pool tadpole shrimp *Lepidurus packardi*	E/–/–	Shasta County south to Merced County.	Vernal pools and ephemeral stock ponds.	None—no suitable habitat present.
Amphibians				
California red-legged frog *Rana draytonii*	T/SSC/–	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County. Considered extirpated from the valley floor (USFWS 2002).	Permanent and semi-permanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation. May estivate in rodent burrows or cracks during dry periods.	Low— USFWS has indicated that California red-legged frogs may be potentially present in the reservoir and associated suitable uplands.
Reptiles				
Giant gartersnake *Thamnophis gigas*	T/T/–	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno.	Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and	Moderate—suitable aquatic habitat in drainage ditches, rice fields, and Funks Creek; suitable upland habitat in annual grassland, ruderal areas, and canal banks.

Common Name Scientific Name	Status[a] (Fed/State/ Other)	Distribution	Habitat Requirements	Potential for Occurrence
			emergent vegetation for basking and areas of high ground protected from flooding during winter.	Seven CNDDB occurrences within 5 miles of the RSA.
Birds				
Golden eagle *Aquila chrysaetos*	–/FP/–	Winter range spans most of California; breeding range excludes the Central Valley floor	Nests and forages in a variety of open habitats, including grassland, shrubland, and cropland; most common in foothill habitats; rare foothill breeder; nests in cliffs, rock outcrops, and large trees.	Moderate—Suitable foraging habitat in grassland and fallow fields; No CNDDB occurrences within 5 miles of the RSA.
Swainson's hawk *Buteo swainsoni*	–/T/–	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County.	Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields.	Moderate—limited nesting habitat along Funks Creek and in isolated trees within grassland and cultivated lands. Suitable foraging habitat throughout the RSA; Eleven CNDDB occurrences within 5 miles of the RSA.
Northern harrier *Circus cyaneus*	–/SSC/–	Occurs throughout lowland California. Has been recorded in fall at high elevations.	Nests and forages in grasslands, meadows, marshes, and seasonal and agricultural wetlands.	Moderate—suitable nesting and foraging habitat; No CNDDB occurrences within 5 miles of the RSA.
White-tailed kite *Elanus leucurus*	–/FP/–	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Moderate—limited nesting habitat along Funks Creek and in isolated trees within grassland and cultivated lands; No CNDDB occurrences within 5 miles of the RSA.
Bald eagle *Haliaeetus leucocephalus*	–/E, FP/–	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin. Reintroduced into central coast. Winter range includes the rest of California, except the	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, reservoir, stream, or the ocean.	Moderate—suitable foraging habitat in Funks Reservoir; No CNDDB occurrences within 5 miles of the RSA.

Common Name Scientific Name	Status[a] (Fed/State/ Other)	Distribution	Habitat Requirements	Potential for Occurrence
		southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County.		
Western yellow-billed cuckoo *Coccyzus americanus*	T/E/–	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers.	Wide, dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley-oak riparian habitats where scrub jays are abundant.	Low—no suitable nesting habitat in the RSA; minimal riparian habitat suitable for migratory stopover and orchards are unlikely to provide stopover habitat because of their distance from suitable riparian areas; no CNDDB occurrences within 5 miles of the RSA.
Western burrowing owl *Athene cunicularia hypugea*	–/SSC/–	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast.	Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows.	Moderate—suitable nesting and foraging habitat in grasslands and bordering cultivated lands; Three CNDDB occurrences within 5 miles of the RSA.
Northern spotted owl *Strix occidentalis caurina*	T/T/–	A permanent resident throughout its range; found in the north Coast, Klamath, and western Cascade Range from Del Norte County to Marin County.	Dense old-growth or mature forests dominated by conifers with topped trees or oaks available for nesting crevices.	None—no suitable habitat present.
Loggerhead shrike *Lanius ludovicianus*	–/SSC/–	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter.	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Moderate—suitable nesting and foraging habitat; no CNDDB occurrences in the RSA.
Tricolored blackbird *Agelaius tricolor*	–/T/–	Permanent resident in the Central Valley from Butte County to Kern County; breeds at scattered coastal locations from Marin County south to San Diego County and at scattered locations in Lake, Sonoma, and Solano Counties; rare	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; habitat must be large enough to support 50 pairs; probably	Moderate—suitable foraging habitat in rice fields; limited amount of suitable nesting habitat present; Eight CNDDB occurrences within 5 miles of the RSA.

Common Name Scientific Name	Status[a] (Fed/State/ Other)	Distribution	Habitat Requirements	Potential for Occurrence
		nester in Siskiyou, Modoc, and Lassen Counties.	requires water at or near the nesting colony.	

[a] Status explanations:

Federal

E = listed as endangered under the federal Endangered Species Act
T = listed as threatened under the federal Endangered Species Act
C = candidate for listing under the federal Endangered Species Act
– = no status

State

E = listed as endangered under the California Endangered Species Act
T = listed as threatened under the California Endangered Species Act
C = candidate for listing under the California Endangered Species Act
FP = California fully protected species
SSC = California species of special concern
– = no listing.

Other

WBWG = Western Bat Working Group 2007. Available: <http://www.wbwg.org/spp_matrix.html>.
Moderate priority = species status is unclear because of a lack of data; this designation indicates a level of concern that should warrant (1) closer evaluation and more research of the species and possible threats and (2) conservation actions benefiting the species.
High priority = species are imperiled or at high risk of imperilment.

In addition to special-status species, non-special-status birds and raptors could nest in or adjacent to the RSA and their occupied nests and eggs are protected by the MBTA. The RSA does not contain critical habitat for any terrestrial wildlife species.

Determination of Adverse Effects

For this analysis, an effect pertaining to wildlife was analyzed if it would result in any of the following environmental effects, which are based on NEPA standards and standards of professional practice.

- Have a substantial effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species by USFWS.
- Contribute to a substantial reduction or elimination of species diversity or abundance.

3.6.1.3 Environmental Consequences

No Action Alternative

The No Action Alternative would have no effect on wildlife or special-status wildlife species in the RSA. The proposed action would not be constructed and habitats for wildlife species in the RSA would remain in their current condition. Direct and indirect effects on wildlife in the RSA would be associated with existing activities including disturbance from livestock grazing and agriculture production.

Proposed Action

Effect BIO-1: Potential Disturbance or Mortality of VELB and its Habitat (Elderberry Shrubs)

Elderberry shrubs may be present within the riparian corridor along Funks Creek or within agricultural lands or grasslands within the RSA. No riparian vegetation, including elderberry shrubs, would be trimmed or removed as a result of construction of the proposed action. However, soil disturbance adjacent to shrubs could affect the roots and subsequent health of elderberry shrubs. Noise and dust generated during construction could directly affect adult valley elderberry longhorn beetle (VELB) or exposed larvae or eggs within 165 feet of the project footprint (USFWS 2017). In the absence of avoidance measures, disturbance of elderberry shrubs would be considered an adverse effect on VELB. With the implementation of Mitigation Measures BIO-MM-1 through BIO-MM-4, this effect would not be adverse.

Effect BIO-2: Potential Disturbance or Mortality of California Red-Legged Frog and its Habitat

Although Funks Reservoir is heavily managed and the nearest recorded occurrence of California red-legged frog is greater than 50 miles away from the action area, USFWS has indicated that California red-legged frogs may be potentially present in the reservoir and associated suitable uplands. Potentially suitable habitat for California red-legged frog is shown in Figure 3.6-1. No California red-legged frog aquatic habitat would be permanently or temporarily removed as a result of the proposed action. However, construction of the proposed action would result in the permanent loss of up to 0.77 acres of potentially suitable upland habitat from the construction of the access road and the temporary loss of up to 3.78 acres of potentially suitable California red-legged frog upland habitat from associated work areas. The duration of construction disturbance for the project

features would range from 4 to 12 months. The conversion of 5.76 acres of cultivated lands providing potentially suitable dispersal habitat to a permanent access road and 30.82 acres of temporary impacts from work areas and the soil stockpile area would not be expected to impair dispersal to and from other suitable habitat areas.

Temporarily affected upland and dispersal habitat would be restored to pre-action conditions within one season (between May 1 and October 1), as described in Mitigation Measure BIO-MM-~~12~~10, and would not be expected to limit the availability of habitat for California red-legged frog in the vicinity of the biological RSA. The conversion of 0.77 acres of grasslands providing potentially suitable upland habitat to an access road is not expected to substantially limit the availability of habitat for California red-legged frogs. The Authority will offset permanent habitat loss consistent with the Section 7 biological opinion if USFWS determines that the project is likely to adversely affect the species.

In the absence of avoidance measures, construction vehicles and heavy equipment could injure or kill California red-legged frog in the unlikely event that individuals are present within the construction footprint. The potential for injury or mortality will be avoided, however, through the implementation of avoidance measures. California red-legged frog mortality from vehicles and heavy equipment are more likely 24 hours proceeding a rain event and during nighttime construction. Construction activities will be restricted to daylight hours. Ground disturbance activities will be initiated during the dry season (Mitigation Measure BIO-MM-7) to minimize chances of encountering California red-legged frogs, Preconstruction surveys will be conducted prior to ground disturbance to ensure no California red-legged frogs are present in the disturbance areas~~, after which exclusion fencing will be installed~~ and construction areas will be monitored to minimize the potential for California red-legged frog to enter work areas. Other potential effects related to construction may include entanglement in erosion control materials, contamination because of toxic substances such as fuels, degradation of aquatic habitat from runoff and siltation, and behavioral changes as a result of lighting or vibration. These effects will be minimized by ~~installing exclusion fencing (Mitigation Measure BIO-MM-8),~~ implementing a Spill Prevention, Control, and Countermeasure Plan (Mitigation Measure WR-MM-1), and prohibiting construction activities during rain events or within 24-hours following a rain event (Mitigation Measure BIO-MM-~~9~~8). Other effects related to construction may include individuals trapped in pipes or other equipment, and falling in trenches or pits 1 foot or deeper. The use of an open-top trailer to elevate materials for onsite storage above ground such as pipes, conduits and other materials that could provide shelter for California red-legged frogs, eliminating the use of plastic monofilament netting (erosion control matting), loosely woven netting, or similar material, implementing dust control measures, and covering trenches and/or pits with wooden planks (Mitigation Measure BIO-MM-~~9~~8) would minimize potential injury or mortality of California red-legged frog.

Injury or mortality of California red-legged frog is considered an adverse effect because the proposed action could reduce the local population size of a federally listed species if the species is present in this area. A site assessment and field surveys (presence/absence surveys) will be conducted prior to construction as described in Mitigation Measure BIO-MM-5. If California red-legged frog is detected during these surveys, Mitigation Measures BIO-MM-1, BIO-MM-2, WR-MM-1, and BIO MM-6 through BIO-MM-~~12~~ 11 will be implemented such that the effect on California red-legged frog is not adverse. If USFWS provides a biological opinion or technical assistance letter with alternative avoidance measures, the USFWS measures will be followed.

Effect BIO-3: Permanent Loss and Temporary Disturbance of Suitable Aquatic and Upland Habitat for Giant Gartersnake

Suitable habitat for giant gartersnake is shown in Figure 3.6-2. Construction of the proposed action would result in the permanent loss of up to 0.76 acre of giant gartersnake aquatic habitat. Permanent impacts on aquatic habitat would result from the construction of the access road, the MWI pipeline, and the TRR. Construction of the proposed action would also result in the permanent loss of up to 2.09 acres of suitable upland habitat for giant gartersnake. Permanent loss of suitable upland habitat would occur from the construction of the access road, the TRR, and the bore-and-jack crossing work area adjacent to the GCID Main Canal. The duration of construction disturbance for the project features would range from 4 to 12 months. Temporary effects on aquatic and upland habitat would result from the construction of the MWI pipeline, the power line work areas, and other construction work areas.

Temporarily affected habitat (2.09 acres of aquatic habitat and 14.26 acres of upland habitat) would be restored to pre-action conditions within one season (a season is defined as the calendar year between May 1 and October 1 [USFWS 1997]), as described in Mitigation Measure BIO-MM-~~15~~13, and would not be expected to substantially limit the availability of habitat for giant gartersnake in the vicinity of the biological RSA. Permanently affected habitat for giant gartersnake would be compensated for through purchasing credits at a USFWS-approved mitigation bank (Mitigation Measure BIO-MM-~~16~~14). Permanent and temporary losses of suitable aquatic and upland habitat for giant gartersnake within the RSA are summarized in Table 10.

Disturbance or degradation of suitable aquatic habitat for giant gartersnake in or adjacent to the biological RSA could occur from fuel or oil leaks or spills during construction activities adjacent to aquatic habitat. These potential effects would be avoided by ~~installing exclusion fencing where staging areas are within 200 feet of aquatic habitat (Mitigation Measure BIO-MM-13), and by~~ implementing a SPCCP (Mitigation Measure WR-MM-1).

In the absence of avoidance and mitigation measures, the loss of aquatic and upland habitat would be an adverse effect on giant gartersnake because the proposed action could reduce the local population size of a federally listed species. With the implementation of Mitigation Measures BIO-MM-1, BIO-MM-2, WR-MM-1, and BIO-MM-~~13~~ 12 through BIO-MM-~~18~~16, this effect would not be adverse.

Table 10. Permanent and Temporary Effects on Giant Gartersnake Aquatic and Upland Habitat in the RSA

Impacts	Aquatic Habitat (acres)	Upland Habitat (acres)
Permanent		
Access road	0.01	0.47
TRR	0.61	1.70
MWI pipeline	0.14	-
Bore and jack crossing work area	-	0.02
Total Permanent	***0.76***	***2.19***

Impacts	Aquatic Habitat (acres)	Upland Habitat (acres)
Temporary [1]		
MWI Pipeline	0.01	0.02
Power line work areas	0.17	0.26
Construction work areas	1.91	13.98
Total Temporary	***2.09***	***14.26***

[1] Temporarily affected aquatic and upland habitat will be restored to pre-action conditions within one season (a season is defined as the calendar year between May 1 and October 1 [USFWS 1997]).

Effect BIO-4: Potential Injury or Mortality of Giant Gartersnake

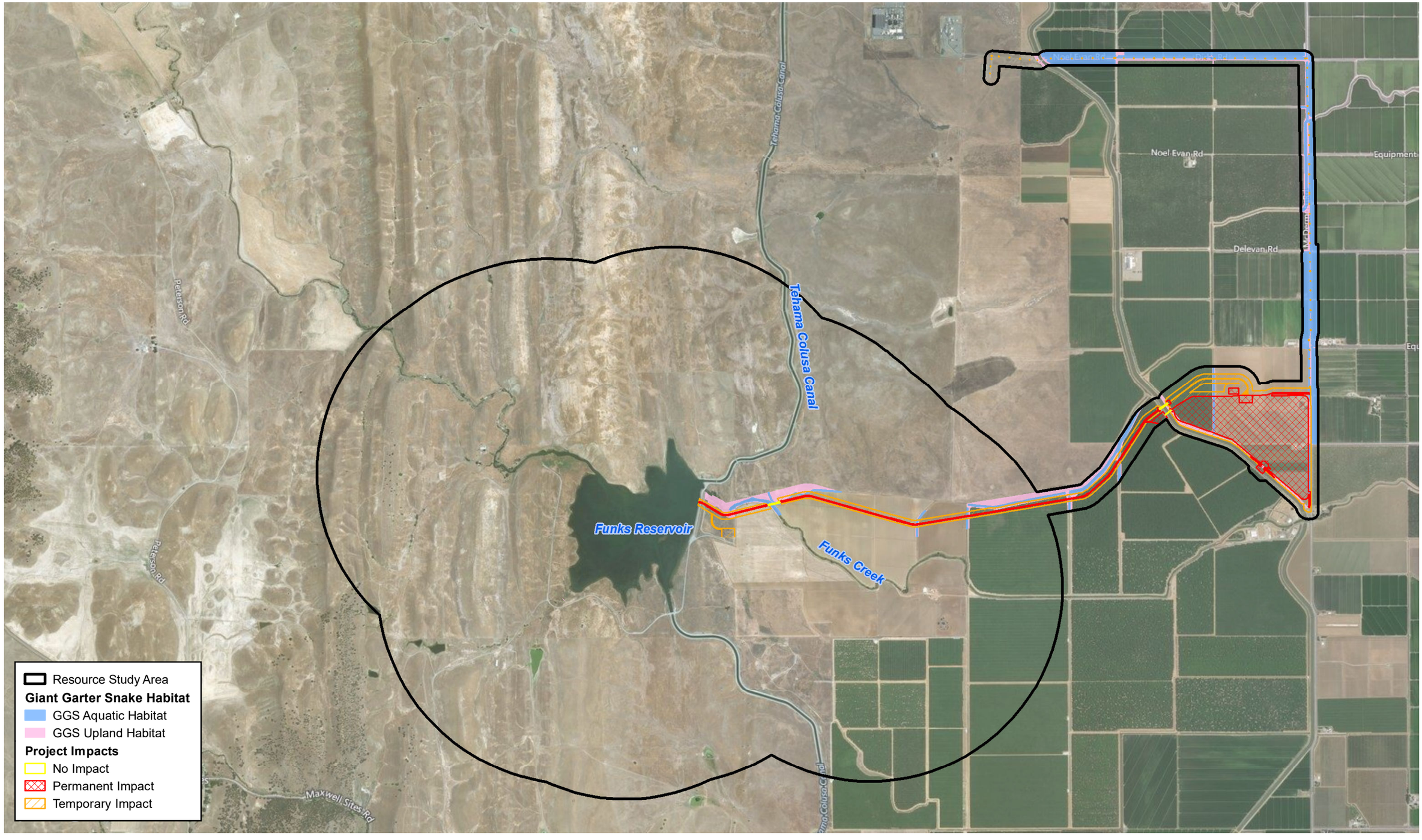
Construction activities in and adjacent to suitable habitat could result in the injury, mortality, or disturbance of giant gartersnakes. Giant gartersnakes could be injured or crushed by construction equipment working in or near suitable aquatic and upland habitat. Snakes could also be killed by construction vehicles traveling though the RSA. Fuel or oil spills from construction equipment into aquatic habitat could also cause illness or mortality of giant gartersnakes. Noise and vibrations from construction equipment and presence of human activity during construction activities may also disturb giant gartersnakes within the RSA which could reduce foraging effecieny, potentially resulting in decreased fitness,or increase dispersal time away from cover making individuals more vulnerable to predators.

Snakes are more vulnerable during their inactive period (October 1 through May 1) because they are unlikely to leave their retreat sites and may be crushed, trapped, or buried during excavation or movement of heavy equipment. Heavy equipment or construction vehicles used during the inactive season could compact or fill California ground squirrel burrows along canal banks and agricultural roads if present, resulting in potential injury or mortality of giant gartersnakes.

Dewatering channels using pumps could result in mortality of individual snakes by being entrained in the pump. The use of intake screens would reduce this likelihood and the pre-pumping inspection and monitoring by an approved biologist would further reduce the chance for injury or death by preventing pumping to occur with snakes present (Mitigation Measure BIO-MM-~~18~~16). In the absence of avoidance measures, potential injury or mortality of giant gartersnake would be an adverse effect because the proposed action could reduce the local population size of a federally listed species. With the implementation of Mitigation Measures BIO-MM-1, BIO-MM-2, WR-MM-1, and BIO-MM-~~13~~ 12 through BIO-MM-~~18~~ 16 this effect would not be adverse.

Effect BIO-5: Loss or Disturbance of Tree-, Shrub- and Ground-Nesting Special-Status and Non-Special–Status Migratory Birds and Raptors

Direct effects on both special-status and non-special-status birds and raptors include the loss of nesting habitat associated with construction as well as the potential for disturbance of foraging habitat and disturbance of actively nesting birds if an active nest is present in or near the construction areas. Northern harrier and western burrowing owl may nest in annual grassland and ruderal areas in or adjacent to the RSA. Loggerhead shrike may nest in shrubs and trees in more open portions of construction areas. Trees and shrubs in the RSA (including orchards, isolated trees within cultivated lands, and the riparian corridor along Funks Creek) could provide nesting habitat for several common migratory birds and raptors, including western bluebird (*Sialia Mexicana*), western kingbird (*Tyrannus verticalis*), Anna's hummingbird, lesser goldfinch (*Spinus psaltria*), American goldfinch (*Spinus tristis*), red-shouldered hawk, and red-tailed hawk. Multiple cliff swallow



0 0.25 0.5 Miles
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Figure 3.6-2
Giant Garter Snake Habitat Impacts
Maxwell Water Intertie Project

nests were observed on the Funk Reservoir Dam and connection to Funks Creek during the reconnaissance site visit.

The RSA does not contain suitable nesting habitat for bald and golden eagles. Funks Reservoir may provide foraging habitat for bald eagle and the annual grassland provides suitable foraging habitat for golden eagle within and adjacent to the RSA. Golden eagles would be expected to avoid areas of construction within the annual grassland such as the temporary placement of stockpiles. Foraging habitat for golden eagle is not limited in the region and therefore the proposed action would not adversely affect golden eagle. Bald eagles would not be adversely affected by the proposed action.

If construction takes place during the breeding season (generally between February 1 and August 31), construction activities (e.g., tree and shrub removal, excavation, grading, stockpiling) in the construction area could disturb or remove occupied nests of special-status or non-special-status birds and raptors. These disturbances could cause nest abandonment and subsequent loss of eggs or of developing young at active nests located in or near the construction area. All migratory birds are protected under the MBTA. Such losses could affect the local population of special-status and non-special-status species and would be considered an adverse effect in the absence of avoidance measures. With the implementation of Mitigation Measures BIO-MM-1, BIO-MM-2, BIO-MM-~~19~~17, and BIO-MM-~~20~~ 18 this effect would not be adverse and would avoid violation of the MBTA.

3.6.2 Vegetation and Special-Status Plants

3.6.2.1 Methods

Definition of Resource Study Area

The RSA for vegetation and special-status plant species encompasses the entire anticipated project footprint. The RSA includes all the project features associated with the GCID TRR Complex including the bridge over the GCID Main Canal, the 150-foot-wide construction disturbance area (i.e., construction work area) that could serve as both a staging and work area, and a 69-kV power line upgrade that would tie into an existing substation yard approximately 3.5 miles northwest of the TRR facility. The RSA is intended to capture all of the project elements that could directly or indirectly affect vegetation and federally listed species during construction, operations, and maintenance of the proposed action.

Method for Effects Analysis

The methods used to identify vegetation and special-status plant species in the RSA consisted of a prefield investigation and reconnaissance-level site visit.

Prefield Investigation

Natural communities in the RSA were identified via aerial interpretation in Google Earth (Google Earth 2018) and categorized into vegetation alliances (where possible) using the California Native Plant Society (CNPS) and California Department of Fish and Wildlife (CDFW) classification systems for natural vegetation types (Sawyer et al. 2009; CDFW 2018a).

Invasive plant species potentially occurring in the RSA were identified from existing surveys that have been conducted in the RSA region (DWR 2000). Because field surveys could not be conducted across the entire RSA (see *Reconnaissance-Level Field Visit* below), the information on invasive plant

species is not comprehensive but rather lists additional species that have the potential to occur in the RSA to inform the effects analysis and mitigation measures. Any additional invasive plant species present in the RSA would be addressed through this analysis and mitigation. The level of threat each invasive plant species poses to the environment is identified in the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory (Cal-IPC 2018) and California Department of Food and Agriculture's California Noxious Weeds List (CDFA 2016).

Special-Status Plant Species

Special-status species are plants that are legally protected under the FESA, California Endangered Species Act (CESA), or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing, such as the CNPS's Rare Plant Rank. A list of special-status plant species with potential to occur in the RSA was developed using the CNDDB that included the USGS 7.5-minute Sites and Maxwell quadrangles (CDFW 2018), USFWS IPaC (Information for Planning and Consultation), Trust Resources Report for Colusa County (USFWS 2018), and the CNPS Inventory of Rare and Endangered Plants for the USGS Quadrangles (CNPS 2018). Special-status plant species are federally or state listed as rare, threatened, or endangered, or are CNPS Rare Plant Rank of 1, 2, and 3.

Reconnaissance-Level Field Visit

A biologist conducted a reconnaissance-level site visit on July 5, 2018 to evaluate existing vegetation and wetland resources and to map vegetation communities in the RSA. The field visit was conducted in the accessible parts of the RSA (i.e., not private property). The field visit was conducted to complete the actions below.

- Identify land cover types.
- Evaluate whether potential habitat is present for special-status plant species that have been identified in the project region.
- Identify potential waters of the United States and/or state, including wetlands.
- Identify invasive plant species present in the RSA.

A complete assessment of the plant species could not be conducted, and therefore binoculars were used to view the portions of the RSA that were not accessible to the biologist. However, this assessment was sufficient to characterize the general vegetation community types in the RSA.

3.6.2.2 Affected Environment

Vegetation

The RSA and surrounding region are characterized by a Mediterranean climate with hot, dry summers and mild, rainy winters. Ecoregions are areas of general similarity in ecosystems based on major terrain features such as a desert, plateau, valley, mountain range, or a combination thereof as defined by the USDA (McNab et al. 2007), which is also consistent with the Jepson Manual's geographic subdivision of the California Floristic Province (Baldwin et al. 2012). The RSA falls within the Great Valley section of the California Dry Steppe Province (McNab et al. 2007) and the Inner North Coast Ranges and Sacramento Valley subdivisions of the California Floristic Province (Baldwin et al. 2012). Conversion from natural land cover types to agriculture is widespread in the Central Valley. This section describes the vegetation communities in the RSA ecoregion.

Vegetation Communities

Two vegetation communities, annual grassland and riparian woodland, are present in the RSA. The annual grassland vegetation community is comprised of two CNPS/CDFW semi-natural communities (Sawyer et al. 2009; CDFW 2018a), the wild oats grassland vegetation alliance and the annual brome grasslands vegetation alliance, which likely intermix (DWR 2000). The densely vegetated portion of Funks Creek adjacent to the Funks Reservoir dam supports riparian vegetation, including willows (*Salix* spp.), cottonwoods (*Populus* spp.), black walnut (*Juglans nigra*) and valley oak (*Quercus lobata*) trees for approximately 0.2 mile and then these trees become much sparser farther downstream from the reservoir[9]. Other vegetation communities/land cover types present in the RSA include agriculture (e.g., almond orchards, row crops, and rice), reservoir/open water (e.g., Funks Reservoir, canals, agriculture ditches), and riverine (e.g., Funks Creek). Funks Reservoir includes an approximately 0.4-acre vegetated island, which is discussed in Section 3.6.3, *Wetlands*. Vegetation communities in the RSA are shown in Figure 3.6-3 and the total acreage of each type in the RSA is included in Table 11.

Annual grassland is the most abundant vegetation community in the RSA (Table 11). Annual grassland is present in the western portion of the RSA surrounding Funks Reservoir and in the northern portion of the RSA where the upgraded 69-kV power line would tie into the existing PG&E substation. Agricultural land dominates the western and central portions of the RSA. These two vegetation communities are described in the following subsections. The remaining vegetation communities/land cover types are very minor components of the RSA, some of which contain little to no vegetation, and so their vegetation composition is not described in this document.

Table 11. Vegetation Community Acreages in the Resource Study Area

Land Cover Type	Amount (acres)
Almond Orchard	195.5
Row Crops	192.0
Rice Field	69.8
Annual Grassland	75.7
Canal	14.9
Drainage Ditch	26.2
Riparian	4.8
Riverine	1.9
Roads/Developed	11.0
Ruderal	62.3
Total	654.1

Annual Grassland

The annual grassland land cover type is an herbaceous plant community dominated by nonnative annual grasses (Sawyer et al. 2009). Annual grassland is defined as areas where grasses and forbs occur as extensive stands without an overstory. The dominant grasses typically consist of introduced annual grasses, including foxtail chess (*Bromus madritensis*), harding grass (*Phalaris*

[9] Field access restrictions prevented the survey data necessary to classify to a vegetation alliance.

aquatica), hare barley (*Hordeum murinum* ssp. *leporinum*), nit grass (*Gastridium phleoides*), oats (*Avena barbata* and *A. fatua*), rattail sixweeks grass (*Festuca myuros*), ripgut brome (*Bromus diandrus*), Italian rye grass (*Festuca perennis*), silver hair grass (*Aira caryophyllea*), small fescue (*Festuca microstachys*), soft chess (*Bromus hordeaceus*), medusahead (*Elymus caput medusae*), and barb goat grass (*Aegilops triuncialis*). The associated herbaceous cover can include native and nonnative forbs. Common herbaceous species include black mustard (*Brassica nigra*), California poppy (*Eschscholzia californica*), clover species (*Trifolium* spp.), common fiddleneck (*Amsinckia menziesii*), common yarrow (*Achillea millefolium*), filaree species (*Erodium* spp.), Ithuriel's spear (*Triteleia laxa*), knapweed species (*Centaurea* spp.), lupine species (*Lupinus* spp.), yellow star thistle (*Centaurea solstitialis*) and owl's-clover species (*Castilleja* spp.). Native grasses can be patchily distributed within the larger annual grassland land cover type. These patches of native grasslands include an abundance of nonnative annual grasses, interspersed with perennial grasses and forbs.

Agriculture

Agriculture accounts for much of the land cover in the Sacramento Valley between the Sacramento River and the Coast Range foothills. Agricultural land uses change over time and the type of crop under cultivation can differ from year to year. The RSA almost exclusively contains almond orchards and rice fields, except for the two fields the TRR would remove that are row crops; at the time of the field visit the TRR contained sunflower row crops and a small amount of almond orchard on its western edge. The MWI pipeline alignment passes through almond orchards before connecting to Funks Reservoir.

Irrigated grain and row crops involve intensive agricultural operations to produce food and landscaping plants. Irrigated row and grain crops are grains, fruits or vegetables that can be planted in rows to grow on a relatively large scale for transport to distant markets. Examples of irrigated row crops include tomatoes, asparagus, melons, squash, cucumbers, onions, strawberries, and peppers. Farming practices associated with these crops generally suppress the growth of other vegetation.

Orchards involve planting rows of fruit- and nut-bearing trees for food production. Orchards in the Central Valley tend to be mostly deciduous small trees producing fruit or nut crops, usually planted in rows with or without irrigation channels. Deciduous fruit and nut orchards are typically planted with a single-tree species. Orchards are distinguished on the basis of their tree cover, canopy characteristics, and distinctive production rows.

Invasive Plant Species

Invasive plant species are widespread throughout the RSA. As stated above under *Annual Grassland,* the annual grassland vegetation communities in California are dominated by nonnative European forage grasses such as wild oat grass, ripgut brome or other bromes (*Bromus* spp.), and Italian ryegrass. The annual grassland in the RSA is managed for high-intensity grazing. Although European grasses are nonnative, they are so widespread in California they are considered to be naturalized and are not actively managed, except for those highly invasive grass species that can affect cattle production, such as barb goat grass and medusahead. Field surveys have not been conducted throughout the entire RSA, but it is anticipated that the annual grassland habitat could contain large patches of invasive grasses and forbs: two large patches of black mustard were observed on the southwestern side of Funks Creek during the field visit. Species that are present or have the potential to be present along Funks Creek include purple loosestrife (*Lythrum salicaria*), Himalayan

blackberry (*Rubus armeniacus*), tamarisk (*Tamarix* spp.), water primrose (*Ludwigia peploides*), pennyroyal (*Mentha pulegium*), tree of heaven (*Ailanthus altissima*), or edible fig (*Ficus carica*). Table 12 lists those invasive plant species that were observed in the RSA; however, as stated in Section 3.6.1.1, *Methods*, this list is limited to the species that could be observed from the accessible portions of the RSA.

Table 12. Invasive Species Observed in the Resource Study Area

Common Name *Scientific Name*	**CDFA List**[a]	**Cal-IPC List**[b]	**Habitat**
Black Mustard *Brassica nigra*	--	M	Fields, pastures, disturbed areas
Yellow Star Thistle *Centaurea solstitialis*	C	H	Pastures, roadsides, disturbed grassland or woodland
Tasmanian Blue Gum *Eucalyptus globulus*	--	L	Disturbed areas
Edible Fig *Ficus carica*	--	M	Disturbed, moist areas
Prickly Lettuce *Latuca serriola*	--	--	Roadsides, dry agriculture fields, disturbed places
Water Primrose *Ludwigia peploides*	--	H	Sloughs and backwaters along the Sacramento River
Tree Tobacco *Nicotiana glauca*	--	M	Open disturbed sites
Russian thistle *Salsola tragus*	C	L	Roadsides, ditches, pastures, disturbed places
Milk Thistle *Silybum marianum*	--	L	Roadsides, ditches, pastures, disturbed places
Tamarisk, Salt Cedar *Tamarix* ssp.	B	H	Washes, streambanks, ditches

[a] California Department of Food & Agriculture List of Noxious Weeds (CDFA 2016):
List B = Includes species less widespread and more difficult to contain—eradication, containment, control, or other holding action at the discretion of the Commissioner
List C = Weeds that are so widespread that the agency does not endorse State- or county-funded eradication except in nurseries
= Not listed

[b] California Invasive Plant Council (Cal-IPC 2018) California Invasive Plant Inventory:
H = High: invasive species with most severe wildland ecological effects, widespread
M = Moderate: invasive species with substantial wildland effects; local to widespread
L = Low: invasive species with minor wildland ecological effects; limited distribution, although may be locally problematic
= Evaluated, but not listed, due to low ecological effects

Special-Status Plants

The queries to determine potentially occurring special-status plant species in the RSA, as described in Section 3.6.1.1, identified a total of six special-status plant species in the USGS Quadrangles, as shown in Table 13. All six special-status plant species could occur within the annual grassland vegetation community in the RSA, where appropriate moisture and soil conditions are present. No special-status plant species are expected to be present in the Maxwell quadrangle, which is entirely composed of agriculture and urban/developed areas and contains no CNDDB occurrences of special-status plant species. The Maxwell quadrangle includes the TRR and a portion of the MWI pipeline. Bent-flowered fiddleneck (*Amsinckia lunaris*), brittlescale (*Atriplex depressa*), and San Joaquin spearscale (*Extriplex [Atriplex] joaquiniana*) are the only species with CNDDB occurrences in the Sites quadrangle, and the latter two species were identified within 1 mile of the RSA. The queries did not identify any special-status plant species with potential to occur in or along Funks Creek.

Table 13. Special-Status Plant Species with Potential to Occur in the Resource Study Area

Species Name	Common Name	Status* (Federal/ State/CNPS Listing)	Habitat Preferences	Flowering Phenology/Life Form	Habitat Suitability	Potential for Occurrence
Amsinckia lunaris	Bent-flowered fiddleneck	-/-/1B.2	Occurs in coastal bluff scrub, cismontane woodland and in valley and foothill grassland habitats, including California annual grassland between 3 and 795 meters.	March–June Annual herb	Suitable habitat is present in RSA, and two occurrences of this species have been documented in the Sites quadrangle 3–5 miles west of the RSA.	Moderate
Atriplex depressa	Brittlescale	-/-/1B.2	Found on alkaline clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pool between 1 and 320 meters.	April–October Annual herb	Suitable grassland habitat is present in RSA, and one occurrence of this species is located 0.7 mile north of the RSA.	Moderate
Eschscholzia rhombipetala	Diamond-petaled California poppy	-/-/1B.1	Found on alkaline clay soils in valley and foothill grassland between 0 and 975 meters.	March–April Annual herb	Suitable grassland habitat is present in the RSA; however there are no CNDDB occurrences of this species in the USGS Quadrangles.	Low
Extriplex [Atriplex] joaquiniana	San Joaquin spearscale	-/-/1B.2	Found on alkaline clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland between 1 and 835 meters.	May–November Annual herb	Suitable grassland habitat is present in RSA, and one occurrence of this species overlaps the RSA. This occurrence has an accuracy of 1 mile and is attributed to Funks Creek, which is outside of the RSA.	Moderate
Fritillaria pluriflora	Adobe lily	-/-/1B.2	Often found on adobe soil in chaparral, cismontane woodland, and valley and foothill grassland between 60 and 705 meters.	February–April Perennial bulb	Suitable grassland habitat is present in the RSA; however there are no CNDDB occurrences of this species in the USGS Quadrangles.	Low

Species Name	Common Name	Status* (Federal/ State/CNPS Listing)	Habitat Preferences	Flowering Phenology/Life Form	Habitat Suitability	Potential for Occurrence
Myosurus minimus ssp. *apus*	Little mousetail	-/-/3.1	Found on alkaline soil in valley and foothill grasslands and vernal pools between 20 and 640 meters.	March–June Annual herb	Suitable grassland habitat is present in the RSA; however there are no CNDDB occurrences of this species in the USGS Quadrangles.	Low

* Status codes:

California Native Plant Society (CNPS) California Rare Plant Rank

1B	=	List 1B species: plants rare, threatened, or endangered in California and elsewhere
2B	=	List 2B species: plants rare, threatened, or endangered in California, but more common elsewhere
0.1	=	Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)
0.2	=	Fairly endangered in California (20–80% of occurrences threatened)

Field surveys were conducted for special-status plant species within the RSA and greater project region in 1998 and 1999 (DWR 2000). The surveys were timed to ensure that they were conducted during the appropriate blooming period for all potentially occurring species. Some areas could not be surveyed due to property access restrictions or dense stands of impenetrable vegetation. The botanical surveys conducted in the RSA and project region documented no special-status plant species during their surveys (DWR 2000).

3.6.2.3 Environmental Consequences

This section describes potential effects on vegetation and special-status plant species that could result from construction, operation, and maintenance of the proposed action. The discussion identifies the effects of the proposed action to the extent that they are reasonably foreseeable, given the general level of detail that is available at this time. Impacts to vegetation in the RSA are shown on Figure 3.6-4.

No Action Alternative

The No Action Alternative would have no effect on vegetation or special-status plant species in the RSA. The proposed action would not be constructed and the vegetation communities, invasive plant species, and special-status species, if present, in the RSA would remain in their current condition or state. Direct and indirect effects on vegetation and special status plant species in the RSA would be associated with existing activities including livestock grazing and agriculture production.

Proposed Action

Vegetation

Effect BIO-6: Removal of Vegetation

The installation of new project features for the proposed action in the RSA would permanently remove approximately 146.7 acres of vegetation, of which 140.7 acres are agricultural land, within the footprint of each feature (Table 14). Although the MWI pipeline would be located underground, the permanent 30-foot-wide maintenance corridor, which includes a 20-foot-wide aggregate base maintenance road, would permanently remove vegetation within this corridor. The bore-and-jack pits on either side of Funks Creek are considered to be temporary effects. Additionally, constructing the bridge over the GCID Main Canal could permanently remove vegetation where the associated infrastructure (i.e., footings) are installed.

Surface disturbance associated with construction of the proposed action may temporarily remove up to approximately 239.2 acres of vegetation within the RSA. These direct effects would be short-term, lasting only for the duration of construction, and vegetation is expected to reestablish once construction is complete. The majority of the MWI pipeline would be constructed by trenching, and soil would be backfilled to bury the newly installed pipeline. Bore-and-jack construction of the MWI pipeline at the GCID Main Canal and at Funks Creek would require the installation of boring pits, which would temporarily remove any vegetation present. Temporary effects on vegetation would also occur from upgrading the power line along McDermott Road and Dirks Road with poles that would be replaced in the existing footprint, and in the 150-foot MWI pipeline corridor and around the TRR complex from staging and vehicle travel during construction.

Table 14. Permanent and Temporary Effects on Vegetation Communities in the Resource Study Area

Vegetation Communities in the Resource Study Area		
Land Cover Type	**Permanent Effects**	**Temporary Effects**
Almond Orchard	10.0	39.0
Annual Grassland	0.8	7.1
Canal	0.6	0.0
Drainage Ditch	0.8	2.1
Reservoir	0.0	0.1
Rice Field	0.0	0.0
Riparian	0.0	0.0
Riverine	0.0	0.0
Ruderal	2.1	12.5
Row Crops	130.7	32.1
Roads/Developed	0.0	0.1
Total	145.0	93.0

Because annual grassland and agricultural lands are not considered to be sensitive natural communities in CNDDB, effects on these vegetation communities are considered to be not adverse, and do not require mitigation. Following the completion of construction activities for the MWI pipeline, agricultural land temporarily affected by pipeline construction would be returned to agricultural uses.

Riparian communities are considered sensitive natural communities by CDFW (CDFW 2018c). Riparian woodland (or scrub) along Funks Creek would be regulated by USFWS (46 FR 7644) under no-net-loss policies for existing riparian habitat values. Although the riparian vegetation community in the RSA appears to be very sparse, it still provides some of the functions of riparian habitat and would be considered a sensitive natural community. Although 3.25 acres of riparian habitat are located within temporary and permanent effect area, effects on riparian vegetation from the proposed action are not expected because bore-and-jack construction methods would avoid vegetation along Funks Creek. The MWI pipeline alignment and bore pits would be moved, as needed, to avoid affecting large trees, and staging areas and vehicle travel routes would avoid riparian areas. However, it is still possible that effects on riparian vegetation could inadvertently occur during construction, and because permanent or temporary effects on riparian vegetation are regulated by USFWS, any direct or indirect effects on riparian vegetation would be considered adverse. Implementation of Mitigation Measures BIO-MM-1 and BIO-MM-2 would reduce this adverse effect to a not adverse level.

Operations and maintenance activities associated with the proposed action are not expected to affect any sensitive vegetation communities in the RSA. The MWI pipeline road would be in place to allow personnel to travel along a designated route. TRR operation would likely be controlled remotely and would not require daily on-site personnel. TRR maintenance would require minimal vegetation clearing from the slopes of the embankments, and maintaining the gravel maintenance road atop the embankment. The effect of operation and maintenance on vegetation in the RSA is considered to be not adverse and does not require mitigation.

Effects on aquatic habitat in the RSA are addressed in Section 3.6.3.

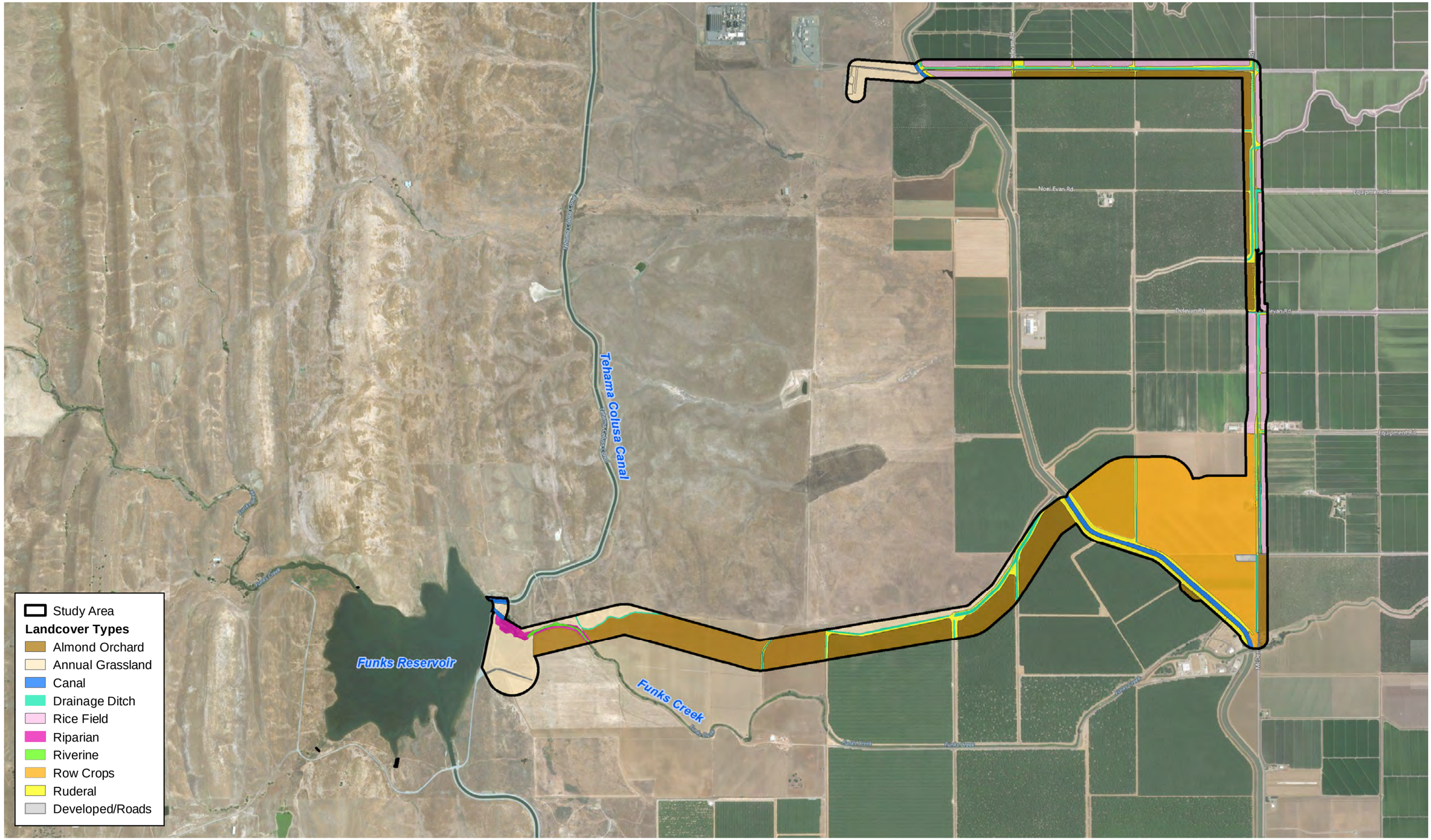

Figure 3.6-3
Vegetation / Landcover
Maxwell Water Intertie Project Overview

Invasive Plant Species

Effect BIO-7: Spread of Invasive Plant Species

Construction activities associated with the proposed action could result in the spread of invasive plant species within the RSA if vehicles or construction personnel traverse areas containing invasive plant species. For example, two large patches of black mustard are present on the southwest side of the MWI pipeline near the 2-acre spoil placement site. Clearing and grubbing the construction workspace could also result in soil disturbance as vegetation is removed, causing surface destabilization, erosion, and root exposure, depending on the density of the vegetation and amount of vegetation affected. Where vegetation is removed but no excavation occurs, heavy machinery in the RSA can result in soil compaction, making these areas less suitable for most native plant species to reestablish and more suitable for opportunistic invasive plant species. The spread of invasive plant species is considered to be a potentially adverse effect on vegetation communities in the RSA. Removal of soil could also result in the loss of nutrients for the vegetation communities in the RSA and the loss of the seed bank, although removal of invasive plant species and their seed bank from the RSA would be considered a beneficial effect of the proposed action. However, this effect would still be adverse. Implementation of Mitigation Measures BIO-MM-1, BIO-MM-2, and BIO-MM-~~21~~ 19 would reduce this effect to a not adverse level.

Special-Status Plants

For the purposes of this EA, this section only analyzes the effects of the proposed action on federally listed plant species; USDA under NEPA has no authority to enforce mitigation measures relating to state-listed species or non-listed species. Given that there are no federally listed special-status plant species with potential to be present in the RSA (Table 13), there will be no effect on federally listed special-status plant species from the proposed action and no mitigation is required.

3.6.3 Wetlands

3.6.3.1 Methods

Definition of Resource Study Area

The RSA for wetlands and non-wetland waters encompasses the entire anticipated project footprint and habitat immediately adjacent (within a 50-foot radius of the project footprint). The RSA includes all the Project features associated with the GCID TRR Complex, the 150-foot-wide construction disturbance area (i.e., construction work area) that could serve as both a staging and work area for the MWI pipeline and 2.7-mile gravel maintenance access road, the bridge over the GCID Main Canal, and a 69-kV distribution line upgrade that will tie into an existing substation yard approximately 3.5 miles northwest of the TRR facility. The RSA is intended to capture all of the project elements that could directly or indirectly affect wetlands and non-wetland waters during construction, operations, and maintenance.

Method for Effects Analysis

The methods used to identify wetlands and non-wetland waters in the RSA consisted of aerial interpretation and review of literature and publicly available data repositories. Publicly available data repositories reviewed to determine the potential presence of wetlands in the RSA include the

USFWS National Wetland Inventory (USFWS 2018) and EPA's Watershed Assessment, Tracking, and Environmental Results System (EPA 2017).

Wetlands and non-wetland waters have the potential to occur in the RSA, and the proposed project was evaluated to determine the level of effect on these resources. However, it is assumed that all wetlands would be avoided during construction.

3.6.3.2 Affected Environment

Wetlands and Non-Wetland Waters

As a result of land conversion to agriculture, water in the RSA is primarily human influenced and used for agricultural production; the main water conveyance systems in the RSA include the TC Canal; the constructed Funks Reservoir, into and out of which the TC Canal flows; GCID Main Canal; and agricultural drainage ditches. None of these features are considered to be waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE). The RSA also includes a small portion of Funks Creek, which is a natural stream that flows into and out of Funks Reservoir. There are emergent wetlands along portions of Funks Creek that have the potential to be jurisdictional waters of the U.S. A number of rice fields are also present in the RSA north of the TRR and adjacent to the alignment of the power line upgrade, which are not considered jurisdictional waters of the U.S. (USACE 2001). Figure 3.6-5 identifies all the wetland and non-wetland waters in the RSA and Table 15 identifies the amount of wetlands and non-wetland waters in the RSA.

Table 15. Wetland and Non-Wetland Waters Acreages in the Resource Study Area

Land Cover Type	Amount (acres)	Type of Habitat
Rice Field	69.8	Non-wetland Water
Canal	15.7	Non-wetland Water
Drainage Ditch	26.2	Non-wetland Water
Reservoir	0.3	Non-wetland Water
Riverine	4.3	Non-wetland Water
Ephemeral Wetland	Unmapped	Wetland
Total	340.8	--

Wetlands

Where Funks Creek exits Funks Reservoir, water flows into a permanently flooded pond that is surrounded by an approximately 1.5-acre seasonally flooded shrub-scrub wetland (USFWS 2018). It is possible that Funks Creek also contains on-channel wetlands where the MWI pipeline crosses the channel.

The annual grassland surrounding Funks Creek contains a number of on-channel and potentially isolated emergent wetlands, some of which may drain into Funks Creek (potentially jurisdictional) in the RSA (Google Earth 2018). Because a wetland delineation has not been conducted for the proposed action, emergent wetland could not be mapped with any accuracy, and therefore are not included on Figure 3.6-5.

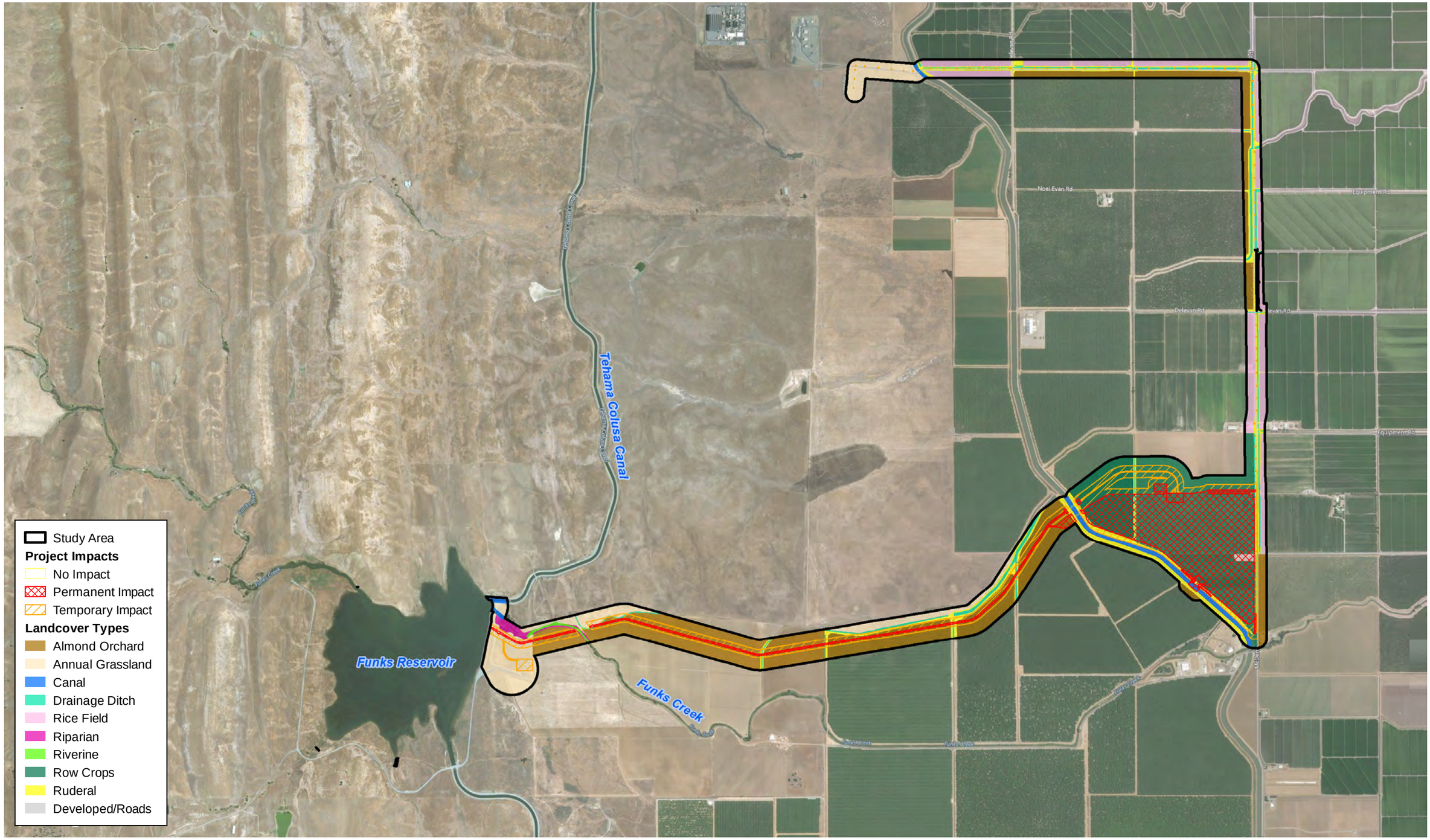

Figure 3.6-4
Vegetation / Landcover Impacts
Maxwell Water Intertie Project Overview

Non-Wetland Waters

The Funks Reservoir contains very little vegetation along its boundary and would be considered a non-wetland water. The reservoir drains a number of channels including Funks Creek, the TC Canal, and other intermittent and ephemeral channels from the surrounding annual grassland habitat.

All of the natural channels that drain to Funks Creek, regardless of whether they are permanent, intermittent, or ephemeral, are classified under the riverine land cover type (Figure 3.6-5). Funks Creek in the RSA is a non-wetland water of the U.S., except where in-channel wetlands are present, as described in the *Wetlands* section.

The GCID Main Canal enters the RSA from the north and runs on the west side of the proposed TRR. The TRR is also bordered by an unnamed drainage ditch to the east. There are also numerous drainage ditches between neighboring agricultural fields in the RSA.

Rice fields border most of the length of McDermott Road and Dirks Road where the 69-kV power line would be upgraded.

3.6.3.3 Environmental Consequences

No Action Alternative

The proposed action would not be constructed and the wetlands and non-wetland waters in the RSA would remain in their current condition. Therefore, the No Action Alternative would have no effect on wetlands and non-wetland waters in the RSA.

Proposed Action

A delineation has not been conducted for the proposed action, so all effects are based on a desktop analysis. Figure 3.6-6 shows the potential permanent and temporary effects on non-wetland waters in the RSA from the proposed action. Effects on jurisdictional waters of the U.S. that would result from implementation of the proposed action would require compliance with Section 404 of the CWA.

Effect BIO-8: Potential Loss of Wetlands

The MWI pipeline would be installed underneath Funks Creek using bore-and-jack methods and would therefore avoid direct and indirect effects on any wetlands in or adjacent to Funks Creek. Construction of the proposed action is not anticipated to require the direct permanent or temporary removal of, or placement of fill in, any jurisdictional wetlands.

Potential jurisdictional wetlands within and immediately adjacent to the project footprint could be indirectly affected by water runoff, dust, and runoff of toxic materials, which would be considered an adverse effect. However, implementation of Mitigation Measures BIO-MM-1, BIO-MM-~~20~~18, and BIO-MM-~~22~~20, along with the *Prepare and Implement a Stormwater Pollution Prevention Plan* Environmental Protection Measure, described in Section 2.4, would reduce this direct and indirect effect to a not adverse level.

Effect BIO-9: Potential Loss of Non-Wetland Waters

Non-wetland waters that could be affected during construction include the GCID Main Canal, the edge of Funks Reservoir, and drainage ditches, all of which are non-jurisdictional. The GCID Main Canal would be modified to allow water to flow into the proposed TRR through an inlet, and concrete lining would be installed to prevent scour at the inlet. While these activities involve permanent fill of approximately 0.59 acres of canal, they would not affect the GCID Main Canal's function, which is to convey irrigation water.

Funks Reservoir could be indirectly affected by water runoff, dust, and runoff of toxic materials from adjacent construction activities. However, the *Preparation and Implementation of a Stormwater Pollution Prevention Plan*, described in Section 2.4, would prevent this potential indirect effect from adversely affecting Funks Reservoir.

Construction of the MWI pipeline and access bridge across the GCID Main Canal would temporarily affect several drainage ditches. Upon completion of MWI pipeline and bridge construction, the drainage ditches would be returned to preconstruction contours, with the exception of portions that would be within the boundaries of the proposed maintenance road along the pipeline alignment and the access bridge. These areas would have a culvert placed in them with soil placed over the top of the culvert. While this would result in a loss of drainage ditch surface area, the ditches would continue to convey irrigation water and there would be no loss in function or value. The ditch that runs along the eastern edge of the proposed TRR would be lined with concrete, which would also result in a loss of surface area. However, the ditch would continue to convey water and there would be no change to its function or value.

Connecting the MWI pipeline to Funks Reservoir would result in a negligible (less than 0.01 acre) loss of surface area from the reservoir. Funks Reservoir would continue to serve in its current use and there would be no change to its function or value.

Upgrading the 69-kV power line along the roadway would include replacement of the existing poles with new poles and guidewires, and could include transformers and other equipment upgrades required by PG&E. The power line would be upgraded by replacing the existing poles in-place and so no new areas of permanent effects would occur. In some cases, the existing power line poles occur in or very near agriculture drainage ditches along the roadway shoulder. However, any disturbed areas in the ditches would be restored to preconstruction contours and there would be no loss of surface area or function. In total, construction of project features would temporarily fill approximately 2.09 acres of drainage ditch, and permanently affect approximately 0.77 acre of drainage ditch.

Power pole replacement may occur adjacent to rice fields. However, the disturbance area for power pole replacement does not overlap any rice fields, and therefore they would not be directly affected by construction. Rice fields could be indirectly affected by water runoff, dust, and runoff of toxic materials. However, the *Preparation and Implementation of a Stormwater Pollution Prevention Plan*, described in Section 2.4, would prevent this potential indirect effect from adversely affecting rice fields in the RSA.

Implementation of the proposed action would directly result in a loss of up to approximately 1.36 acres of non-jurisdictional, non-wetland waters as a result of filling portions of drainage ditches and a canal with either soil or concrete, although there would be no loss in their ability to convey water and their general hydrology would stay the same. Therefore, this direct effect would not be adverse. There would be no indirect effect. No mitigation is required.

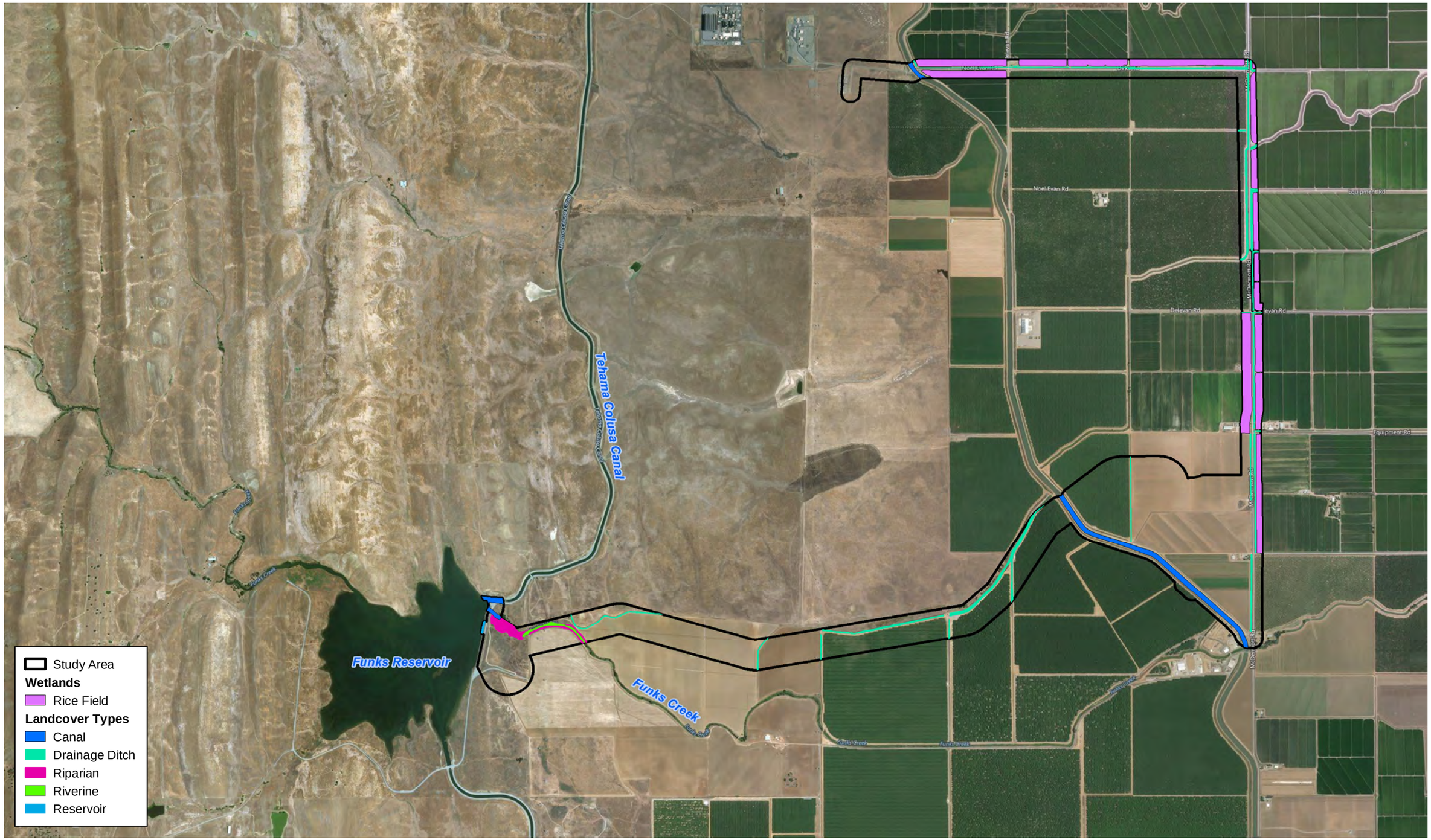

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Figure 3.6-5
Wetlands
Maxwell Water Intertie Project Overview

3.6.4 Fisheries

3.6.4.1 Methods

Definition of Resource Study Area

The RSA for fisheries includes waterbodies and water courses in and around the project area that support or contain fish populations that could be affected by the proposed project. The fisheries RSA is bounded by both natural and manmade conditions. Natural conditions of waterbodies (i.e., watershed boundaries and direction of flows) would limit which waterbodies could be subject to changes from the proposed project. For example, only waterbodies within or crossing the project area would be subject to direct or indirect physical disturbances (e.g., sediment runoff). Constructed conditions of waterbodies (i.e., fish exclusion devices) would limit the presence of some fish in certain areas of waterbodies.

Based on natural and human-made boundaries, the waterbodies included in the fisheries RSA for this analysis are Funks Reservoir, Funks Creek, Stone Corral Creek, two tributary streams – Grapevine Creek and Antelope Creek, and the CBD, which are shown on Figure 3.6-7. The TC Canal and GCID Main Canal are connected to or cross these waterbodies but include state-of-the-art positive barrier fish screens, which exclude most fish species from the canals.

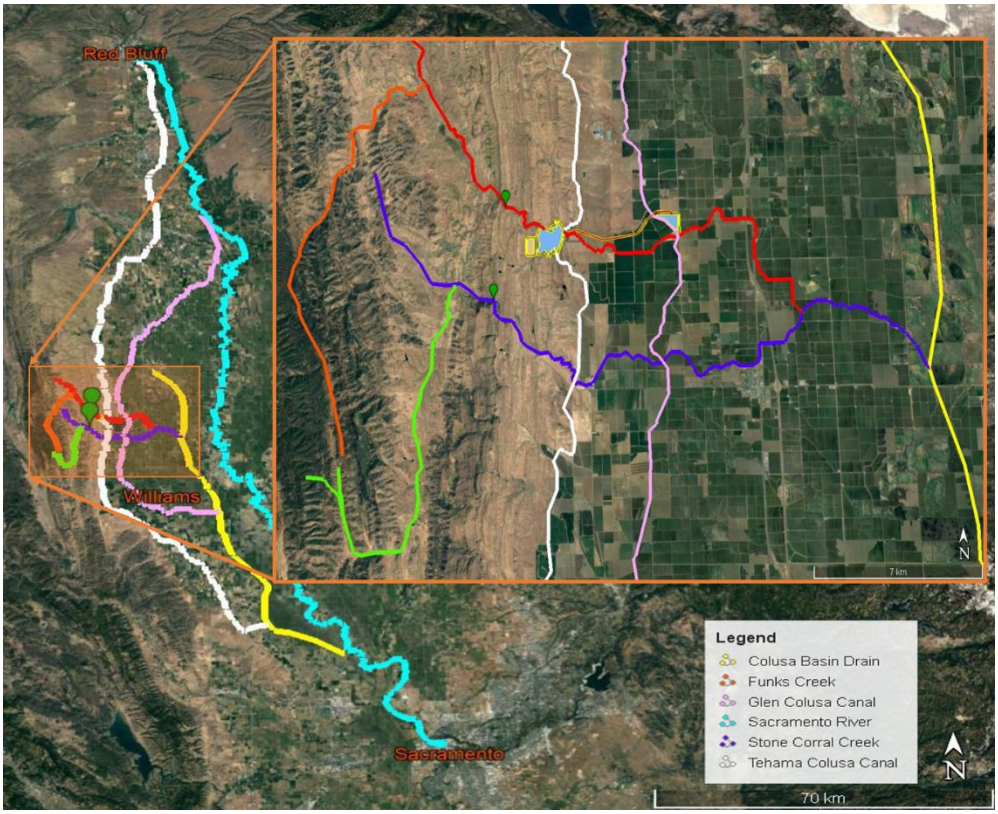

Figure 3.6-7. Waterbodies in the Resource Study Area for Fisheries

Note: Grapevine Creek and Antelope Creek are not identified in the legend of this figure but are shown in orange and green, respectively.

Method for Effects Analysis

A literature review was performed to inventory past fish surveys and identify species potentially present in the RSA. One report was identified by the California Department of Fish and Game (now CDFW) that includes 1998 and 1999 surveys of streams likely to be inundated by north of the delta water storage projects under consideration by the DWR as part of the CALFED Bay Delta water storage investigations (CDFG 2003). The surveys included surveys of Funks Creek, Stone Corral Creek, Grapevine Creek, which flows into Funks Creek, and Antelope Creek, which flows into Stone Corral Creek. The survey locations within these streams were upstream of the proposed project footprint but in areas that are hydrologically connected to the portions of the streams that occur in the RSA. The survey also sampled downstream of the project footprint in the CBD (CDFG 2003).

The CDFG (2003) fish surveys were used to identify potential fish populations in the RSA. The native or nonnative statuses of any fish species identified in the RSA through these surveys were determined using the California Fish Website maintained by University of California Davis, Division of Agriculture and Natural Resources (University of California 2018). The CDFW species of concern web page was used to identify any fish species listed as species of concern (CDFW 2018). While the designation of *species of special concern* is an administrative designation that carries no formal legal status, it is intended to highlight species that would benefit from consideration in project reviews so project proponents may incorporate conservation measures in project designs to avoid future need for regulatory protections.

3.6.4.2 Affected Environment

Waterbodies

Funks Creek and Stone Corral Creek flow through irrigated pasture, rice fields, and row crop agriculture. They are incised and revetted in some areas, and have been straightened and altered by farming practices. During summer, much of the streambed is dry, except for occasional pools or when receiving agricultural drainage or runoff. In addition, water quality is reported to be poor and high in dissolved minerals (Brown 2000). Funks Creek converges with Stone Corral Creek southeast of the project footprint. Stone Corral Creek continues east and drains into the CBD.

The CBD is a natural drainage system that was modified through dredging and channelization in the 1920s to collect and convey flows from agricultural lands and ephemeral streams during the irrigation season and winter storms to the Sacramento River and/or the Yolo Bypass. It extends from the Stoney Creek watershed in the north to the Cache Creek watershed to the south. There are numerous streams that flow into the CBD, but the only waterbody in the fisheries RSA for this analysis that flows into the CBD is the Stone Coral Creek. The CBD terminates at two locations: the Knights Landing Outfall Gate, where water is returned to the Sacramento River, and the Knights Landing Ridge Cut, which conveys flood flows into the Yolo Bypass. Section 3.5, *Water Resources*, provides additional details on hydrology and quality of surface waterbodies in the RSA.

Fish Populations

In the CDFW (2003) surveys, six native and four nonnative species were documented in Funks Creek, Stone Corral Creek, Grapevine Creek, and Antelope Creek (Table 16). Three of the species documented are listed as species of special concern by CDFW (CDFW 2018).

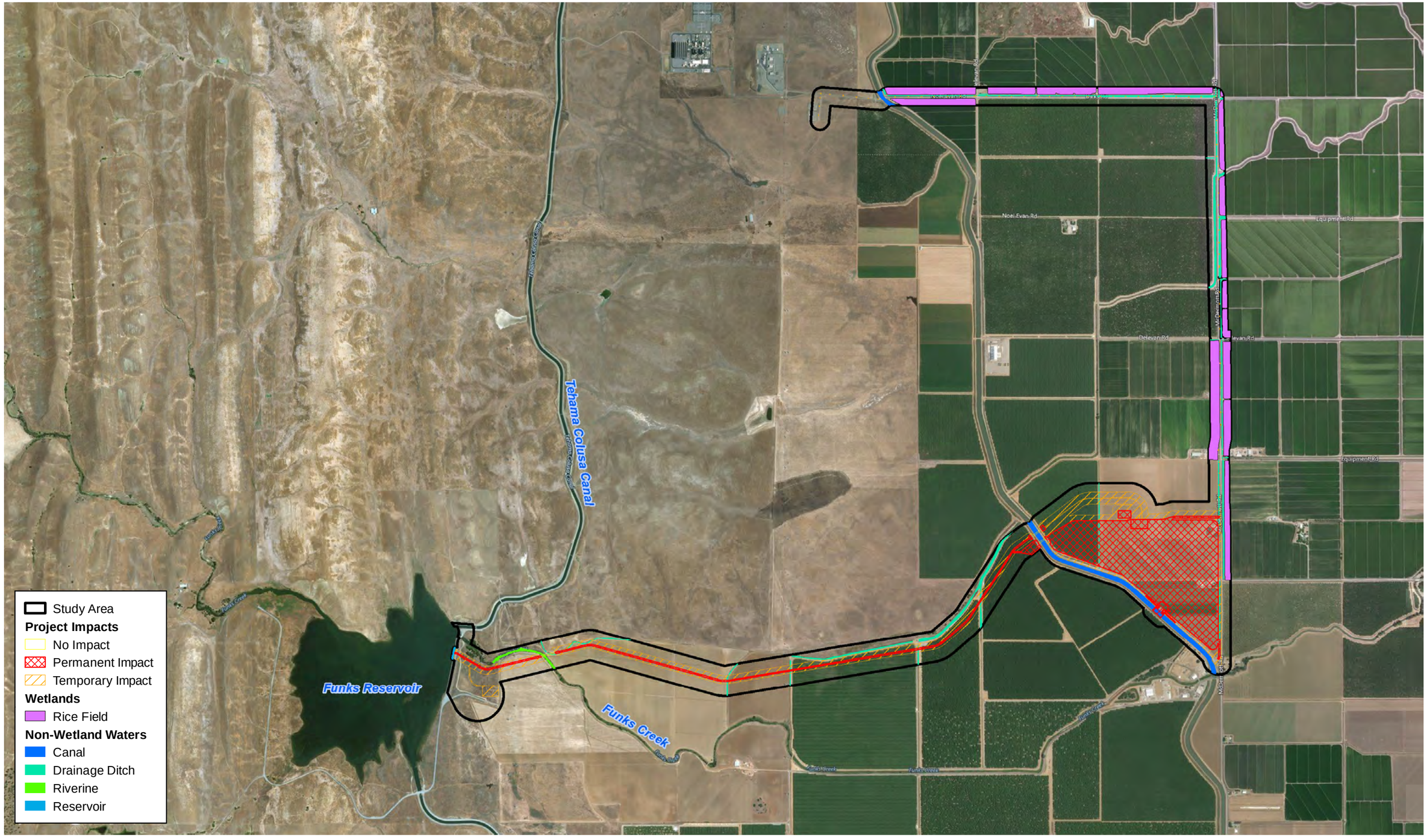

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Figure 3.6-6
Wetland Impacts
Maxwell Water Intertie Project Overview

Table 16. Fish Species Identified in Funks Creek, Stone Corral Creek, Grapevine Creek, and Antelope Creek

Common Name	Scientific Name	Native	SSC
Sacramento Hitch	*Lavinia exilicauda*	Yes	Yes
Central California Roach	*Lavinia symmetricus*	Yes	Yes
Sacramento Blackfish	*Orthodon microlepidotus*	Yes	No
Sculpin spp.*	*Cottus spp.*	Yes	Yes
Sacramento Sucker	*Catostomus occidentalis*	Yes	No
Sacramento Pikeminnow	*Ptychocheilus grandis*	Yes	No
Largemouth Bass	*Micropterus salmoides*	No	No
Western Mosquitofish	*Gambusia affinis*	No	No
Bluegill	*Lepomis macrochirus*	No	No
Green Sunfish	*Lepomis cyanellus*	No	No

*Not identified to species but likely Prickly Sculpin.

A single observation of a spring-run Chinook salmon was reported in Antelope Creek, a tributary to Stone Corral Creek, during one of CDFW's 2003 surveys. This fish likely strayed into the CBD during high flows and then traveled up Stone Corral Creek to Antelope Creek in search of suitable habitat. None of the streams in the RSA, nor the CBD, provide suitable spawning or rearing habitat for salmon, including the salmon caught or observed in this study. Since the CDFG surveys were conducted fish barriers were added to the downstream ends of the CBD to preclude migratory fish from straying into the CBD during high-flow events. The Knights Landing Fish Barrier Project was completed in 2015 and the Wallace Weir Fish Rescue Facility was completed in 2016. Based on the presence of these barriers, migratory species including salmon are not likely to be present in the RSA.

CDFW (2003) surveys for fish in the CBD documented 11 native species and 17 nonnative species (Table 17). Theoretically all species captured in the CBD could also be present in waterbodies below the Funks Reservoir, including Lower Funks Creek, Stone Coral Creek, and Antelope Creek, because they are connected hydrologically, and during flow events, the fish species identified in the area are capable of dispersing up and down the streams. Funks Reservoir presents a barrier to upstream movement but fish could move downstream from above the dam to habitat below the dam during spill events or other releases from the reservoir to Funks Creek. Five of these species documented in the CBD are listed as species of special concern by CDFW (2018).

Table 17. Fish Species Identified in the Colusa Basin Drain

Common Name	Scientific Name	Native	SSC
Sacramento Splittail	*Pogonichthys microlepidotus*	Yes	Yes
Hardhead	*Milopharodon conocephalus*	Yes	Yes
Pacific Lamprey	*Lampetra tridentate*	Yes	Yes
Central California Roach	*Lavinia symmetricus*	Yes	Yes
Sacramento Hitch	*Lavinia exilicauda*	Yes	Yes
Sacramento Blackfish	*Orthodon microlepidotus*	Yes	No
Tule Perch	*Hysterocarpus traskii*	Yes	No
Chinook Salmon	*Oncorhynchus tshawystsha*	Yes	No
Sculpin sp.*	*Cottus sp.*	Yes	No
Sacramento Pikeminnow	*Ptychocheilus grandis*	Yes	No
Sacramento Sucker	*Catostomus occidentalis*	Yes	No
Threadfin Shad	*Dorosoma petenense*	No	No
Fathead Minnow	*Pimephales promelas*	No	No
Common Carp	*Cyprinus carpio*	No	No
Goldfish	*Carassius auratus*	No	No
Inland Silverside	*Menidia beryllina*	No	No
Western Mosquitofish	*Gambusia affinis*	No	No
Bigscale Logperch	*Percine macrolepida*	No	No
White Catfish	*Ameiurus catus*	No	No
Brown Bullhead	*Ameiurus nebulosus*	No	No
Black Bullhead	*Ameiurus melas*	No	No
Channel Catfish	*Ictalurus punctatus*	No	No
Black Crappie	*Pomoxis nigromaculatus*	No	No
White Crappie	*Pomoxis annularis*	No	No
Warmouth	*Lepomis gulosus*	No	No
Bluegill	*Lepomis macrochirus*	No	No
Green Sunfish	*Lepomis cyanellus*	No	No
Largemouth Bass	*Micropterus salmoides*	No	No

*Not identified to species but likely Prickly Sculpin.

In the spring of 1998, one late fall–run Chinook salmon carcass was found in a fyke net in the CBD, several fall-run Chinook salmon were observed in the CBD at the Delevan Wildlife Area, and a spring-run Chinook salmon was reported in Walker Creek, which is slightly north of the CBD (CDFW 2003). None of the downstream waterbodies, including the CBD, provide suitable spawning or rearing habitat for salmon. The salmon caught or observed in this study were likely fish that had strayed into the study area via the Knights Landing Outfall Gate or the Wallace Weir. As indicated above, these avenues of entry into the CBD and its tributaries have been blocked, and migratory fish are no longer expected to occur in the CBD. Therefore, these salmon observations are considered anomalies, and it is determined that migratory fish species are not likely to be present in the RSA.

Because there were no endangered or threatened fish identified in past surveys in the RSA, no endangered or threatened fish species are expected to occur in waterbodies throughout the RSA.

Therefore, potential effects on threatened or endangered fish species from the proposed project are not further evaluated.

Essential Fish Habitat

Essential fish habitat (EFH) is the aquatic habitat necessary for fish to spawn, feed, or grow to maturity and allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem. Important components of EFH include substrate, water quality, depth, velocity, channel gradient and stability, food, cover and habitat complexity, space, access and passage, and habitat connectivity.

The geographic extent of freshwater EFH is defined as all currently viable waters and most of the habitat historically accessible to salmon within the USGS hydrologic units identified in Table A-1 of Amendment 14, Appendix A: Identification and Description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon (PFMC 1999). Salmon EFH includes aquatic areas above all artificial barriers except impassible barriers (e.g., waterfalls, dams) listed in Table A-2 (PFMC 1999). Also, activities occurring upstream of impassable barriers that are likely to adversely affect EFH downstream of impassable barriers are subject to the consultation provisions of the Magnuson-Stevens Act. Within the RSA, Stone Corral Creek has been designated EFH by the Pacific Fisheries Management Council (PFMC 1999).

3.6.4.3 Environmental Consequences

No Action Alternative

Under the No Action Alternative the TC Canal and GCID Main Canal would be operated via current operational criteria and with existing facilities. The proposed action would not be constructed and no effects on fisheries would occur as a result of continued operations and maintenance of the existing facilities.

Proposed Action

Effect Fish-1: Disruptions to Fish Populations and Habitat during Construction

The construction of the TRR and excavation for placement of the pipeline would require movement and storage of soils as well as the creation of staging areas for the equipment and supplies used for construction activities. Excavation of the pipeline corridor may require dewatering of areas where groundwater occurs near the surface. Earth moving activities associated with construction have the potential to release sediment to water courses in the RSA and affect fish populations and habitats through injury to fish respiratory systems, burying of eggs and gravel, or exclusion from habitats.

The proposed action is subject to a construction-related stormwater permit and dewatering requirements of the federal CWA and NPDES program. The operators would obtain required permits through the CVRWQCB before any ground-disturbing construction activity occurs. As required by the Construction General Permit, a SWPPP would be prepared and implemented before and throughout the construction period. The SWPPP would identify BMPs to prevent and minimize the introduction of contaminants into surface waters. BMPs would also be implemented as part of project design to address soil stabilization, sediment control, non-stormwater management, and good housekeeping practices based on the best available technology. These measures would ensure that stormwater runoff would be controlled to reduce or avoid degradation of water quality in water

courses downstream of the construction sites that would affect fish populations and habitat. The proposed action would also operate in compliance with the County's Phase II Small MS4 General Permit and the Northern Sacramento Valley Integrated Regional Water Management Plan. As a result, there would be no changes to surface water quality that would result in increased or contaminated stormwater runoff or violations of water quality standards that would negatively affect fish populations and habitat. Therefore, the effect on fish populations and habitats from construction of the proposed action would be not adverse. No mitigation is required.

Effect Fish-2: Disruptions to Fish Species from Diversions and Delivery during Operations

The proposed action would increase the efficiency and reliability of the water management in the western Sacramento Valley and increase the drought resistance of rural communities by enhancing the ability of water users to move water to areas of its best and highest use. For example, during periods of extended drought, water could be moved from annual crops to ensure survival of perennial crops. Operation of the proposed action would not result in any changes in the existing rates or timing of diversions. In addition, because no new water is produced by the proposed action, the quantity and quality of the water in waterbodies throughout the RSA would not change. Because operation of the proposed action would not result in changes to existing diversions and water quantity and quality, there would be no effect on fish species. No mitigation is required.

Effect Fish-3: Changes to Essential Fish Habitat during Construction and Operation

The Magnuson-Stevens Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to consult with the National Oceanic and Atmospheric Administration Fisheries on activities that may adversely affect EFH. The purpose of the Act is to conserve and manage the fishery resources of the United States and promote protection of EFH.

Stone Corral Creek is the only waterbody in the RSA that has been designated EFH for salmon. However, Chinook salmon are not likely to occur in the CBD due to the installation of state-of-the-art positive barrier fish screens as part of the Knights Landing Outfall Gates Project and the Wallace Weir Fish Rescue Facility Project, which block migratory fish at the downstream end of the CBD. Salmon are unable to swim up the CBD to Stone Corral Creek and would therefore not be present in Stone Corral Creek. In addition construction and operation of the proposed action is not expected to result in the degradation of water quality in the CBD (see Section 3.5 for more information on potential surface water effects). Therefore, there would be no effect on EFH. No mitigation is required.

3.7 Cultural Resources

This section addresses the evaluation and consideration of the proposed action's potential effects on cultural resources and historic properties. Cultural resources are sites, buildings, structures, objects, and districts that may have traditional or cultural value. This broad range of resources includes archaeological sites that reflect the prehistoric (Native American) and historic-era past; historic-era built environment resources, such as buildings and structures; landscapes and districts; and traditional cultural properties (TCPs) (i.e., those resources that are historically rooted in a community's beliefs, customs, and practices). Prehistoric archaeological sites are places where Native Americans lived or carried out activities during the prehistoric period, which is generally

defined as before the early 1800s in the project area. Historic-era archaeological sites reflect the activities of people after initial exploration and settlement in the region during the early 1800s. Native American sites can also reflect the historic era. Prehistoric and historic-era archaeological sites may contain artifacts, cultural features, subsistence remains, and/or human burials. Historic properties, including TCPs, are cultural resources that have been determined eligible for listing in the National Register of Historic Places (NRHP) by analyzing the resources against the criteria of evaluation found in 36 CFR 60.4.

This section identifies the affected environment for these resources, evaluates project-related effects on cultural resources and historic properties, and recommends mitigation measures that would address adverse effects on NRHP-eligible resources.

3.7.1 Methods

3.7.1.1 Definition of Resource Study Area

The cultural resources RSA is defined as the area of potential effects (APE), which is described under 36 CFR 800.16(d) as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." For the proposed action, the APE encompasses approximately 269 acres and includes all areas of potential disturbance for the construction, maintenance, and operation of the MWI project elements (Figure 3.7-1). The APE also has a vertical dimension to account for subsurface disturbances caused by construction of the various project facilities, as described in Section 2.2. The maximum vertical depth of the APE is 30 feet for construction of the TRR Pumping Plant, while the average excavated depth for the 3.5-mile pipeline will be 25 feet. Excavations for the construction of the TRR will be up to 9 feet in depth.

3.7.1.2 Method for Effects Analysis

The identification of potentially affected cultural resources is largely based on information obtained from previous cultural resources studies (archaeological survey, and built environment resource identification and evaluations) for the proposed Sites Reservoir Project (URS 2013a, 2013b), as that project overlapped portions of the current MWI project. As a result of those studies, approximately 12 acres of the APE have previously been surveyed for archaeological resources (Figure 3.7-2). All of the surveyed area was along Funks Dam and at the west end of the MWI pipeline, including the location of the pipeline soil stockpile area, and no archaeological resources were identified (URS 2013a); no archaeological survey has been conducted for the MWI Pipeline Connection or the TRR Complex, or along the PG&E power line that would be upgraded. The built environment study for Sites Reservoir (URS 2013b) identified two resources—the GCID Main Canal and the WAPA Maxwell-Olinda 500-kV Transmission Line—within the MWI project APE, both of which were evaluated for NRHP eligibility; these resources are discussed more completely in Section 3.7.2.2, *Cultural Resources Studies and Results*.

The Authority will complete the remaining archaeological surveys and any necessary cultural resource evaluations for the proposed action under the USDA's *Nationwide Programmatic Agreement Among the U.S. Department of Agriculture Rural Development Programs, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation Programs for Sequencing Section 106* (USDA NPA) (Appendix D1), which was fully executed in July 2018. The USDA NPA supplements the *Programmatic Agreement among the Rural Economic and*

Community Development services, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Implementation of the Rural Economic and Community Development Services Programs in California (RECDS PA) (Appendix D2) that was executed in 1995. However, the preamble clauses of the USDA NPA require the various programs under USDA (including RHS Community Facilities programs) to develop their own protocols for Section 106 compliance by 2020 and that, until the protocols are developed, the processes established in existing state agreements will be followed. As a result, implementation of the USDA NPA would insure that the requirements of Section 106 are fulfilled prior to construction of the project by following the established procedures outlined in the RECDS PA.

The methods for analyzing NEPA effects of the proposed action on cultural resources relies on the methods for assessing adverse effects stipulated in the RECDS PA. The Section 106 criteria for adverse effect have been applied to known historic properties, and the results are summarized in Section 3.7.3, *Environmental Consequences*. Once the surveys have been completed, the criteria for adverse effect will be applied to any additional historic properties that qualify for listing in the NRHP. The criteria for adverse effect are explained in further detail in Section 3.7.3.

3.7.2 Affected Environment

3.7.2.1 Environmental Setting

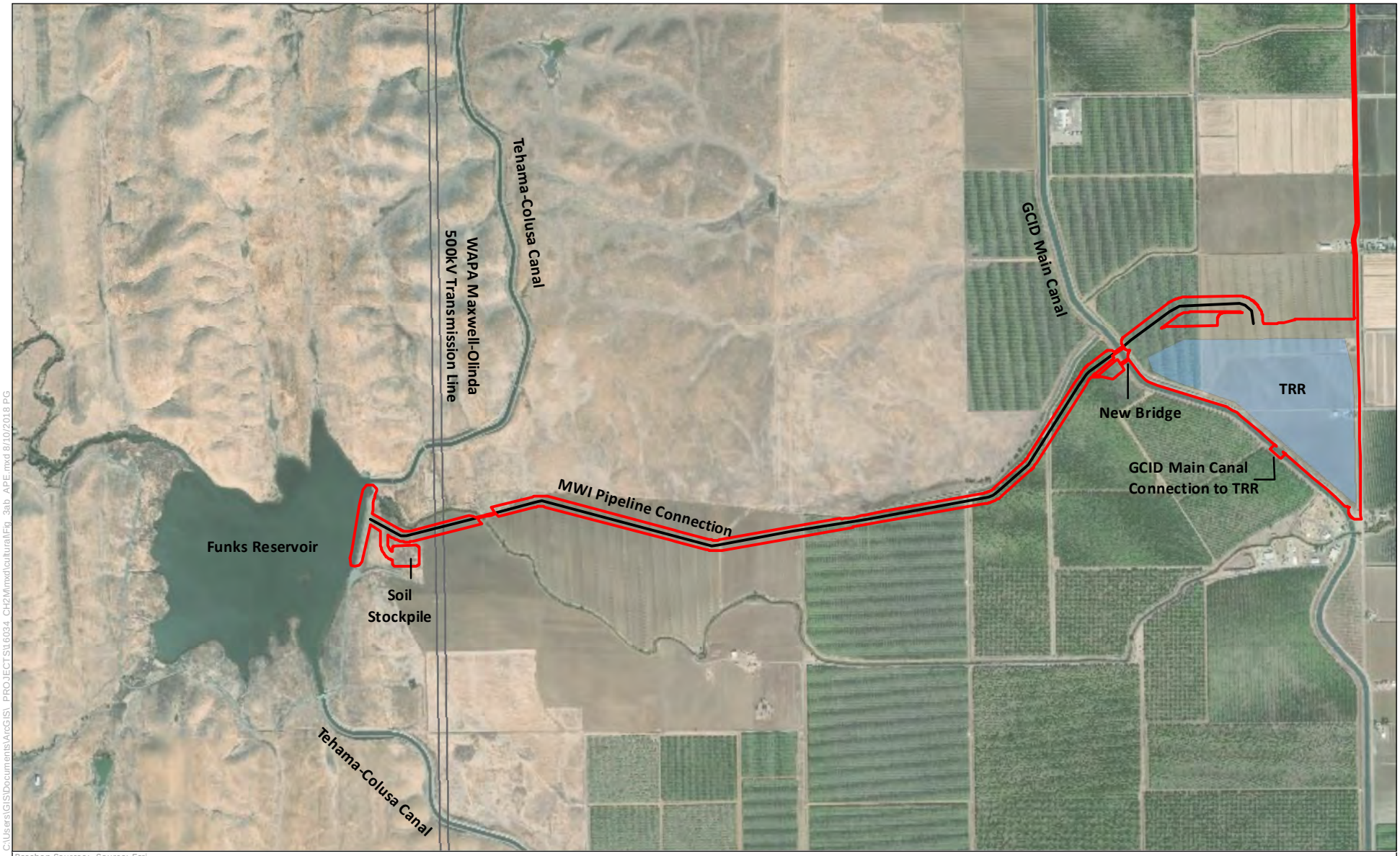
The cultural contexts provided below are derived from reports prepared by URS (2013a, 3013b).

Native American Prehistoric Context

Like many parts of the state, archaeologists are still in the process of building a basic archaeological record for the Sacramento Valley. Much of the record is unknown, and evidence of the early occupations dating more than 3,000 years ago is especially lacking. However, broad outlines of California prehistory are best captured by an integrative scheme that proposes three basic prehistoric periods: Paleoindian, Archaic, and Emergent. The Archaic is further subdivided into the Lower, Middle, and Upper periods, and the Emergent into Lower and Upper (sometimes referred to as Phase 1 and Phase 2) divisions. The periods are listed in Table 18.

Each period is characterized by a generally prevailing economic, cultural, and environmental condition. Of note are climatic changes during the Middle Archaic Period that adversely affected the development of upland and lowland soils, which diminished the capacity of the landscape to store archaeological deposits. Consequently, Middle Archaic archaeology is uncommon and the available record problematic. In addition, the density and distribution of economically significant resources also appears to have been affected by climatic and landscape instability, which led to cultural responses such as local depopulation, interregional population movements, and dietary change.

A second "climatic anomaly" dating to around 900 BP, during the late Upper Archaic Period, may have caused widespread disruption of resources and people. In northern California, after 1100 BP many Archaic technologies and cultural traditions disappeared, and were replaced by the onset of regional cultural patterns and behaviors similar to those existing locally at the time of culture contact with nonnative peoples.



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Basebap Sources: Source: Esri, DigitalGlobe, GeoEye, Earthstar

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Horizon WATER and ENVIRONMENT

Project Study Area / Area of Potential Effects

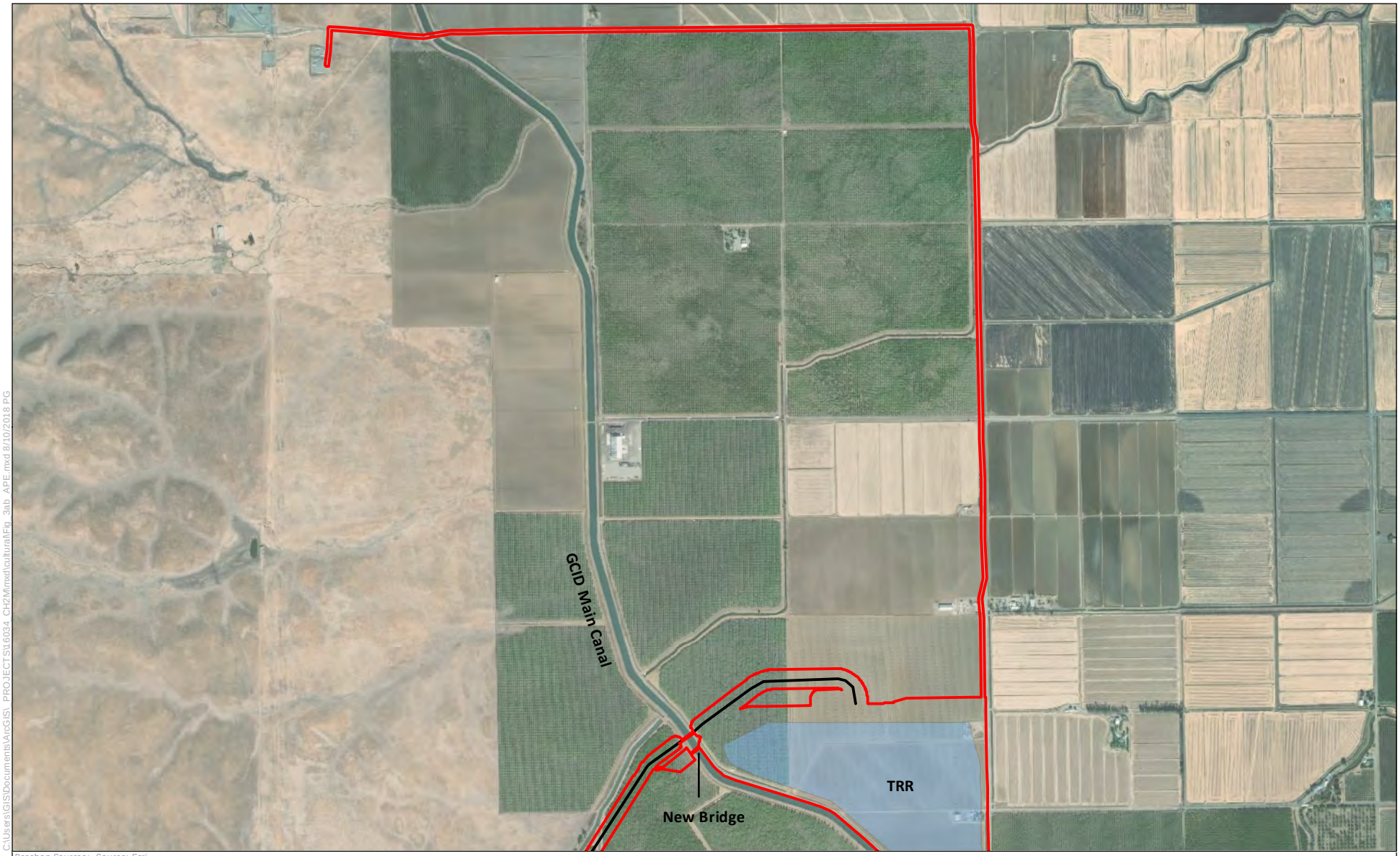
TRR Pipeline

Reservoir

Figure 3.7-1a

Area of Potential Effects

Maxwell Intertie Project



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Basebap Sources: Source: Esri, DigitalGlobe, GeoEye, Earthstar

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Project Study Area / Area of Potential Effects

TRR Pipeline

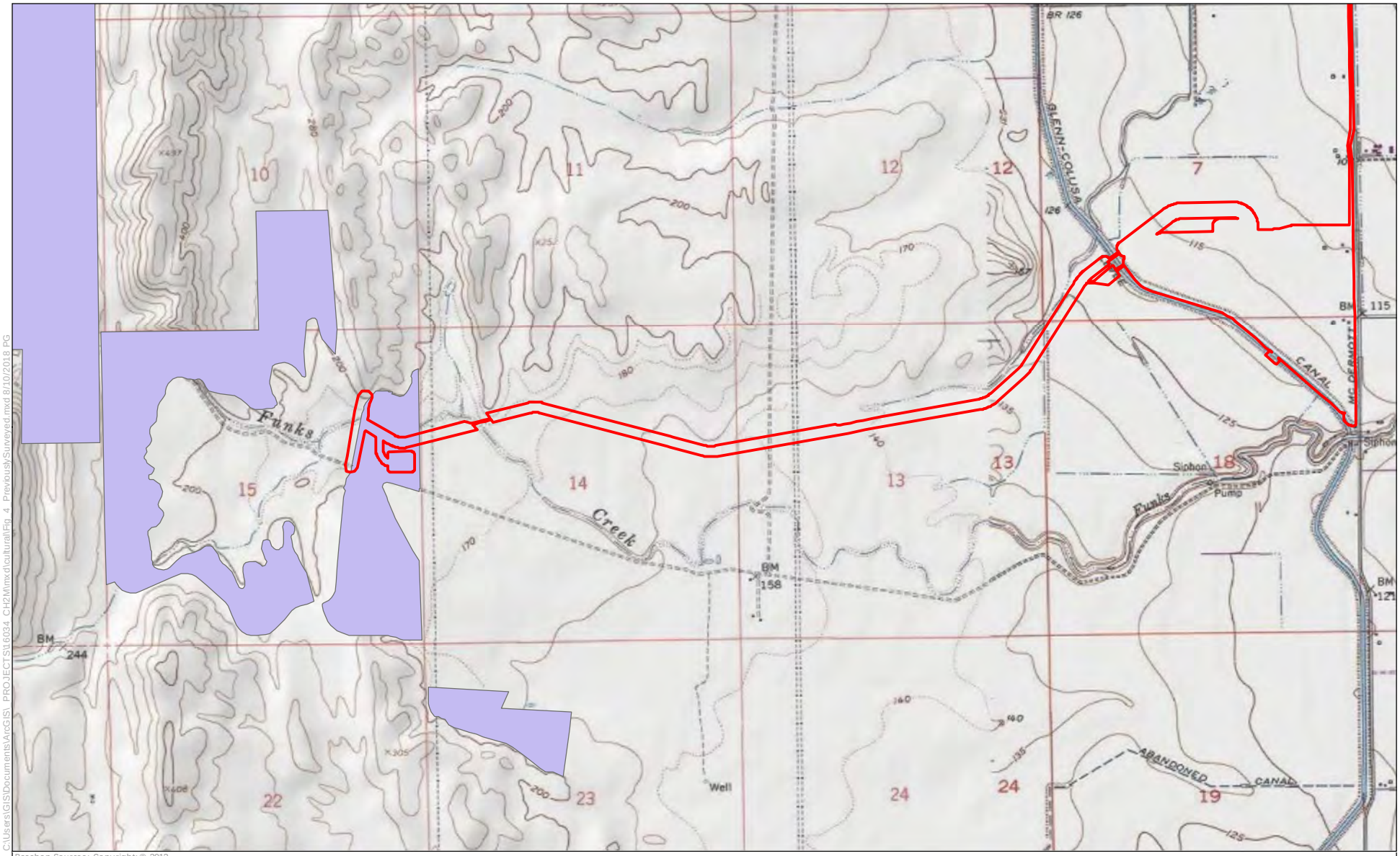
Reservoir

Figure 3.7-1b

Area of Potential Effects

Horizon WATER and ENVIRONMENT

Maxwell Intertie Project



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Project Study Area / Area of Potential Effects

Previously Surveyed Areas

Figure 3.7-2

Previously Surveyed Areas

Horizon WATER and ENVIRONMENT

Maxwell Intertie Project

Table 18. Prehistoric Archaeological Periods of the Sacramento Valley

Archaeological Period	Age – Years Before Present (BP)	Characteristics
Paleoindian Period: Western Clovis Tradition	> 10,500 years	Opportunistic hunters and foragers; possible hunted Pleistocene megafauna. Low population. Fluted projectile points (darts), flaked stone crescents.
Lower Archaic Period: Borax Lake Pattern	10,500–7000 years	Hunters and foragers. Low population. Wide-stemmed projectile points; hand stones and milling stones; use of obsidian.
Middle Archaic Period: Windmiller	7000–4050 years	Introduction of dietary specializations focused on acorns, deer, and freshwater and anadromous fisheries. Establishment of villages with cemeteries. Expanded material culture, including basketry, use of marine shell for beads and ornaments; continued use of hand stones and milling stones; a variety of dart forms such as notched, stemmed, thick leaf or lozenge, and narrow concave.
Upper Archaic Period: Berkeley Pattern	3000–1200 years	Increased cultural diversity represented by distinct regional specializations; increased populations; more complex social structure. Introduction of mortars and pestles for acorn processing; expanded bone tool industry; diamond-shaped and stemmed projectile points.
Emergent Period: Augustine Pattern—Phase 1	1200–600 years	Increased sedentism and populations. Coalescence of long-distance, integrative trade spheres, and the introduction of the bow and arrow that replaced the dart as the favored hunting implement. Increased use of fishing and acorns.
Emergent Period: Augustine Pattern—Phase 2	600–200 years	Continuation and intensification of Phase 1 traits; considered representative of Native American cultures encountered by the first nonnative colonists. Small corner-notched and triangular points, clam disc beads, magnesite cylinders, bedrock mortars,

Culture contact between Native Californians and immigrant populations from throughout the world occurred at various times in northern California, generally between 1808 to 1820 in the Sacramento Valley. Sites in Colusa County near the Sacramento River all contain evidence of Patwin interaction with non-indigenous populations in archaeological deposits that mix traditional Native American artifacts with metal and glass items.

Ethnographic Context

The project area lies in what was likely the eastern limits of ancestral lands identified with the Hill Patwin, whose villages were located among the valleys of the low hills along the east flank of the North Coast Range. Five Hill Patwin subgroups have been identified, of which the closest to the

project is the *Choo-hel'-mem-sel,* who lived in Antelope Valley (the location of the historic-era town of Sites) and the southern end of Indian Valley. The ethnographic literature suggests that Antelope Valley was sparsely populated relative to other Hill Patwin locations but, nevertheless, seven Hill Patwin ethnographic place names have been identified within the valley. Hill Patwin villages have not been identified at the eastern base of the hills that line the North Coast Range, such as near Funks Reservoir, but it is reasonable to assume that people took advantage of the resources there and in the valley plain. The valley itself, including the area of the proposed TRR, was sparsely populated, as it was dry in the summer and often marshy in the winter.

The River Patwin, who held lands along the Sacramento River and approximately 6 miles of the river, are close linguistic and cultural relatives to the Hill Patwin. Though their villages were concentrated along the Sacramento River, it is possible that they used the valley plain in the vicinity of the project for hunting and gathering vegetal resources.

Today's descendants of the ethnographic-era Patwin continue to live and thrive in the region around the RSA. Federally recognized tribes in the project vicinity include the Cachil Dehe Band of Wintun in Colusa and the Cortina Indian Rancheria west of Williams. The Cachil Dehe has developed a successful gaming venue that have allowed their members to experience economic stability, and through which they have made substantial contributions to their surrounding communities such as providing grants to schools and building medical facilities. The Cortina Indian Rancheria is currently in the process of securing similar economic security for its members through alternative business developments. Each of the tribes invest considerable time and energy into maintaining their cultural heritage by sponsoring and supporting language and arts programs.

Historic-Era Context

The history of culture contact between indigenous and nonnative populations in the northern Sacramento Valley began with the Spanish explorer Gabriel Moraga in 1808 and ended suddenly with the devastating smallpox epidemic in 1833. In this 25-year span, the river tribes and their neighbors met non-Native Americans for the first time. No formal European or Euro-American outposts or long-term footholds were secured on indigenous lands before 1833, and there is no clear evidence of pandemics or significant social or economic upheaval.

A number of overland fur trapping and trading expeditions visited the Central Valley in the late 1820s and early 1830s. These included two trips by trapper Jedediah Smith, of the Rocky Mountain Fur Company, who led parties of trappers through California in 1827 and 1828. Beginning in 1829, the Hudson's Bay Company sent trapping expeditions into the northern portion of California from Oregon, and other trapping parties followed suit. By 1833 the hunting parties reportedly encountered depleted game. The fur trapper's journals also comment on the great number of native peoples encountered in the Sacramento Valley through the winter of 1832. However, in spring and summer 1833, traditional Native American lifeways came to a sudden and somber end when smallpox, introduced by the trappers, swept through and decimated the Sacramento Valley tribes, including the River Patwin.

Euro-American colonists arrived in the Sacramento Valley in the early 1840s when Mexican-era land grants were issued in quick succession in territory now found in Tehama, Butte, Glenn, and Colusa Counties. Two of the land grants, Rancho Larkin's Children and Rancho Colus, were located along the Sacramento River, upstream and downstream from the current city of Colusa in the project vicinity. The town of Colusa was established 1850 as a hub for river transportation.

Use of foothills on the west side of the Sacramento Valley for livestock grazing was an important element of California's economy prior to the discovery of gold, as the raising of cattle was the primary focus of the ranchos. Early settlers were impressed with the region's valleys that were covered with verdant fields of head-high clover, abundant water, and highly productive range. These areas of northern California, which were some of the first exploited for rangeland purposes, experienced a boom between 1850 to 1860 as the Gold Rush created an enormous demand for meat and other animal products. The cattle industry declined as the Gold Rush waned, and the valley ranchers turned to using the valley for the dry farming of crops, primarily wheat.

By the 1880s, wheat farming had become less profitable for several reasons in the valley. First, the intensive dry farming depleted the soil and, second, the transcontinental railroad achievement reduced the West's dependence on locally grown wheat. Because Glenn County was so arid and only suitable for grazing livestock and dry farming, irrigation was prompted by William Semple Green. Green envisioned revolutionizing agriculture in the area by constructing a major canal that would divert water from the Sacramento River to farms on the west side of the valley. Green began his campaign for the canal in 1883, and with the support of the Wright Irrigation District Act of 1887, numerous irrigation districts were formed in Colusa County that year. This included the Central Irrigation District, which was founded on November 27, 1887. The irrigation district extended from Jacinto in the north to Berlin in the south. In the west, the canal was fed by Salt Creek, Stone Corral Creek, Funk Slough, Hunter Slough, and Logan Creek, and was bordered by the Sacramento River on the east. Construction of the Central Canal and its appurtenant features (siphons, pumping stations, ditches) proceeded in at an irregular pace, as the district changed ownership several times over the next several decades due to several bankruptcies tied to economic downturns and irregular water rates. The Sacramento Valley West Side Canal Company purchased the bankrupt company who owned the district in 1915, and in business with the State Railroad Commission, fixed the water rates for farmers. In 1918–1919, the water rate for rice was fixed at $7 an acre-foot versus $2 an acre for other crops. Despite this higher cost, more farmers switched to growing rice because it was the most successful crop in the heavy clay and alkaline soils of the Sacramento Valley. Farmers switching to rice crops, however, led to an increase in water demand from the Sacramento River. The result was a reorganization of lands held within the original Central Irrigation District, and the creation of five new irrigation districts: the Jacinto, Princeton-Cordora-Glenn, Provident, Compton-Delevan, and Maxwell.

The Central Canal was renamed the Glenn-Colusa Canal (now the GCID Main Canal) in 1920 and was managed by the GCID. Construction of the Glenn-Colusa Canal was also completed that same year. In 1929, there were a total of 15 irrigation districts in the valley between Sacramento and Redding.

Landowners within the boundaries of the GCID reorganized yet again to prevent land loss during the Depression. USBR formed the CVP in 1933 to convey northern California water to meet the irrigation needs of the San Joaquin Valley. In doing so, the USBR questioned the GCID's water rights on the Sacramento River. Litigation ensued between the GCID and USBR after Shasta Dam was constructed at the river's headwaters in Tehama County in 1951. The U.S. Secretary of the Interior settled the disagreement in 1964 in favor of Reclamation District No. 108. Currently, the GCID diverts approximately 735,000 cubic acre-feet of water from the Sacramento River to irrigate approximately 58,000 acres. GCID facilities include the 65-mile GCID Main Canal, a 3,000-cfs pumping plant with a fish screen structure, and approximately 900 miles of lateral canals and drains. Multiple natural tributaries, such as Stony Creek, Willow Creek, Stone Corral Creek, and Lurline Creek, flow into the GCID irrigation system. Between April and October, the GCID irrigates a diverse number of crops from alfalfa, tomatoes, cotton, and wheat, as well as rice.

MID was formed in 1918 out of a GCID reorganization and new irrigation district creation. MID constructed levees and a drainage system to capture natural water runoff. MID's water rights follow appropriated water rights under the 1953–54 code between seven irrigation districts, and USBR District No. 2047, as well as a 1972 contract between the United States and MID to divert water from the Sacramento River. These USBR contracts provide MID with a base water diversion of 11,980 acre-feet during the April to October water season, supplemental to 6,000 acre-feet during the months of July and August, totaling 17,980 acre-feet.

Besides the GCID and MID, the TCCA, situated on the far west side of the Colusa County, was organized in 1965 as part of the CVP. Completed on May 30, 1980, the TC Canal is an approximately 110-mile-long concrete-lined canal, which extends from the Red Bluff Diversion Dam in Tehama County through Glenn County to just south of Dunnigan in Yolo County. Funks Reservoir, a 2,000-acre-foot regulating reservoir, is located at the midpoint of the TC Canal, providing regulating and storage capacity to assist the operation of the canal.

3.7.2.2 Cultural Resources Studies and Results

Portions of the APE have been previously studied for archaeological and built environment cultural resources in support of the proposed Sites Reservoir Project (URS 2013a, 2013b) and their results are applicable to the MWI project. This section provides a summary of the results of those studies, as they pertain directly to the MWI project.

Previous Archaeological Studies

The *North-of-the-Delta Offstream Storage Project Draft Archaeological Inventory Report* (URS 21013a) summarizes previous archaeological studies that were adjacent to the MWI project APE, as identified through their record search at the Northwest Information Center of the California Historical Resources Information System at Sonoma State University (Table 19).

Table 19. Early Archaeological Studies adjacent to the MWI APE (after URS 2013a)

Author	Date	Affiliation	Project
Archaeological Survey			
Treganza et al.	1965	San Francisco State College	Tehama-Colusa Canal
Chartkoff	1969	University of California, Los Angeles Archaeological Survey	Funks Reservoir
Archaeological Excavation			
West, et al.	1975	University of California, Davis	CA-COL-53, CA-COL-233, CA-COL-242 evaluations

Adapted from URS 2013a, Table 1 Previous Archaeological Studies in the NODOS Study Area.

Archaeological surveys identified by the records search included the entirety of the TC Canal, which enters Funks Reservoir immediately north of Funks Dam and the MWI project APE, and a slightly smaller footprint of the modern-day Funks Reservoir (the actual surveyed area was not provided). No archaeological sites had been recorded in the vicinity of the MWI APE during the survey of the TC Canal, but three archaeological sites had been recorded within the proposed footprint of Funks Reservoir. The three sites (CA-COL-53, CA-COL-233, and CA-COL-242), all non-midden artifact

scatters with ground and flaked stone artifacts[10], were subject to intensive surface collection and backhoe trenching prior to inundation. A single 1.5-by-1.5-meter test unit was also excavated in CA-COL-53. Site depths ranged between 30 and 70 centimeters and terminated in sandstone bedrock. All three sites were heavily weathered surface deposits with similar artifact content and were considered to "represent recent prehistoric short-term seasonal gathering camps or stations occupied by a few individuals and possibly related to a larger permanent or semi-permanent village" (West et al. 1976:10 in URS 2013a:6-6). The sites were not formally evaluated for NRHP eligibility.

More recently DWR surveyed areas directly around and near to Funks Reservoir (URS 2013a:6-13), as depicted in Figure 3.7-2, in support of the Sites Reservoir Project. No archaeological sites were identified by the survey although one chert flake was recorded on the north shore of the reservoir. Approximately 12 acres within the MWI APE, including the east face of Funks Dam (which would contain the pipeline inlet/outlet structure), 988 feet of the westernmost end of the MWI pipeline, and the location of the pipeline soil stockpile area, have been surveyed. As a result, approximately 257 acres of the APE will require archaeological survey under the USDA NPA.

Previous Built Environment Studies

Two resources of the built environment that are located within the MWI APE have been previously recorded and evaluated for NRHP eligibility (URS 2013b). These are segments of the GCID Main Canal and the WAPA Maxwell-Olinda 500-kV Transmission Line, both of which are linear resources that pass through the MWI APE. The GCID Main Canal is located directly adjacent to the TRR on the west and will be incorporated into the TRR Complex; approximately 1 mile of the canal is in the APE. The WAPA power line crosses north-south east of Funks Reservoir. The MWI pipeline and pipeline road will pass under the power line and it would not be modified as part of the proposed action.

As reported by URS (2013b:6-8), two portions of the GCID Main Canal have been recorded. While the entire Main Canal, or the GCID itself, have not been formally evaluated for the NRHP, "the GCID and the Glenn-Colusa Canal would appear to have the potential to be significant under NRHP criteria A and/or C" (Stock and Corbett 2001 in Appendix A of URS 2013b). The segments of the canal are considered contributors to a larger GCID historic district. The origins of the canal date to the late 1800s and its period of historic significance is from 1887 to 1920. The canal is considered eligible under Criterion A due to its association with the development of irrigation and farming in the Sacramento Valley, and under Criterion C for being a significant early-20th-century irrigation and engineered system that included earthen prisms and a network of irrigation ditches as laterals that provided water to hundreds of farmsteads in the Sacramento Valley.

The WAPA Maxwell-Olinda 500-kV Transmission Line was evaluated as not eligible for listing in the NRHP (URS 2013b:6-8). Begun in 1958 and completed in 1964, PG&E constructed high-voltage transmission lines between California and Oregon as part of the California-Oregon Power Company. WAPA combined forces with PG&E in the early 1970s as part of the California Oregon Intertie, also known as Path 66 (URS 2013b:2-19). The WAPA Maxwell-Olinda 500-kV Transmission Line does not appear to meet any of the criteria for NRHP eligibility. Furthermore, even though the resource is part of a larger network of transmission lines and towers built between 1958 and 1960 throughout the western United States, the Olinda and Maxwell substations were not constructed until 1986, thereby compromising the historic integrity of the alignment.

[10] CA-COL-242 also contained a fragment of a human femur (URS 2013a:6-6).

Previous Native American Consultation

USDA has not initiated consultation with Native American tribes, but will do so as part of the implementation of the USDA NPA should tribes request government-to-government consultation. The USBR contacted local Native American tribes (Cortina Rancheria of Wintun Indians, Grindstone Rancheria of Wintun-Wailaki, Yocha Dehe Wintun Nation, Paskenta Band of Nomlaki Indians, Cachil DeHe Band of Wintun Indians of the Colusa Indian Community Council of the Colusa Rancheria, Enterprise Rancheria of Maidu Indians, and the Mechoopda Indian Tribe of Chico Rancheria) in 2016 to provide information regarding the Sites Reservoir Project, which overlaps with portions of the MWI project APE. No specific information about Native American sites within the MWI APE has been forthcoming from tribes, to date.

Future Cultural Resources Studies Required

The Authority under direction of the USDA will comply with the requirements of Section 106 by implementing the newly-executed USDA NPA. The preamble clauses of the USDA NPA state that each of the three services under the USDA (including the Utility Services program) will develop their own Section 106 procedures by 2020. The 11th preamble clause says that "Until these appendices are approved as an amendment to the NPA, the activities and programs that they address will follow the four stem Section 106 process as set forth in 36 CFR Part 800, or ***as outlined in existing state agreements*** [emphasis added]." As a result, the procedures outlined below reflect the protocols defined in the RECDS PA.

The USDA has determined that the proposed action is not considered an exempt activity under Stipulation IV of the RECDS PA and, because the entire APE has not yet been surveyed for historic properties, has determined that construction of the proposed MWI project has the potential to adversely affect historic properties situated within the project's APE. As a result, the USDA will ensure that the project applicant (the Authority) will complete the requirements of the RECDS PA prior to initiating construction. These requirements are summarized below.

Stipulation V. Identification and Evaluation of Historic Properties

> *A.* …the Applicant [the Authority] working on RECDS' behalf shall consult with the appropriate Information Center and Interested Persons to identify historic properties within the APE. These identification efforts shall extend to all buildings, structures, objects, archeological sites, and sites that may have special importance to Native Americans or other Interested Persons and appear to be fifty (50) or more years old. RECDS will assess the recommendations of the Information Center and conduct any surveys that RECDS determines necessary…

The project applicant will request a record search from the Northwest Information Center of the California Historical Resources Information System at Sonoma State University to determine if additional cultural resources studies have been conducted, or if additional cultural resources have been recorded or evaluated, in addition to those reported herein, within the MWI APE and a 0.5-mile search buffer.

At the time the RECDS' PA was executed, language found under 36 CFR 800 about coordination with Native American tribes and other interested parties was very general. The regulations were amended in January 2001 to require more robust consultation with Native American tribes and interested parties by the lead federal agency. This included the requirement that federal agencies retain responsibility for formally consulting with tribes in a government-to-government capacity, per 36 CFR 800.2(c)(2)(ii)(A-D), that cannot be delegated to a project proponent or their

consultants. The USDA NPA preamble acknowledges the need for USDA to retain government-to-government consultation with Native American tribes, but also "advocates" for project proponents to contact Native American tribes to discuss the potential for significant resources within a project APE. As a result, in order to identify resources that may have special importance to tribes and the public, the Authority will contact local Native American tribes, historical societies, and other interested persons, as appropriate, to gather additional information about potential cultural resources within the APE. Follow-up phone calls will be made to those contacted if there has been no response within 45 days. This effort will be separate from USDA's responsibility for consulting with tribes on a government-to-government level, which would be expected to generate additional information about resources important to the tribes. USDA will contact those tribes identified by the USBR, at a minimum, for government-to-government consultation and engage in consultations, as prescribed in 36 CFR 800.2(c)(2)(ii)(A-E), should any tribe desire such consultation.

The USDA will ensure that the project proponent will conduct an archaeological survey of the acreage within the project's APE that has not previously been examined to identify previously unrecorded archaeological sites. All sites identified will be recorded on the appropriate pages of California Department of Parks and Recreation (DPR) form 523. Recordation will include photo-documentation, and the site location will be recorded with a global positioning system unit. Furthermore, any built environment resources that are 50 years old, or are soon to be 50 years old, that have not previously been recorded will be documented on appropriate DPR form 523 pages. At a minimum, Funks Reservoir and the TC Canal will be recorded. Other built environment resources requiring recordation may be identified through the records search or during preliminary cultural resources research.

> B. The RECDS shall evaluate each property identified pursuant to Stipulation V. A. by applying the National Register Criteria, 36 CFR 60.4, in consultation with the SHPO to each property within the APE. The RECDS shall notify the SHPO in writing of its determinations regarding the National Register eligibility…

Should archaeological sites be identified during the survey effort, data would be gathered that would allow each site to be evaluated according to 36 CFR 60.4 criteria. Subsurface excavations, in consultation with associated Native American tribes, may be required at Native American archaeological sites. The need for subsurface excavations at historic-era archaeological sites would depend on the results of archival research conducted in support of the evaluations. Native American cultural sites that are not also archaeological sites would be evaluated through consultation with the affected tribe(s). One or more reports, as appropriate, would be prepared to document the evaluation procedures and analyses.

Funks Dam, along with any other identified built environment resources that require evaluation, will be evaluated within the body of the DPR form 523 pages.

TCPs may be identified through future consultation with Native American tribes and other interested parties.

The Authority will provide the State Historic Preservation Officer (SHPO) with complete documentation of the cultural resources studies conducted, including the results of the record search, consultation with Native American tribes and interested parties, and cultural resource evaluations.

Stipulation VI. Assessment of Effects to Historic Properties

> A. The RECDS shall apply the Criteria of Effect and Adverse Effect, in accordance with 36 CFR 800.9 to all Historic Properties located in the APE…

Although not formally evaluated, one resource of the built environment in the APE, the GCID Main Canal, appears eligible for listing in the NRHP under criteria A and C, and is being treated as eligible. The proposed action would connect the GCID Main Canal with the TRR by constructing a TRR inlet channel and inlet control structure along with an energy dissipation bay/check structure within the body of the canal. Over the last century the canal has been deepened and various elements maintained and updated, as part of the evolution of the structure. The canal alignment and overall design would not be modified, nor would the original use of the canal be changed by the proposed action. Thus, the integrity of the location and original basic design of the canal would not be affected. Furthermore, the canal would remain in an agricultural location, retaining integrity of setting and feeling. Therefore, USDA proposes that there would be no adverse effect, pursuant to 36 CFR 800. 5(b).

If it is determined that other historic properties exist within the APE, the Authority will provide the SHPO with full documentation to assess the effects of the proposed action on the historic properties, per this stipulation, and, if necessary, develop mitigation measures pursuant to Stipulation VII.A, Standard Mitigation Measures of the PA.

Stipulation VIII, Discoveries and Unforeseen Effects

> A. The RECDS should plan for discoveries made during project implementation, particularly when an undertaking will take place within an area where buried archeologic deposits may be encountered. Such discovery plans shall be prepared in consultation with the SHPO and interested Native American groups and shall be submitted to the SHPO for review and approved prior to the commencement of the undertaking.

Native American archaeological sites are known to be located within the MWI project area, as evidenced by the three sites that were inundated by Funks Reservoir. Furthermore, buried sites have been found in the valley plains of Colusa County (White 2003 reported in URS 2013a:3-3). The identification of one human bone fragment at site CA-COL-242 at Funks Reservoir also suggests that human remains may be present within the APE. As a result, it is possible that other archaeological sites without surface manifestations are located in the project APE. USDA will, therefore, ensure that the Authority prepare a discovery plan for resources found during project construction, in accordance with Stipulation VIII.A., prior to initiating construction. The plan will detail the protocols for avoiding or treating archaeological sites discovered during construction, including notification of the Colusa County coroner if human remains are uncovered, such that there will be no adverse effect on the resources through implementation of mitigation measures that would be prepared in future consultation with the SHPO and Native American tribes.

3.7.3 Environmental Consequences

3.7.3.1 Thresholds of Significance

The Council on Environmental Quality (CEQ) and the Advisory Council on Historic Preservation advise federal agencies to coordinate compliance with Section 106 and the procedures in the regulations implementing Section 106, with steps taken to meet the requirements of NEPA. Consequently, the NRHP criteria for adverse effect, no adverse effect, or no effect on historic properties (36 CFR 800.5) was used to evaluate effects on historic properties within the project's APE.

Cultural resource effects presented in this section are consistent with the National Historic Preservation Act (NHPA) criteria for adverse effect (36 CFR 800.5). Under these regulations, a project has an effect on a historic property when the project may alter, directly or indirectly, the characteristics of the property that may qualify the property for inclusion in the NRHP (36 CFR 800.5(a)). An effect is considered adverse when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The effects analysis considers all qualifying characteristics of a historic property, including those characteristics that may have been identified subsequent to the original evaluation of the property's NRHP eligibility. Adverse effects may include reasonably foreseeable effects caused by the project that may occur later in time, be farther removed in distance, or be cumulative.

The Section 106 criteria for adverse effect state that examples of adverse effects on historic properties include, but are not limited to:

- Physical destruction of or damage to all or part of the property.
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines.
- Removal of the property from its historic location.
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.
- Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to a Native American tribe or Native Hawaiian organization.
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to provide for long-term preservation of the property's historic significance.

3.7.3.2 No Action Alternative

Under the No Action Alternative, neither construction nor operation of the proposed action would occur. Accordingly, effects on cultural resources under the No Action Alternative would not be adverse.

3.7.3.3 Proposed Action

Potential effects on historic properties by the construction, operations, and maintenance of the proposed action are discussed in this section. The USDA NPA will be implemented to address potential effects on historic properties to the greatest extent feasible; therefore, no additional mitigation measures are offered in response to potential effects.

Effect CR-1: Construction, Operations, and Maintenance Effects on Archaeological Historic Properties

Archaeological resources, including human remains, are known to exist within the APE, although they are currently inundated by Funks Reservoir. Although 12 acres of the APE have been surveyed for archaeological resources and no archaeological remains have been identified, approximately 257 acres of the APE would require survey under the USDA NPA prior to construction. As a result, additional archaeological sites that may be historic properties could be identified by the survey. Furthermore, archaeological sites might be uncovered during construction of the MWI pipeline and TRR Complex facilities.

USDA will ensure that the project proponent comply with the USDA NPA to complete the requisite archaeological survey of the APE (Stipulation V.A), evaluate any identified archaeological sites for NRHP eligibility (Stipulation V.B); assess the effects of the proposed action on the identified archaeological historic properties (Stipulation VI); develop appropriate mitigation measures, as necessary (Stipulation VII); and prepare a discovery plan for resources found during construction (Stipulation VIII.A). Implementing the USDA NPA would ensure that construction would have no adverse effect on archaeological sites that are historic properties. Operations and maintenance would have no effect on archaeological historic properties.

Effect CR-2: Construction, Operations, and Maintenance Effects on Built Environment Historic Properties

Two built environment resources within the APE, the WAPA Maxwell-Olinda 500-kV Transmission Line and the GCID Main Canal, have been previously identified and evaluated for NRHP eligibility. The WAPA Maxwell-Olinda 500-kV Transmission Line was evaluated by URS (2013b) as not eligible for listing in the NRHP. The proposed action would pass beneath the transmission line and not have any effect on the facility. USDA is assuming eligibility of that portion of the GCID Main Canal within the APE as a contributor to the entire GCID Main Canal alignment and to a proposed GCID historic district. The TRR would be constructed directly adjacent to and east of the GCID Main Canal, and the canal would be linked to the TRR via an inlet channel and inlet control structure along with an energy dissipation bay/check structure within the body of the canal. In addition, a bridge would be constructed across the top of the canal to provide access to the MWI pipeline road. USDA has determined that these actions would not have an adverse effect on the GCID Main Canal, as the modifications would not affect the qualities of the resources that qualify it for NRHP eligibility.

One additional built environment resource, Funks Dam, would require NRHP evaluation prior to construction according to Stipulation VI of the Section 106 PA. Even if the resource is determined to be a historic property, USDA's application of Stipulation VI (assessment of effects) would find that proposed construction activities would not affect the resources. While installation of the MWI pipeline connection would be in Funks Dam, and additional material would be installed to support the connection facility, this action would not change the function of the dam. Furthermore, it is not anticipated that the dam would be found eligible under 36 CFR 60.4(c), due to its method of construction. However, should application of Stipulation VI determine that the dam is a historic property, Stipulation VII (develop mitigation measures) would be implemented and there would be no adverse effect.

It is possible that additional built environment resources would be identified during implementation of Stipulation V.A. of the RECDS PA, although it is not anticipated. Should any such historic properties be identified through application of Stipulation V.B, USDA would assess the effects of the

proposed action on the identified built environment historic properties (Stipulation VI) and develop appropriate mitigation measures, as necessary (Stipulation VII). Implementation of the RECDS PA stipulations would ensure a result of no adverse effect on built environment historic properties.

Overall, construction of the proposed action would have no adverse effect on historic properties of the built environment. Operations and maintenance would have no effect on built environment historic properties.

Effect CR-3: Construction, Operations, and Maintenance Effects on TCPs.

No TCPs have been identified in the APE or proposed action vicinity, to date. As a result, there would be no effect on known TCPs. The Authority will consult with Native American tribes and other interested parties in accordance with Stipulation V of the RECDS PA, and the Authority will also reach out to Native American tribes and other interested parties for information about significant cultural resources. Should these consultations result in the identification of TCPs within the APE, the Authority would comply with Stipulations VI and VII of the RECDSPA to assess the effects of the proposed action on TCPs and to develop mitigations measures, as necessary. Through application of Stipulation VII, including future consultation with Native American tribes, as appropriate, there would be no adverse effect on TCPs during construction, operations, and maintenance.

3.8 Aesthetics and Visual Resources

3.8.1 Methods

3.8.1.1 Definition of Resource Study Area

The RSA for aesthetic resources is the area of visual effect (AVE), which is the area composed of viewsheds, or what people can see in the landscape, as further described in Section 3.8.1.2, *Method for Effects Analysis*.

3.8.1.2 Method for Effects Analysis

Concepts and Terminology

Area of Visual Effect

The visual resources RSA is defined as the AVE that is composed of viewsheds, or what people can see in the landscape. The AVE and its viewsheds are defined by the physical constraints of the environment and the physiological limits of human sight. Physical constraints of the environment include landform, land cover, and atmospheric conditions. Landform is a major factor in determining the AVE because it can limit views or provide an elevated perspective for viewers. Similarly, land cover such as trees and buildings can limit views, while low-growing vegetation and the absence of structures can allow for unobscured views. Atmospheric conditions such as smoke, dust, fog, or precipitation can temporarily reduce visibility.

The physiological limits of human sight are affected by location, proximity, and light. *Location* refers to the topographic position of the viewer, such as being even with, above, or below what is being observed. Proximity is broken down into three distance zones: foreground (up to 0.5 mile from the

viewer), middleground (0.5 mile to 3 to 5 miles from the viewer), and background (from 3 to 5 miles to infinity). Features in the landscape are more dominant and have a greater importance the closer the resource is to the viewer; conversely, importance is reduced the farther away features are from the viewer because details and features in the landscape, including project elements, become lost and make up a smaller portion of the total landscape. In the background, the scale and color of existing landscape elements and project features blend so that only broad forms, large-scale patterns, and muted colors are evident. Light also affects views. For example, views are more readily available during the day versus during the night, when darkness greatly reduces the ability to see details and color in the landscape without bright moonlight or artificial light sources. In addition, lighting levels change throughout the day, making color and individual forms more prominent with more light and less distinct as light decreases.

The environment's physical constraints and the limits of human sight combine to provide viewsheds that range from restrictive to expansive and AVEs that range from smaller and more confined to larger and wider reaching (FHWA 2015, Litton 1968).

Scenic vistas may occur within an AVE. Scenic vistas generally encompass a wide area with long-range views to the middle and background of surrounding elements in the landscape. Viewers may have scenic vista views from elevated vantages (e.g., hilltops and slopes), open agricultural lands, and roadways. Some vistas may encompass a 360-degree view in all directions, while others may be narrower. Scenic vistas may be designated by a local jurisdiction or a community value but may also include areas that have a high level of viewer sensitivity, such as a lookout point.

Visual Quality

Visual quality is determined by assessing what viewers like and dislike about the visual character of the AVE. Visual quality depends on how the viewer desires the view to look and what is actually seen. If the two are aligned, then often the viewer is pleased and the visual quality is considered to be good, or high. However, if what the viewer wishes to see and what is seen do not align, viewers tend to be displeased and the visual quality is considered to be poor, or low. Viewer preference is also motivated by relationship to the site. For example, someone using a site may view it differently or aim to view it differently based on their interests compared to someone simply being near the site (FHWA 2015).

Viewer Sensitivity

The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on viewer exposure and viewer awareness. Viewer exposure is based on the following elements.

1. **Proximity**—The viewer's proximity to an object or scene, described using distance zones (refer to *Area of Visual Effect*).
2. **Extent—**The number of people that will be viewing an object or scene where fewer viewers means less exposure and many viewers means greater exposure.
3. **Duration—**How long viewers are in contact with the object or scene. Narrow views seen quickly in passing have shorter durations and less exposure, whereas wider views that are seen from a more stationary position have longer durations and greater exposure. With greater exposure comes increased viewer concern for visual impacts.

Viewer awareness includes the following elements.

1. **Attention**—How common a scene is to a viewer where the more common the scene is, the less sensitive the viewer and the more unique the scene, the more sensitive the viewer.
2. **Focus**—Includes details or elements that draw attention. Views with no specific visual element or focal point draw less attention from the viewer and the viewer will be less sensitive to the details of that scene. However, a viewer will have greater sensitivity to details if there are details or elements that stand out in the view and draw the viewer's focus.
3. **Protection**—Includes legal and social protection and may not be explicitly for visual resources. For example, recreational, historic, and ecological values can create a need to protect the aesthetic values of those features because viewers will be sensitive to changes in the protected resource (FHWA 2015:6-2–6-3).

Commuters and nonrecreational travelers have generally fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are generally considered to have lower visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views they see from their homes; therefore, they are generally considered to have higher visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having higher visual sensitivity.

Judgments of visual quality and viewer response must be made in a regional frame of reference (U.S. Soil Conservation Service 1978). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have very little significance in mountainous terrain.

Methods for Analysis

Using the concepts and terminology described above, and the criteria for determining adverse effects described below, analysis of the visual effects of the proposed action are based on the following sources of information.

- Desktop review using Google Streetview.
- Photographic documentation of key views of the project site and project vicinity.
- Evaluation of regional visual context.
- Review of conceptual plans for the proposed action.
- Review of the proposed action concerning compliance with state and local ordinances and regulations and professional standards pertaining to visual quality.

Effect Thresholds

NEPA criteria for determining adverse effects are listed in 40 CFR 1508.27, but are considered broader and less stringent than CEQA criteria, set forth in this section. Also, the CEQA criteria incorporate NEPA standards. For these reasons, although the proposed action is not subject to CEQA, the State CEQA Guidelines provide criteria to assist in determining the magnitude of a given effect. Due to the absence of applicable federal regulations, the State CEQA Guidelines were used to determine whether the action alternatives would have adverse effects. Identification of effects as significant under CEQA is treated, herein, as sufficient for identifying effects considered adverse

under NEPA. An action alternative may have an adverse effect on visual resources if it would result in any of the conditions listed below:

- Substantial degradation of the existing visual character or quality of the site and its surroundings, including scenic vistas
- Substantial damage to scenic resources, including but not limited to trees, rock outcroppings, and historic buildings along a scenic highway
- Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

Professional Standards

Professional standards result from professional and direct expertise gained by staff working on visual analyses and consulting with other experienced staff, subconsultants, and clients on visual effects, including knowledge gained from public input on a broad range of projects. The analysis of effects on aesthetics and visual quality are supported collective knowledge that is professionally agreed upon and represents common, general public concerns. According to professional standards, a project may be considered to have adverse effects if it would substantially have any of the following consequences:

- Conflict with local guidelines or goals related to visual quality
- Alter the existing natural viewsheds, including changes in terrain
- Alter the existing visual quality of the region or eliminate visual resource
- Increase light and glare in the RSA
- Result in backscatter light into the nighttime sky
- Result in a reduction of sunlight or introduction of shadows in community areas
- Obstruct or permanently reduce visually important features
- Result in long-term (i.e., persisting for 2 years or more) adverse visual changes or contrasts to the existing landscape as viewed from areas with high visual sensitivity

3.8.2 Affected Environment

The RSA is located 1.8 miles west of I-5 and 3.75 miles northwest of Maxwell, in Colusa County, California. The RSA is defined as the area of land that is visible from nearby vantages, such as from local roadway and private residences, and is determined by topography, vegetation, and viewing distance. The RSA is located in the transition zone between the foothills of the Coast Ranges and the northern Sacramento Valley. The landscape is characterized by grassy pastures and open-space lands, rice fields, almond orchards, and rural landscaping over terrain that varies from flat to gently rolling. The RSA is also characterized by agricultural-related buildings. Fewer than ten single-family rural residences located within a half mile of the RSA. There is a large-scale almond processing facility located west of McDermott Road and the GCID Main Canal and situated on either side of Funks Creek, and there are also adjoining local roadways and associated signage.

Pasture lands allow for scenic vista views out and over open pastures and rice fields in the foreground toward background views of Table Mountain to the north, the Coast Ranges to the west, and the Sutter Buttes to the southwest. In addition, limited scenic vista views of the Sierra Nevada

Mountains are available to the east. Where present, orchards, mature trees, and buildings may partially or fully limit such views. Waterbodies in the RSA include Funks Creek, the GCID Main Canal and TC Canal, and the Funks Reservoir. The canals and reservoir do not have any riparian vegetation associated with them, because their banks are kept clear as a part of operations and maintenance. However, riparian vegetation along Funks Creek improves aesthetics associated with the RSA. Funks Reservoir is closed to the public and the TC Canal is not accessible to the public in the RSA, so public visual access of waterbodies in the RSA is limited to Funks Creek and the GCID Canal because they can be seen from McDermott Road.

Local roadways within the RSA include two-lane rural roadways with no curbs, gutters, or sidewalks. There are no scenic routes associated with the RSA. Wooden power poles and lines are located along McDermott Road, other local roadways, and transecting agricultural fields. Lighting in the project vicinity is limited to interior and exterior lighting associated with rural residences, security lighting associated with the almond processing facility, and lighting from headlights of vehicles driving at night. The roadways and roadway intersections surrounding the RSA are not lit. The RSA is also not lit. Overall, lighting levels in the RSA are low.

3.8.2.1 Existing Viewer Groups and Viewer Responses

Existing viewer groups associated with the RSA include rural residents, roadway users, agricultural workers, and recreationists. Residents are considered to have high visual sensitivity because although they are accustomed to views of the existing agricultural operations and agricultural traffic passing on local roadways, they generally view the RSA for an extended duration, are likely to have a high sense of ownership over local views, and are more likely to be affected by changes in the views from their homes than other affected viewers. Roadway users include local commuters traveling to and from work or nearby developed areas, recreational travelers, agricultural transporters, and haulers in vehicles that travel at speeds ranging from a stop to approaching 65 miles per hour (there is no posted speed limit on McDermott Road). Depending on speed, drivers and passengers are able to take in brief to longer views of the scenery around them due to the straight roadways in the RSA. Sections of the roadway are more open and provide scenic vista views of the surrounding area. Therefore, roadway users are considered to have moderately high visual sensitivity. Agricultural workers are likely to have moderately low visual sensitivity due to their intermittent and limited views of the RSA, which they would see while they are generally more focused on working agricultural lands surrounding the site. It is anticipated that the average response of all viewer groups will be moderately high. Recreationists in the area generally include viewers who are using local roadways for walking, jogging, running, and cycling. Walkers, joggers, and runners are focused on their associated recreational activity but tend to take in and enjoy their surroundings. Cyclists pass through the area more quickly, but also enjoy their surroundings. Because most users are intimately familiar with the area or are accessing the area for its views and rural nature, recreationists are considered to have high sensitivity to visual change.

3.8.3 Environmental Consequences

3.8.3.1 No Action Alternative

Under the No Action Alternative, no new construction would take place and no features associated with the proposed action would be built within the AVE. As a result, no new visual elements would

be introduced and no resource change would occur within the RSA. There would be no aesthetic effects on the existing visual character, visual quality, or affected viewer groups.

3.8.3.2 Proposed Action

Effect AV-1: Temporary Degradation of the Existing Visual Character from Construction Activities

The proposed action would be constructed over 2.5 years between April 1 and October 31 each year, with limited work during the winter that would be similar to existing operations and maintenance activities. Construction activities would introduce considerable heavy equipment and associated vehicles, including backhoes, compactors, tractors, and trucks, into the viewsheds of all viewer groups. Staging would also be located on-site.

Earthwork and grading activities would be the primary elements of construction needed to create the new TRR and MWI pipelines, with limited amounts of construction associated with erecting built structures. Water trucks would be used during construction and would ensure that visible construction dust in the vicinity of the RSA is minimized. The new MWI pipeline would be installed underground north of the TRR, and head in a westward direction toward Funks Reservoir. A narrow swath of trees would need to be removed from the orchards crossed by the alignment to accommodate pipeline installation. Once the pipe is installed in the trench, the trench would be backfilled and seeded. A new bridge would be constructed over the GCID Main Canal to provide access to the TRR for operation and maintenance. Construction would require minimal disturbance and would be completed in a short period of time. A new switchyard and an approximately 3.5-mile segment of 69-kV line would also be constructed to connect into existing PG&E power lines. The new power line corridor would replace an existing power line corridor. Construction of the new 69-kV line would require replacement of the existing wooden poles with taller wooden poles. Construction would occur in a linear fashion, require minimal disturbance, and would be completed in a short period of time.

All viewers in the area are used to heavy machinery and truck traffic associated with agricultural operations and, because of this, construction traffic would not greatly affect viewers in the AVE. The closest rural residences are located over 0.25 mile from the RSA and are buffered from the site by mature trees associated with residential landscaping. Therefore, construction activities would not result in notable visual disturbances to rural residences. Because the proposed action would be built over several construction seasons, it would not stretch out over a contiguous period of time and would only create temporary visual effects on and from the RSA during the construction periods. Therefore, the effect on aesthetics and visual quality would be not adverse due to the temporary nature of construction, transient nature of viewers passing by the RSA, and viewers' familiarity with heavy equipment in the project area for working agricultural lands. No mitigation is required.

Effect AV-2: Permanent Degradation of the Existing Visual Character from Built Structures during Construction

The proposed action includes construction of the pipeline and related facilities along the pipeline corridor and pipeline connection at Funks Reservoir. These facilities would not be visible because public access to the reservoir is restricted and roadway users. Recreationists traveling on nearby roadways cannot see the reservoir due to distance and intervening vegetation and topography. In addition, no residential viewers have views of the Funks Reservoir.

The proposed action would require that approximately 130 acres of existing agricultural lands on the RSA be replaced with the TRR and built structures, including the pump station building, switchyard, pump facility, spillway, creek outlet, and the TRR inlet and GCID flow control structure. The MWI pipeline would be underground and would not be visible. The narrow swath of removed trees from the orchards and the pump facility access road would not stand out in views because they would appear similar to the linear canals, transmission corridors, and farm access roads that are very common in the AVE. Similarly, large-scale agricultural operations, the existing gate control structure, and the GCID Canal contribute to an existing visual environment that contains features consistent with the elements being installed under the proposed action.

The 6-foot-high TRR embankments would be similar to the height of the GCID Canal berms located immediately north and south of Funks Creek. The embankments would obscure views of the reservoir's water surface so the earthen, grassy berms would be the primary feature visible from McDermott and Lenahan Roads. The embankments would also partially obscure scenic vista views toward the Coast Ranges, momentarily, as roadway travelers and recreationists on local roads pass by the RSA. Once viewers pass by the site, however, the Coast Ranges would be visible again so the embankments would not substantially affect or detract from scenic vista views. The closest rural residence is located over 0.25 mile from the RSA and is surrounded by mature trees. Therefore, the embankments would not obstruct views of the Coast Ranges for these residential viewers.

In addition to the embankments, built features associated with the proposed action would also be visible on approach from McDermott Road. The pump station building, switchyard, and pump facility would be seen by roadway travelers and recreationists traveling south on McDermott Road, approaching the site from the north. The spillway, creek outlet, and the TRR inlet and GCID flow control structure would be seen by roadway travelers and recreationists traveling north on McDermott Road, approaching the site from the south. Views of these features would be intermittent and brief as roadway travelers and recreationists on local roads pass by the RSA; however, these facilities would introduce industrial-looking features into the agrarian landscape.

The upgraded power line poles would be taller than the existing poles, but because the poles would also be wooden, they would be in keeping with the existing visual character of the RSA and would not detract from or degrade the quality of views. Although there are no designated scenic routes, Colusa County acknowledges that rural roadways provide viewsheds with high scenic value due to the scenic beauty associated with their rural character, availability of scenic vista views, and views to the surrounding mountains and waterways.

Although changes to views from structures built during construction would be degraded and result in a permanent adverse effect, changes to views would not be substantial due to the limited exposure of these structures by viewers. Mitigation Measure AV-1 would ensure that built structures would recede into views, that these features would be consistent with existing built features located nearby, and that the quality of views from McDermott Road would be maintained. Therefore, following mitigation the effect on aesthetics and visual quality would be not adverse.

Effect AV-3: Introduction of Temporary New Sources of Substantial Light or Glare during Construction

Existing lighting levels in the project vicinity are low because roadways and roadway intersections surrounding the RSA and the RSA itself are not lit and there is limited lighting associated with rural residences, agricultural facilities, and nighttime traffic. Construction would take place during the summer, Monday through Saturday, from 7:00 a.m. to 6:00 p.m. Therefore, high-intensity nighttime

lighting would not be needed to illuminate temporary construction activities because construction activities would occur only during daylight hours. As a result, there would be no new sources of substantial light or glare during construction, and there would be no effect on aesthetics and visual quality. No mitigation is required.

Effect AV-4: Introduction of Permanent New Sources of Substantial Light or Glare during Construction

The primary sources of daytime and nighttime glare include sunlight reflecting off the new pump station building and sunlight and moonlight reflecting off the new water surfaces of the TRR, creating new permanent sources of glare where none presently exists. Daytime glare could result if structures are painted a lighter color that reflects light. Because the RSA is currently vegetated and there are no structures present, glare at the site is very low, and the introduction of new, permanent structures would result in new sources of daytime glare.

The embankments of the TRR would be 6 feet higher than the existing ground elevation, and the maximum water elevation of the TRR would be 3 feet below the top of the embankment. Therefore, the water surface would not likely be visible to viewers passing by on local roadways or from rural residences.

The use of nighttime lighting would result in a substantial increase in nighttime lighting and glare if not properly designed. Nighttime outdoor safety lighting associated with the pump station and switchyard could utilize light-emitting diode (LED) lamps that can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if blue-rich white light (BRWL) lamps are used (American Medical Association 2016; International Dark-Sky Association 2010a, 2010b, 2015). Studies have found that a 4,000-Kelvin (K) white LED light causes approximately 2.5 times more light pollution than high-pressure sodium lighting with the same lumen output, which would affect sensitive receptors, and more than double the perceived brightness of the night sky (Aubé et al. 2013; Falchi et al. 2011, 2016). This would result in a substantial source of nighttime light and glare that would negatively affect nighttime views in the area if lighting is not properly designed.

Permanent structures built during construction of the proposed project and nighttime lighting would result in an adverse effect from new sources of daytime and nighttime glare and nighttime light pollution. Glare from permanent structures would be reduced through Mitigation Measure AV-1, which would require structures are painted in a manner that prevents glare from light colors. Mitigation Measure AV-2 would ensure that BRWL LED lighting is not used and would lessen nighttime light and glare effects caused by the proposed action. As a result, the effect on aesthetics and visual quality would be reduced to not adverse.

3.9 Noise

3.9.1 Methods

3.9.1.1 Definition of Resource Study Area

During construction and operation, the noise RSA is the localized area immediately in the vicinity of the project footprint that could be affected by noise. The geographic context for the analysis of noise

effects is generally very small (within a few hundred feet), because noise diminishes rapidly with distance (6 A-weighted decibels [dBA] per doubling of distance for point and stationary sources). Because the existing ambient noise levels in the vicinity of the proposed action are generally quiet, the RSA for the proposed action includes the areas within a distance of 2,000 feet from the proposed action. This RSA is inclusive of the nearest sensitive land uses that could potentially be exposed to noise effects.

3.9.1.2 Key Resource Terminology

This section provides a brief description of the noise and vibration concepts and terminology used in this assessment.

- **Sound**. A vibratory disturbance transmitted by pressure waves through a medium such as air or water that is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micropascals. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion; rather, they combine logarithmically. For instance, if two identical noise sources each produce noise levels of 50 dBA (see definition immediately following), the combined sound level would be 53 dBA, not 100 dBA.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear. The dBA scale is the most widely used for environmental noise assessments.
- **C-Weighted Decibel.** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear at very high noise levels. The C-weighting scale is flat and therefore includes more of the low-frequency sound energy than the A scale.
- **Maximum Sound Levels (L_{max}).** The maximum sound level measured during a given measurement period.
- **Equivalent Sound Level (L_{eq})**. The equivalent steady-state sound level that, in a stated period of time, would contain the same acoustical energy. The 1-hour A-weighted equivalent sound level (L_{eq} 1h) is the energy average of A-weighted sound levels occurring during a 1-hour period.
- **Day-Night Level (L_{dn}).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with a 10 dB penalty added to sound levels between 10:00 p.m. and 7:00 a.m.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the sound levels occurring during the period from 10:00 p.m. to 7:00 a.m. L_{dn} and CNEL are typically within 1 dBA of each other and, for all intents and purposes, interchangeable.
- **Vibration Velocity Level (or Vibration Decibel Level).** The root-mean-square velocity amplitude for measured ground motion expressed in dB.
- **Peak Particle Velocity (PPV).** A measurement of ground vibration, defined as the maximum speed at which a particle in the ground is moving, expressed in inches per second (in/sec).

3.9.1.3 Method for Effects Analysis

To characterize the types of noises typically occurring in the RSA, existing noise levels have been qualitatively described for the TRR and its associated features. Ambient noise levels have been estimated based on existing land uses. Noise-sensitive land uses, which typically include residences, hospitals, places of worship, libraries, schools, and nature and wildlife preserves and parks, have been identified in the RSA using aerial imagery. Noise effects are evaluated with respect to Colusa County's noise ordinance using noise and vibration equipment reference data from the Federal Highway Administration (FHWA) (Colusa County n.d., and FHWA 2006). Details on thresholds and methods for determining effects on noise and groundborne vibration are described below.

Noise

Noise is commonly defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, an evaluation of noise is necessary when considering the environmental effects of a proposed project.

Sound is characterized by various parameters, including the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient (existing) sound level. Although the decibel scale, which is a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The human ear is not equally sensitive to all frequencies in the entire spectrum; therefore, noise measurements are weighted more heavily toward frequencies to which humans are sensitive through a process referred to as A-weighting. Table 20 on the following page summarizes typical A-weighted sound levels for different noise sources.

Table 20. Typical A-Weighted Sound Levels

Common Outdoor Activities	Sound Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 mph at 50 feet		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower at 100 feet	70	Vacuum cleaner at 3 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban area, daytime	50	Dishwasher in next room
Quiet urban area, nighttime	40	Theater, large conference room (background)
Quiet suburban area, nighttime		
	30	Library
Quiet rural area, nighttime		Bedroom at night, concert hall (background)
Rustling of leaves	20	
		Broadcast/recording studio
	10	
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013.

Human sound perception, in general, is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level. A doubling of actual sound energy is required to result in a 3 dB (i.e., barely noticeable) increase in noise; in practice, for example, this means that the volume of traffic on a roadway would typically need to double to result in a noticeable increase in noise.

The decibel level of a sound decreases (or attenuates) exponentially as the distance from the source of that sound increases. For a point source, such as a stationary compressor or construction equipment, sound attenuates at a rate of 6 dB per doubling of distance. For a line source, such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance. Atmospheric conditions, including wind, temperature gradients, and humidity, can change how sound propagates over distance and affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface, such as grass, attenuates at a greater rate than sound that travels over a hard surface, such as pavement. The increased attenuation is typically in the

range of 1 to 2 dB per doubling of distance. Barriers, such as buildings and topography, which block the line of sight between a source and receiver also increase the attenuation of sound over distance.

In urban environments, simultaneous noise from multiple sources may occur. Because sound pressure levels in dB are based on a logarithmic scale, they cannot be added or subtracted in the usual arithmetical way. Adding a new noise source to an existing noise source, with both producing noise at the same level, will not double the noise level. If the difference between two noise sources is 10 dBA or more, the higher noise source will dominate, and the resultant noise level will be equal to the noise level of the higher noise source. In general, if the difference between two noise sources is 0 to 1 dBA, the resultant noise level will be 3 dBA higher than the higher noise source, or both sources if the sources are equal. If the difference between two noise sources is 2 to 3 dBA, the resultant noise level will be 2 dBA above the higher noise source. If the difference between two noise sources is 4 to 10 dBA, the resultant noise level will be 1 dBA higher than the higher noise source.

Community noise environments are generally perceived as quiet when the 24-hour average noise level is below 45 dBA, moderate in the 45 to 60 dBA range, and loud above 60 dBA. Very noisy urban residential areas are usually around 70 dBA CNEL. Along major thoroughfares, roadside noise levels are typically between 65 and 75 dBA CNEL. Incremental increases of 3 to 5 dB to the existing 1-hour L_{eq}, or to the CNEL, are common thresholds for an adverse community reaction to a noise increase. However, there is evidence that incremental thresholds in this range may not be sufficiently protective in areas where noise-sensitive uses are located and CNEL is already high (i.e., above 60 dBA). In these areas, limiting noise increases to 3 dB or less is recommended (FTA 2006). Noise intrusions that cause short-term interior levels to rise above 45 dBA at night can disrupt sleep. Exposure to noise levels greater than 85 dBA of 8 hours or longer can cause permanent hearing damage.

Groundborne Vibration

The operation of heavy construction equipment, particularly pile-driving equipment and other impact devices (e.g., pavement breakers), creates seismic waves that radiate along the surface of the ground and downward. These surface waves can be felt as ground vibration, resulting in annoyance for people or damage to structures.

Perceptible groundborne vibration is generally limited to areas within a few hundred feet. As seismic waves travel outward from a vibration source, they cause rock and soil particles to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in in/sec) at which these particles move is referred to as PPV, the commonly accepted descriptor of vibration amplitude.

Vibration amplitude attenuates (or decreases) over distance. This attenuation is a complex function of how energy is imparted into the ground as well as the soil or rock conditions through which the vibration is traveling (variations in geology can result in different vibration levels).

The following equation is used to estimate the vibration level at a given distance for typical soil conditions (FTA 2006). PPV_{ref} is the reference PPV at 25 feet (Table 21).

$$PPV = PPV_{ref} \times (25/Distance)^{1.5}$$

Table 21 summarizes typical vibration levels generated by construction equipment at a reference distance of 25 feet and other distances, as determined with use of the attenuation equation above.

Table 21. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 70 Feet	PPV at 80 Feet	PPV at 100 Feet	PPV at 200 Feet
Pile driver (impact)	0.650	0.303	0.209	0.181	0.141	0.066
Pile driver (sonic/vibratory)	0.650	0.303	0.209	0.181	0.141	0.066
Hoe ram	0.089	0.042	0.029	0.025	0.019	0.009
Large bulldozer	0.089	0.042	0.029	0.025	0.019	0.009
Caisson Drill	0.089	0.042	0.029	0.025	0.019	0.009
Loaded trucks	0.076	0.035	0.024	0.021	0.017	0.008
Jackhammer	0.035	0.016	0.011	0.010	0.008	0.004
Small bulldozer	0.003	0.001	0.001	0.001	0.001	0.000

Source: Caltrans 2013.

Table 22 summarizes the guidelines developed by Caltrans for damage and annoyance from the transient and continuous vibration that is usually associated with construction activity. Impact pile drivers, "pogo stick" compactors (small hand-held soil compactors), crack-and-seat equipment (equipment that breaks and re-seats pavement), excavation equipment, static compaction equipment, tracked vehicles, vehicles on highways, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment are typically associated with continuous vibration. The activities that are typically associated with single-impact (transient) or low-rate, repeated impact vibration include blasting and the use of drop balls or dropped metal plates (Caltrans 2013).

Table 22. Vibration Annoyance Potential, Criteria Guidelines

	Maximum PPV (in/sec)	
Human Response	Transient Sources	Continuous/ Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans 2013.

3.9.2 Affected Environment

3.9.2.1 Colusa County

The RSA for the proposed action is located in Colusa County. Ambient noise levels in portions of Colusa County are defined primarily by traffic on major roadways, including, but not limited to, I-5 and State Routes (SR) 16 and 20. Agricultural activities, as well as aircraft from local airports, such as the Colusa County Airport, also contribute to the noise environment. In addition, there are numerous stationary noise sources (e.g., quarry operations, lumber mills, industrial facilities) dispersed throughout the county (Colusa County 2012).

3.9.2.2 Terminal Regulating Reservoir Complex and Associated Features

The RSA would be located within Colusa County in an area that is expected to have low ambient noise levels. The larger vicinity surrounding the RSA is agricultural, with the primary noise source being agricultural equipment that currently operates at and adjacent to the RSA. The location of the RSA is near existing local roads (Delevan, McDermott, and Lenahan Roads), which results in limited traffic noise that also contributes to the ambient noise setting. There are other roads near the RSA that are used for maintenance purposes and for agricultural equipment, but these roads are closed to the public and do not result in regular traffic noise.

3.9.3 Environmental Consequences

3.9.3.1 No Action Alternative

Under the No Action Alternative, there would not be construction of any new facilities or related changes to the existing noise environment in the RSA. The TRR and its facilities would not be constructed. Consequently, the No Action Alternative would result in no effect on noise and vibration.

3.9.3.2 Proposed Action

Effect Noise-1: Exposure of Persons to or Generation of Excessive Noise Levels during Construction

Construction of the proposed action would result in the use of a fleet of construction equipment, which is included in Table 23, along with the corresponding acoustical use factors, L_{max}, and L_{eq} values from the FHWA's reference values (FHWA 2006). Use of the equipment would be subject to the Colusa County noise ordinance, which requires that no individual piece of equipment produce a noise level exceeding 83 dBA at a distance of 25 feet.

Table 23. Proposed Action Construction Equipment

Equipment Type	Acoustical Use Factor	L_{max} at 50 feet (dBA)	Equipment L_{eq}
Backfill loader	40%	79	75
Backhoe	40%	78	74
Backhoe with Auger Drill	20%	84	77
Boom Truck	40%	74	70
Bulldozer	40%	82	78
Compactor	20%	83	76
Concrete material trucks	40%	79	75
Concrete pumper	50%	81	78
Concrete trucks	40%	79	75
Crane	16%	81	73
Dump truck	40%	76	72
Excavator loader	40%	81	77
Excavator	40%	81	77
Fork lift	40%	79	75
Fuel truck	40%	76	72
Grader	40%	85	81
Generator	50%	81	78
Grout pump	50%	81	78
Highway trucks	40%	75	71
Jacking equipment	25%	82	76
Lift truck	20%	75	68
Loader	40%	79	75
Off-road trucks	40%	76	72
Paving machine	50%	77	74
Personnel Truck	40%	75	71
Pipe fabrication equipment	40%	73	69
Pipe transp. truck	40%	74	70
Scraper	40%	84	80
Water trucks	40%	76	72

Source: FHWA 2006
[a] Calculated based on acoustical use factors and L_{max} values.

The loudest piece of construction equipment would be a grader with an L_{max} value of 85 dBA at a distance of 50 feet. At a distance of 50 feet, the noise level of 85 dBA from this loudest piece of equipment is approximately 6 dBA quieter than the noise level at 25 feet, based on geometric attenuation. Because the grader noise level would be 85 dBA at 50 feet, at 25 feet it would be below 83 dBA and would thus comply with the County's noise ordinance. Because all of the proposed action's construction equipment would comply with the 83-dBA limit at 25 feet in the noise ordinance people near the project site would not be exposed to a level of noise in exceedance local standards. As a result, the effect on noise during construction would be not adverse. No mitigation is required.

Effect Noise-2: Exposure of Persons to or Generation of Excessive Noise Levels during Operation

Noise from operational activities would generally be limited to minor noise associated with the TRR and pipeline connection operations that would mostly involve slow movement of water. The unpaved pipeline road would result in occasional slow-speed vehicle traffic for maintenance activities that would result in minor noise. None of the noise sources are anticipated to result in a violation of the County's noise ordinance, which restricts maximum noise to 60 dBA during the daytime hours and 55 dBA during the nighttime hours for agricultural, commercial, and industrial uses.

The TRR Pumping Plant would generate pump-related noise that would be enclosed in a pre-fabricated metal building with metal cladding and a roof. This would reduce noise of the pumping plant such that it would not likely be noticeable on adjacent properties and would comply with the noise limits specified in the noise ordinance. Therefore, the effect on noise during operation would be not adverse. No mitigation is required.

Effect Noise-3: Exposure of Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels during Construction

During construction of the proposed action, heavy-duty equipment would be required (Table 23) that would result in some level of groundborne vibration. Equipment, such as pile drivers and jackhammers, result in more groundborne vibration than typical construction equipment, because it makes forceful and repeated contact with the ground surface. However, based on FHWA's equipment noise reference levels, none of the equipment required for construction is considered to equipment that would result in vibration effects.

As shown in Table 21, even equipment that is not considered to result in vibration effects, such as a bulldozer, can result in distinctly perceptible vibration levels (based on the values in Table 22) at close distances. However, even for a large bulldozer, vibration levels would fall below the threshold of what is considered barely perceptible (0.04 in/sec, for transient sources) at a distance just beyond 50 feet. For the majority of construction of the proposed action, the distance to the nearest residence would be approximately 1,700 feet (south of the TRR on McDermott Road). At a distance of 1,700 feet, there would be no detectable groundborne vibration.

Construction of the proposed power line would result in construction equipment that would operate along McDermott Road as close as 50 feet from houses along the roadway. The vibration levels for a large bulldozer, if perceptible at all, would be barely perceptible at 50 feet. Power line construction would require backhoes and several trucks, which are typically smaller and less vibration-intensive than a large bulldozer and thus would likely result in even less groundborne vibration than a large bulldozer. Thus, even during construction of the power line when equipment may be as close as 50 feet from a residence, vibration levels would not be considered excessive. All other features of the proposed action would be an even greater distance to the nearest residences. The effect groundborne vibration during construction would be not adverse. No mitigation is required.

Effect Noise-4: Exposure of Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels during Operation

During operations of the proposed action, there is not anticipated to be prolonged use of equipment capable of generating excessive groundborne vibration that would affect sensitive land uses.

Operation of the TRR, MWI pipeline, and pipeline connection would mostly involve slow movement of water and minor maintenance activities, which would not generate noticeable groundborne vibration. The pipeline road would result in occasional light vehicle travel, but groundborne vibration from pickup trucks would not be detectable beyond the immediate vicinity of the road, where there are no sensitive land uses. Operation of the pumping plant would result in equipment that could potentially generate vibration; however, because the pumping plant is located 1,800 feet from the nearest residence, vibration from pump operation would not be detectable. Vibration levels from the most vibration-intensive equipment, a pile driver, would be reduced to a level that would be distinctly perceptible at a distance of 200 feet (refer to Tables 21 and 22). For pumping equipment, which does not interact with the ground surface like a pile driver, at a distance of 1,800 feet, there would be no noticeable groundborne vibration. Because none of the TRR facilities or associated activities would generate substantial groundborne vibration noise during operation, the effect would be not adverse. No mitigation is required.

Effect Noise-5: Substantial Temporary Increase in Ambient Noise Levels in the Project Vicinity during Construction

As discussed for Effect Noise-1, construction of the TRR and its associated facilities would involve heavy-duty noise-generating equipment and that equipment would not result in any exceedances of the County's noise ordinance. Nevertheless, construction of the proposed action could generate a substantial increase even if not in violation of the County's noise ordinance.

To analyze a reasonable worst-case combined construction noise level, it was assumed that the three loudest pieces of equipment would be operating simultaneously in close proximity to one another. For the TRR, the pumping plant and the pipeline and the associated road and connections, the combined noise level was calculated based on the assumption that a grader, scraper, and bulldozer would all be used simultaneously at the project site. These activities would occur at a distance of approximately 1,400 feet from the nearest residence, though this distance applies to the activity occurring in the eastern section of the project site, and much of the activity would be an even greater distance from the nearest residences. Construction of the 69-kV power line could occur as close as 50 feet from residences, so noise from this activity is evaluated separately from the rest of the construction activity.

To calculate average L_{eq} values, L_{max} values were utilized in conjunction with estimated utilization factors (the fraction of time that equipment is anticipated to be operate). Anticipated L_{max} and L_{eq} construction noise levels at various distances from the proposed action are provided in Table 24 for construction of the TRR, pumping plant, canal connections, pipeline, and pipeline road and connection. The construction noise levels for the 69-kV power line, which would occur at a much closer distance to residences and would use a subset of the construction equipment, are shown in Table 25.

Table 24. Combined Construction Noise Levels from Loudest Equipment—All Construction Activity Except 69-kV Power Line Construction

Source Data:			**Maximum Sound Level (dBA)**	**Utilization Factor**	**Leq Sound Level (dBA)**
Construction Condition: Site leveling					
Source 1: Grader Sound level (dBA) at 50 feet =			85	40%	81.0
Source 2: Scraper Sound level (dBA) at 50 feet =			84	40%	80.0
Source 3: Bulldozer Sound level (dBA) at 50 feet =			82	40%	78.0
Calculated Data:					
All Sources Combined Lmax sound level (dBA) at 50 feet =					89
All Sources Combined Leq sound level (dBA) at 50 feet =					85
Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)		Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
50	0	0.0		89	85
100	-6	-1.5		81	77
200	-12	-3.0		74	70
300	-16	-3.9		69	65
500	-20	-5.0		64	60
700	-23	-5.7		60	56
900	-25	-6.3		57	53
1000	-26	-6.5		56	52
1400	-29	-7.2		52	48

Notes:
Geometric attenuation based on 6 dB per doubling of distance.
This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 25. Combined Construction Noise Levels from Loudest Equipment—69-kV Power Line Construction

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Site leveling			
Source 1: Backhoe with Auger Sound level (dBA) at 50 feet =	84	20%	77.0
Source 2: Concrete Truck Sound level (dBA) at 50 feet =	79	40%	75.0
Source 3: Backhoe Sound level (dBA) at 50 feet =	78	40%	74.0
Calculated Data:			
All Sources Combined L_{max} sound level (dBA) at 50 feet =			86
All Sources Combined L_{eq} sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated L_{max} Sound Level (dBA)	Calculated L_{eq} Sound Level (dBA)
50	*0*	*0.0*	*86*	*80*
100	-6	-1.5	78	73
200	-12	-3.0	71	65
300	-16	-3.9	66	61
500	-20	-5.0	61	55
700	-23	-5.7	57	52
900	-25	-6.3	55	49
1000	-26	-6.5	53	48

Notes:
Geometric attenuation based on 6 dB per doubling of distance.
This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

As shown in Table 24, the loudest pieces of equipment under a worst-case scenario for the primary construction activity could result in elevated noise levels near the project site. However, because the project site is located approximately 1,400 feet from the nearest residence the increase in noise from the proposed action would not likely disturb any noise-sensitive land uses. At a distance of 1,400 feet, as shown in Table 24, the construction noise (48 dBA L_{eq}) would not likely be detectable in the presence of typical ambient background noise levels.

For the 69-kV power line, construction activity could result in noise levels, under a worst-case scenario, of 80 L_{eq} at a distance of 50 feet, where the nearest residence would be located. This level of noise would likely be noticeable by nearby residences. However, power line construction would be relatively brief at any one location, because construction would progress linearly, and a power line is a less involved facility to construct than most of the other proposed action features. Additionally, construction noise is allowed under the County's noise ordinance if the individual equipment items comply with the 83 dBA limit at a distance of 25 feet. As discussed in Effect Noise-1, all proposed action construction equipment would comply with that requirement of the noise ordinance. As a result, the temporary increases in noise from the primary construction activity

would not be substantial, because noise would attenuate sufficiently over a 1,400-foot distance. The temporary increases in noise from power line construction would also not be substantial, because construction would be brief in any single location, and construction noise is allowed under the County's noise ordinance. Therefore, the effect on noise during construction would be not adverse. No mitigation is required.

Effect Noise-6: Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity

During operations of the proposed action, there is not anticipated to be prolonged use of equipment capable of generating substantial increases in noise that would permanently affect sensitive land uses. Operation of the TRR, MWI pipeline, pipeline and canal connections would mostly involve slow movement of water and minor maintenance activities, which would result in only minor noise. The pipeline maintenance gravel access road would result in occasional light vehicle travel, and, because the road would be unpaved, vehicle travel would be slow and would generate little noise. Thus, any noise from pickup trucks and other light vehicles would not be detectable beyond the immediate vicinity of the road, where there are no sensitive land uses.

The TRR Pumping Plant would be located approximately 1,800 feet from the nearest residence, which is northwest of the pumping plant along McDermott Road. The existing residence that would be removed is closer than 1,800 feet from the pumping plant location, but this residence would not exist simultaneously with the pumping plant. The pumping plant would be enclosed in a pre-fabricated metal building with metal cladding and a roof. Noise generated by the operation of the pumping plant would be substantially reduced by the source-receptor distance of 1,800 feet. Based on the geometric sound attenuation rate for a stationary source of 6 dB per doubling and the ground attenuation rate of 1.5 dB per doubling of distance, noise from the pumping plant would attenuate by approximately 40 dB by the time it reached the nearest residence. Pumping noise would also be reduced by the building enclosing the pumps. With this level of noise attenuation, no sensitive land uses would be exposed to substantial noise increases.

The proposed 69-kv power line would be located as close as 50 feet from residences but is not anticipated to noticeably increase existing noise levels, because there is existing electric infrastructure in place, and the proposed power line would be identical or very similar to the existing infrastructure. Additionally, electric utility infrastructure is not a typical source of noticeable noise. Therefore, the effect on noise during operation would be not adverse. No mitigation is required.

Effect Noise-7: Exposure of People Residing or Working in the Project Area to Excessive Airport Noise during Construction and Operation

The closest public airports to the proposed action are Willows Glenn County Airport, located 12 miles north of the project site, and Colusa County Airport, located 16 miles southeast of the project site. These airports are much further than 2 miles from the project site and would have no noticeable noise effect on people residing or working in the RSA, and the proposed project would not result in noise effects on airports. Therefore, there would be no effect from noise related to airport noise No mitigation is required.

Effect Noise-8: Exposure of People Residing or Working in the Project Area to Excessive Airstrip Noise during Construction and Operation

Although there are private airstrips located in Colusa County, there are none within 2 miles of the project site. Consequently, those working either temporarily or permanently at the project site would not be exposed to excessive noise from any private airstrip activities. The proposed project would not result in noise effects on any private airstrips. Therefore, there would be no effect related to aircraft noise from private airstrips. No mitigation is required.

3.10 Transportation

3.10.1 Methods

3.10.1.1 Definition of Resource Study Area

The RSA for transportation is the roadways within Colusa County. This RSA was chosen because construction, operation, and maintenance activities would add additional vehicles to roadways both adjacent to the proposed action and on major roadways in Colusa County.

3.10.1.2 Method for Effects Analysis

Major roadways within the RSA were identified using Google Maps. For the RSA, roadway classifications are based on the Colusa County Regional Transportation Plan (RTP) (Colusa County 2014). The definitions and maximum daily volumes from the Colusa County RTP have been selected as representative to determine significance thresholds for effects in the RSA.

Colusa County uses the LOS criteria, as defined by the 2010 Highway Capacity Manual (Transportation Research Board 2010), to assess the performance of its street and highway system and the capacity of roadways. LOS is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometrics, speed, delay, and maneuverability on roadway and intersection operations.

The baseline conditions for traffic were assumed to be those existing in 2015. Caltrans conducted annual average daily traffic (ADT) surveys in 2015, which include counts for all highways in the RSA. For county and local roadways, the most recent available data were collected from Colusa County's General Plan, and average annual growth rates identified in the plan were applied to the historical traffic data to determine approximate 2015 ADT on representative roadways. Based on this methodology, a 2 percent growth factor was applied to those numbers identified in Colusa County's General Plan (Colusa County 2012). 2015 ADT volumes were estimated for local roadways that would be used to access the proposed action facilities but did not have information available.

The Colusa County General Plan was updated in July 2012. For planning-level analysis, Caltrans identifies LOS D as the acceptable mobility criteria. The Colusa County General Plan identify LOS C as the acceptable mobility criteria (Colusa County 2012). These criteria were used for the quantitative analysis for roadways within the RSA.

Some roadways to the proposed action facility sites may not have vehicle count information available. For these facilities, LOS operational analysis has not been conducted.

Evaluation Criteria

The evaluation for this effects analysis represent a combination of current regulations, standards, professional judgment, knowledge of the area, and the context and intensity of the environmental effects, as required pursuant to NEPA. For the purposes of this analysis, an alternative would result in a potentially adverse effect if it would result in any of the following:

1. Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
2. Conflict with an applicable congestion management program, including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
5. Result in inadequate emergency access.
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

3.10.2 Affected Environment

3.10.2.1 Roadway Traffic Levels and Conditions

The RSA is located in Colusa County, California. The roadway network within the unincorporated parts of the county is rural in character, mainly serving small communities and agriculture uses. I-5, SR 20 and SR 45 are the primary transportation corridors extending through the county and serve all of the county's major population centers, including Maxwell. Other county arterials and a network of local public and private roads constitute the remainder of the roadway system (Colusa County 2012).

The expected access routes to the proposed action are from I-5, travel west on Delevan Road, and turn left on McDermott Road or turn left on Noel Evan Road; or to access the TRR Pipeline and road, from I-5, travel west on Delevan Road, turn left on McDermott Road, turn right on a temporary construction access road. Additionally, from I-5, exit Maxwell Road to McDermott Road to access the TRR or continue on Maxwell Sites Road to access the Funks Reservoir. Table 26 provides a summary of these roadways and observed characteristics and Table 27 provides ADT and LOS.

Table 26. Roadway Characteristics in Colusa County

Roadway	Number of Lanes	Roadway Condition[a]	Comments
I-5	4	Good	Divided interstate highway.
Maxwell Sites Road	2	Fair to Good	Narrow shoulders east of Maxwell. Unpaved or no shoulders west of Mills Orchard; 35 mph posted speed limit.
Delevan Road	2	Good and Poor to Fair	Paved shoulders are narrow near the canal, and east of Old Hwy 99. Some areas are depressed; some potholes, cracking, and patching. New pavement west of I-5 to McDermott Road. Dirt and below grade west of McDermott Road (possibly being prepared for paving).
Noel Evan Road	1	Poor	A gravel canal road.
McDermott Road	2	Fair to Good	Narrow or no shoulder. Some patching, some cracking. New pavement north of Delevan Road. Gravel north of Dirks Road.

[a] Good = Fully paved with very few cracks or potholes that result in desirable driving conditions.
Fair = Fully paved with some cracks or potholes that result less-than-desirable driving conditions.
Poor = Unpaved or paved with significant cracks and potholes that need to be avoided while driving and result in undesirable driving conditions.

Table 27. 2015 Average Daily Traffic for Selected Roads in Colusa County

Roadway	Segment	Roadway Classification	Maximum ADT Capacity[a]	2015 ADT[b]	2015 LOS[a]
I-5	SR 20 to Maxwell Colusa Road	Interstate	79,200	26,500	B
I-5	Delevan Road to Glenn/Colusa County Line	Interstate	79,200	26,700	B
Maxwell Sites Road	I-5 to Sutton Road	Minor County Highway	17,400	1,071	B
Maxwell Sites Road	Sutton Road to GCID Main Canal	Minor County Highway	17,400	613	A
Maxwell Sites Road	GCID Main Canal to Sites Lodoga Road	Minor County Highway	17,400	462	A
Delevan Road	Four Mile Road to GCID Main Canal	Minor County Highway	17,400	552	A
Noel Evan Road	South from gravel portion of Delevan Road	Local Road	N/A	N/A	N/A
McDermott Road	Maxwell Sites Road to Lenahan Road	Minor County Highway	17,400	402	A

[a] Based on 2014 Colusa County RTP LOS criteria.
[b] Acquired from 2015 data or calculated based on most recent available data with a 2 percent average annual growth rate applied.
Notes:
ADT = average daily traffic; I = Interstate; LOS = level of service; SR = State Route
Source: Shantz 2011; Caltrans 2015; Colusa County 2014.

3.10.2.2 Transit System

Nine vehicles comprise the Colusa County Transit services fleet (Colusa County 2018). The services include:

- Five routes operated on a fixed route and schedule.
- Individual pick-ups can be arranged on a dial-a-ride basis, with door-to-door service available for American with Disabilities Act passengers.
- Out-of-county medical transportation service provided to Chico, Davis, Lincoln, Marysville, Oroville, Roseville, Sacramento, Willows, Woodland, and Yuba City.
- Trips to/from Yuba City provided on Fridays (bus departs Colusa at 9:30 a.m. and departs Yuba City at 1:30 p.m.).
- Charter trips can be arranged using the available fleet if it does not interfere with regularly scheduled service.

3.10.2.3 Air Traffic

The airfield nearest to proposed action is Moller Airport located approximately 4 miles to the southeast, outside of Maxwell. There are eight single-engine aircrafts based at Moller Airport. Other nearby airports include Colusa County Airport, Gunnersfield Ranch Airport, Antelope Valley Ranch Airport, Willows-Glenn County Airport, Williams Soaring Center, and Richter Aviation.

None of the identified airports are located near the proposed action; therefore, construction and operation would not affect air traffic patterns. For this reason, air traffic patterns are not discussed in this analysis.

3.10.3 Environmental Consequences

3.10.3.1 No Action Alternative

There would be no effects to the transportation system under the No Action Alternative because construction of proposed facilities and their associated operation and maintenance activities would not occur.

3.10.3.2 Proposed Action

Within the RSA, construction-related vehicle trips would occur on numerous roadways for the duration of the project construction period. The total construction period would span approximately 2.5 years. Construction could add a maximum of 670 trips per day on RSA roadways, while operations and maintenance could add a maximum of 12 trips per day. The proposed access routes to be used during construction, operation, and maintenance of the proposed action are described in Section 3.10.2, *Affected Environment*. The LOS for the roadways leading to the proposed action prior to and during construction is presented in Table 28 and the LOS for the roadways leading to the proposed action facilities prior to and during operation is presented in Table 29. Applicable county, state, and federal regulations, ordinances, and restrictions will be identified and complied with prior to and during construction. The construction contractor will obtain all necessary road permits prior to construction, and comply with all the applicable conditions of approval.

Effect Trans-1: Conflict with an Applicable Plan, Ordinance, or Policy

Tables 28 and 29 present construction LOS and operations and maintenance LOS for the proposed action. All roadways would continue to operate at an acceptable LOS during construction. Traffic levels on roadways would increase during construction of the proposed action, particularly before construction activities start and after they end each day, and would result in an increase in traffic congestion. The LOS on Maxwell Sites Road between Sutton Road and Sites Lodoga Road, Delevan Road and McDermott Road would change from LOS A to LOS B. This increase in vehicle traffic and congestion would result in a no adverse effects because the LOS criteria for county roadways would not be exceeded. No mitigation is required.

Table 28. Proposed Action Construction Levels of Service

Roadway	Segment	2015 ADT[a]	2015 LOS[b]	ADT with Daily Construction Trips	Daily Construction LOS[b]
I-5	SR 20 to Maxwell Colusa Road	26,500	B	27,170	B
I-5	Delevan Road to Glenn/Colusa County Line	26,700	B	27,370	B
Maxwell Sites Road	I-5 to Sutton Road	1,071	B	1,741	B
Maxwell Sites Road	Sutton Road to GCID Main Canal	613	A	1,283	B
Maxwell Sites Road	GCID Main Canal to Sites Lodoga Road	462	A	1,132	B
Delevan Road	Four Mile Road to GCID Main Canal	552	A	1,222	B
McDermott Road	Maxwell Sites Road to Lenahan Road	402	A	1,072	B

[a] Acquired from 2015 data or calculated based on most recent available data with a 2 or 3 percent average annual growth rate applied.
[b] Based on 2014 Colusa County RTP LOS criteria.
Notes:
ADT = average daily traffic; I = Interstate; LOS = level of service
Source: Caltrans 2015; Colusa County 2014

Table 29. Proposed Action Operation and Maintenance Levels of Service

Roadway	Segment	2015 ADT	2015 LOS[a]	ADT with Daily O&M Trips[b]	Daily O&M LOS[a]
I-5	SR 20 to Maxwell Colusa Road	26,500	B	26,512	B
I-5	Delevan Road to Glenn/Colusa County Line	26,700	B	26,712	B
Maxwell Sites Road	I-5 to Sutton Road	1,071	B	1,083	B
Maxwell Sites Road	Sutton Road to GCID Main Canal	613	A	625	A
Maxwell Sites Road	GCID Main Canal to Sites Lodoga Road	462	A	474	A
Delevan Road	Four Mile Road to GCID Main Canal	552	A	564	A

[a] Based on 2014 Colusa County RTP LOS criteria.
Notes:
ADT = average daily traffic; I = Interstate freeway; LOS = level of service; O&M = operations and maintenance
Source: Caltrans 2015; Colusa County 2014

Operation- and maintenance-related traffic would use the same roads that were used for construction, but would require a maximum of 12 total vehicle trips per day throughout the RSA, which would not affect the roadway LOS. This would result in a no adverse effects, due to the low number of vehicle trips associated with operation and maintenance of the proposed action. No mitigation is required.

Effect Trans-2: Conflict with an Applicable Congestion Management Program

All of the roadways anticipated to be used to access proposed action facilities would continue to operate at an acceptable LOS during construction and operation of the proposed action. Therefore, no effect would result. No mitigation is required.

Effect Trans-3: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses

All proposed action construction of roadways within the RSA would adhere to the appropriate city, county, and state design standards, resulting in no effect. No mitigation is required.

During construction, the use of construction equipment, such as oversize or overweight vehicles, on roadways near the proposed action could result in unsafe conditions or damage to road surfaces. However, with the implementation of the Construction Equipment, Truck, and Traffic Management measures presented in Chapter 2, *Project Description*, no adverse effects would result. No mitigation is required.

Operation- and maintenance-related traffic is expected to be minimal and would not be anticipated to cause extensive damage to road surfaces or result in unsafe conditions. Therefore, no adverse effects would result from operations and maintenance of the proposed action. No mitigation is required.

Effect Trans-4: Result in Inadequate Emergency Access

During construction of the proposed action, roadways closures are not anticipated, but occasional lane closures or traffic hold times could be required locally near the work sites. Construction of proposed action has the potential to cause short-term effects on emergency services response times through these traffic holds and lane closures. Any road closures would be temporary and short term, and these closures would be coordinated with Caltrans and/or local jurisdictions to reduce the potential temporary and short-term effects on emergency access. All temporary lane closures would also be covered by encroachment permits and approved traffic control plans. Emergency responders would be notified prior to construction. Ensuring access for emergency vehicles and all applicable local, state, and federal traffic control measures would be followed to ensure the safety of the local as well as construction traffic. This would result in a not adverse effect during construction. No mitigation is required.

During operations and maintenance of the proposed action, adequate emergency access would be maintained. Therefore, there would be no effect during operation and maintenance. No mitigation is required.

3.11 Human Health and Safety

3.11.1 Methods

This section describes methods used to analyze potential effects from the proposed action related to sources of electromagnetic fields (EMF) and electromagnetic interference (EMI), and hazardous materials and sites in the RSA.

3.11.1.1 Definition of Resource Study Area

The RSA for EMF/EMI encompasses the project area. The RSA for hazardous materials includes the project footprint plus a 0.50-mile radius to capture hazardous materials conditions in the project area and surrounding properties.

3.11.1.2 Method for Effects Analysis

Electromagnetic Fields and Electromagnetic Interference

EMF/EMI-generating facilities were identified in the RSA by performing a review of planning documents and consultation of websites that describe existing utilities (as described in Section 3.12, *Public Services and Utilities*). The evaluation of potential effects related to EMF/EMI was conducted by analyzing existing and proposed EMF/EMI-generating facilities and the potential exposure of people during construction and operation or their potential to interfere with other sources of EMF/EMI.

Environmental Risk Management

Hazardous materials are defined in Section 66260.10, Title 22, of the California Code of Regulations (CCR) as:

> A substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious, irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of or otherwise managed.

In addition, California Health and Safety Code Section 25501 defines a hazardous material as follows:

> Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or environment.

The EPA defines hazardous waste as waste that is dangerous or potentially harmful to human health or the environment. Hazardous wastes can be liquids, solids, gases, or sludge, and are generally discarded commercial products or the byproducts of manufacturing processes (EPA 2017). For the purpose of this analysis, a hazardous waste site is an area that has been affected by a release of hazardous material into soil, groundwater, surface water, sediments, or air.

The evaluation of potential effects on human health and safety was conducted by first compiling information on documented existing hazardous wastes or sites from the following resources:

- State Water Resources Control Board *GeoTracker* database (SWRCB 2015)
- State of California Department of Toxic Substances Control (DTSC) *EnviroStor* database (DTSC 2018)
- USGS Mineral Resources Data System (MRDS) (USGS 2018)
- State of California, Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) *Well Finder* database (DOGGR 2018)

The location or types of hazardous materials and sites collected from these resources were evaluated with anticipated construction and operation activities to assess the potential for existing contaminated soils or groundwater, mineral resources and gas and oil wells in the RSA and the use of new hazardous materials during construction and operation that could lead to the exposure of hazardous materials, resulting in human health and safety risks.

3.11.2 Affected Environment

3.11.2.1 Electromagnetic Fields and Electromagnetic Interference

EMFs include electric and magnetic fields. Electric fields are forces that electric charges exert on other electric charges. The strength of the electric field increases as voltage increases, and the strength of the electric field decreases as the distance between the observer and the conductor increases. Magnetic fields are forces that a magnetic object or moving electric charge exerts on other magnetic materials and electric charges. The strength of the magnetic field depends on the current in the conductor, the geometry of the construction, the degree of cancellation from other conductors,

and the distance the observer is from the conductors or cables. EMFs occur throughout the electromagnetic spectrum, are found in nature, and are generated both naturally and by human activity. Naturally occurring EMFs include the Earth's magnetic field, static electricity, and lightning. EMFs also are created by the generation, transmission, and distribution of electricity; the use of everyday household electric appliances and communication systems; industrial processes; and scientific research.

EMI is the interference that occurs when the EMF produced by a source adversely affects the operation of an electrical, magnetic, or electromagnetic device. EMI may be caused by a source that intentionally radiates EMFs (such as a television broadcast station) or one that does so incidentally (such as an electric motor).

Existing sources of EMF and EMI are present in the RSA and include electricity and communications sources located throughout the area, as described in Section 3.12. These electricity sources include 12-kV distribution lines on the rights-of-way in the project area owned by PG&E and two high-voltage transmission lines east of Funks Reservoir operated by WAPA. Transmission lines also exist along the Maxwell Sites Road and feed south via Huffmaster Road. Overhead power lines are located throughout the RSA. Communications facilities also exist throughout the RSA and are owned by AT&T, Comcast, and Frontier Communications. These include buried and overhead telephone and cable lines.

3.11.2.2 Environmental Risk Management

A large portion of the RSA includes agricultural land uses for a wide variety of crops grown year-round. These existing agricultural activities are largely dependent on agricultural chemicals, which can often be classified as hazardous materials. Long-term use of agricultural chemicals, including pesticides, herbicides, fertilizers, and crop-specific additives can lead to a buildup of residues in the soil, resulting in contaminated conditions.

A search of the MRDS did not identify any mineral resources on or adjacent to the proposed action footprint (USGS 2018). The closest mineral resource area was identified as the Colusa Sandstone Co. facility approximately 0.9 mile to the southwest of the proposed action's western terminus, which is outside of the RSA.

According to the DOGGR Well Finder website, the project footprint does not lie within an oil or gas well field. The closest wells to the RSA are two dry wells, 'Exxon Mobil 1' (American Petroleum Institute [API] number 01100356) and 'Wm. P. Jackson 1' (API number 01100354), located 0.16 mile east and 0.45 mile northeast of the eastern terminus of the proposed action. Because these wells are inactive and are no longer producing materials that could be classified as hazardous, they do not warrant further analysis.

3.11.3 Environmental Consequences

Transmission and communication lines exist throughout the project area, and one power line installation is being proposed as part of the proposed action. However, there would not be adverse effects associated with EMF and EMI because minimization measures as part of the project design would be implemented during construction to reduce interference with existing sources or from new sources of EMF and EMI. Additionally, there are no current defined or adopted standards for defining health risk from EMF/EMI.

There would be no adverse effects related to exposure to contaminated media in the RSA or the handling of hazardous materials during construction and operation. Due to the historic and current agricultural land uses, there is a potential risk of exposure to residual pesticides and herbicides during construction and operation. There is also the potential for exposure to hazardous materials from the use of hazardous materials, including fuels, solves, paints, oil and grease during construction and operation. However, the project design would include implementation of environmental commitments that would include proper identification, handling, storage, and treatment of hazardous materials or contaminated media. The proposed action would comply with applicable federal and state regulations on the safe handling of hazardous materials.

3.11.3.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed, and therefore would not result in the interference with existing sources of EMF and EMI or result in the addition of new sources of EMF and EMI. In addition, the disturbance or removal of any soils, groundwater, or structures or the use of hazardous materials would not occur, and therefore there would be no human health and safety effects from the exposure to hazardous waste and materials.

3.11.3.2 Proposed Action

Electromagnetic Fields and Electromagnetic Interference

Effect HS-1: Exposure to or Interference with Existing EMF and EMI Sources during Construction and Operation

Existing power lines and communication facilities are located throughout the RSA that emit EMFs or result in EMI. The California Public Utilities Commission has recognized that EMF (and thus, EMI) potential effects cannot be fully analyzed because there is no agreement among scientists that EMF and EMI creates a potential health risk, and there are no defined or adopted standards for defining health risk from EMF and EMI. However, utilities typically include design measures intended to minimize the potential for EMF and EMI generation. In addition, EMF and EMI minimization measures are incorporated during construction of power and communication facilities to reduce or prevent potential EMF exposure and EMI.

All existing power lines and communication facilities have been identified prior to construction of the proposed action, and any new sources would be identified before beginning construction. Construction and operation activities would be coordinated with utility owners to identify potential risks of exposure or interference with EMF and EMI sources, and plans would be implemented as part of the proposed action to avoid these sources to the extent possible. Where avoidance is not possible, plans as part of the project design would identify coordination activities and safety plans with utility owners to reduce or avoid safety risks from exposure to or interference with existing EMF and EMI sources during construction and operation. As a result, the effect on human health and safety from existing EMF and EMI sources during construction and operation would be not adverse. Mitigation is not required.

Effect HS-2: Exposure to or Interference from New EMF and EMI Sources during Construction and Operation

The power line connecting the proposed TRR facility to an existing power line would be part of the proposed action and thus, would result in new sources of EMF and EMI. Although there are no

defined or adopted standards for defining health risks from EMF and EMI, utilities typically include design measures intended to minimize the potential for EMF and EMI generation.

All existing power lines and communication facilities have been identified prior to construction of the proposed action to identify the potential for interference with these facilities from the new power line. Construction and operation activities would be coordinated with utility owners to identify and avoid potential interference from the new power line with existing EMF and EMI sources. Where avoidance is not possible, plans as part of the project design would identify coordination activities with utility owners to reduce or avoid interference with existing EMF and EMI sources and safety plans to reduce or avoid safety risks from exposure to the new power line during construction and operation. As a result, the effect on human health and safety from new EMF and EMI sources during construction and operation would be not adverse. Mitigation is not required.

Environmental Risk Management

Effect HS-3: Health and Safety Risks from the Exposure to Existing Sources of Hazardous Materials during Construction

Due to the historic and current land uses in the RSA, there is a potential risk of exposure during construction to hazardous wastes and materials, specifically from soils contaminated with residual pesticides and herbicides. As part of implementation of environmental commitments, the proposed action would include proper measures to identify, handle, store, and treat hazardous materials or contaminated media if found on the site in accordance with applicable federal and state regulations on the safe handling of hazardous materials.

Although a records search did not identify any hazardous waste sites in the RSA, a full site history could be conducted in the form of an ESA if any indication of contaminated media is identified during construction (e.g., identification of waste containers) to identify any potentially hazardous or contaminated sites. This search would begin with a Phase I ESA, and subsequent implementation of Phase II and Phase III ESAs, if necessary. As a result, the effect on health and safety risks from the exposure to existing sources of hazardous materials during construction would be not adverse. Mitigation is not required.

Impact HS-4: Health and Safety Risks Associated with the Handling of Hazardous Materials during Construction and Operation

Construction and operation, including maintenance activities, of the proposed action would involve routine handling of hazardous materials such as fuel, solvents, paints, oils, and grease. Improper handling or use of these hazardous materials could lead to human exposure and related safety risks. However, the project design would include implementation of environmental commitments that would include proper identification, handling, storage, and treatment of hazardous materials or contaminated media. In addition, the proposed action would comply with applicable federal and state regulations on the safe handling of hazardous materials. The proposed action would also implement environmental commitments, which include Construction Management Procedures and a SWPPP that would implement measures to manage materials used during construction and operation. These measures would prevent mishandling such as spills and control runoff that could transport hazardous materials to soils or surface water and result in contamination. Maintenance and repair of the equipment would be completed at the project facility site, or the equipment would be transported off-site. Implementation of environmental commitments, including spill prevention

and hazardous materials management plans and implementation of a Worker Environmental Awareness Program, would further minimize the potential for a release of hazardous materials during operation and maintenance activities. As a result, the proposed action would not result in effects on human health and safety from the use of hazardous materials during construction and operation. The effect would be not adverse and no mitigation is required.

3.12 Public Services and Utilities

3.12.1 Methods

3.12.1.1 Definition of Resource Study Area

The RSA for effects on public services and utilities is Colusa County to capture the extent of service areas and infrastructure for public services and utilities provided or available to the project area.

3.12.1.2 Method for Effects Analysis

Existing public services and utilities were identified in the RSA by reviewing planning documents and consulting of websites to describe existing public services (e.g., schools, medical services, law enforcement, and fire protection) and utilities (e.g., water, wastewater, solid waste, natural gas, electricity, and communication providers).

The evaluation of potential effects on public services and utilities compared existing facilities and levels of service with anticipated construction, operation, and maintenance activities to assess the potential for increases in demand that may exceed existing capacity, requiring additional services or providers, or result in service disruptions.

3.12.2 Affected Environment

3.12.2.1 Public Services

Schools

In 2018, there were 18 public schools within Colusa County, including 6 elementary schools, 3 intermediate/middle schools, 4 high schools, and 5 other types of schools (1 county community, 3 continuation high schools, and 1 alternative school of choice) (California Department of Education 2018).

Medical Services

The Colusa Medical Center is a 48-bed facility providing general acute medical care services in Colusa County (CDPH 2018). It is approved for dialysis, occupational therapy, surgical care, physical therapy, respiratory care, social services, speech pathology, and emergency medical services (CDPH 2018).

Law Enforcement

The Colusa County Sheriff's Office is responsible for law enforcement throughout Colusa County except for the incorporated cities of Williams and Colusa, which are served by municipal police departments (USACOPS 2018). The Sheriff's Office has permanent employees and uses volunteer organizations to augment their paid staff for Search and Rescue and other programs (Colusa County 2018).

Fire Protection

Colusa County is serviced by 10 fire departments, including the Sacramento River Fire Protection District of Colusa and Colusa Fire Department in Colusa, the Arbuckle College City Fire Protection District, the Maxwell Fire Protection District, the Princeton Volunteer Fire Department, the Bear Valley Indian Valley Fire Protection District in Stonyford, and the Williams Fire Protection Authority and California Department of Forestry and Fire Protection Leesville and Wilbur Springs units in Williams (California Fire & EMS 2018).

3.12.2.2 Utilities

Water

Groundwater supplies the majority of municipal and industrial water needs in Colusa County. Surface water supplies approximately 25 percent of water needs in the county. The county's water use is almost entirely agricultural.

Wastewater

Wastewater in Colusa County is treated and returned to the environment primarily through on-site disposal systems including septic tanks and leach fields (Colusa County 1989), and five centralized disposal systems in the communities of Arbuckle, Colusa, Maxwell, Princeton, and Williams.

Solid Waste

Solid waste services in Colusa County are provided by the Stonyford Landfill, which is owned by the County. As of 2011, the landfill had a remaining capacity of approximately 56,000 cubic yards with an estimated closure in year 2064 (CalRecycle 2018). The Maxwell Transfer Station in Colusa County also provides waste services to Colusa County. Both waste facilities accept solid waste, green waste, and recyclables (Colusa County n.d.). Two facilities outside of Colusa County provide additional landfill capacity, including Norcal Waste Systems Ostrom Road Landfill, Inc. in Yuba County and the Anderson Landfill in Shasta County.

Natural Gas

PG&E provides natural gas to the more populous areas of the county, while the more rural areas are served by several propane companies. To the east of Funks Reservoir, PG&E operates two high-pressure arterial gas transmission lines that are 42 and 36 inches in diameter within a 100-foot right-of-way that are aligned north to south and serve most of northern and central California. There is no gas service to the project area.

Electricity

PG&E provides electric service to Colusa County and operates 12-kV distribution lines on rights-of-way in the project area that range from 10 to 30 feet wide. Lines exist along the McDermott Road and Maxwell Sites Road and feed south in the general direction of Leesville via Huffmaster Road. East of Funks Reservoir, WAPA operates two high-voltage transmission lines. Both lines run north to south, with the 500-kV line occupying a 125-foot-wide right-of-way from the Olinda Substation to the Tracy Substation and the 230-kV line occupying a 160-foot-wide right-of-way from Keswick to Elverta. Overhead power lines are located throughout the RSA.

Communications

In Colusa County, AT&T, Comcast, and Frontier Communications Solutions are the major providers of telephone, cable, and internet services. Telephone lines owned by Frontier Communications are buried in the town of Sites and in the valley. A buried cable also exists in the County road easement west of the town of Sites on Maxwell Sites Road. A combination of buried and overhead cables are located throughout Sites. West of the project area, there is a buried telephone cable in the county road for approximately 1 mile, and then on private property for approximately 1 mile. Lines also run along Huffmaster Road within the County right-of-way for 6.5 miles.

3.12.3 Environmental Consequences

3.12.3.1 No Action Alternative

Under the No Action Alternative, neither construction nor operation of the proposed action would occur. Accordingly, there would be no adverse effects on public services or utilities under the No Action Alternative.

3.12.3.2 Proposed Action

Public Services

Effect Public-1: Population Increase would Increase Demand on Public Services, Require New or Expanded Facilities during Construction

Construction of the proposed action would require the temporary (short-term) use of construction workers. At the peak of construction, approximately 120 construction workers would be required during the approximate 2.5-year construction period. Construction workers would typically reside in Colusa County during project construction and would therefore rely on public services including schools, medical services, law enforcement, and fire protection within the county. Because some construction workers would already be located in the county prior to project construction, and any construction workers relocating to the county would not represent a substantial increase in population, there would not be an increased demand on public services requiring new or expanded services. As a result, the effect on public services during construction would be not adverse. No mitigation is required.

Effect Public-2: Population Increase would Increase Demand on Public Services, Require New or Expanded Facilities during Operation

Operation and maintenance of the proposed action would require the permanent (long-term) use of workers. Approximately 13 to 14 people (based on three shifts per day) would be required to operate the proposed action, two people would be responsible for weekly maintenance of pipelines, and four people would be responsible for annual maintenance at the TRR pump. Because there would be no substantial increase in population from workers moving to the area, there would be no increase in demand on public facilities requiring new or expanded facilities. As a result, the effect would be not adverse on public services during operation. No mitigation is required.

Effect Public-3: Ground Disturbance and Elimination or Reduction of Public Service Facility Capacity during Construction

Construction of the proposed action would include ground disturbance within the project footprint and would not require ground disturbance at or near existing public services in the RSA. Because the proposed action would not disturb, reduce, or eliminate public services facilities or capacity, there would be no effect on public services during construction.

Effect Public-3: Disruption to Emergency Access during Construction

Construction of the proposed action would not require changes to public roadways and would not disrupt access, thereby allowing emergency responders to continue to reach their destinations. Construction would require approximately 196 truck trips per day, resulting in a small temporary increase in traffic levels above existing conditions. However, the area surrounding the project area, where the majority of truck trips would occur, is rural, and these truck trips would not result in delays or changes in levels of service on public roadways. Because there would be no disruption to emergency service access from construction traffic that could require additional emergency services to meet demands and response times, there would be no effect on public services.

Utilities

Effect Public-4: Conflicts with Utilities during Construction

Public utilities exist throughout the RSA and are limited within the project area where construction activities would take place. The proposed action would require one power line to tie-in to an existing PG&E transmission line northeast of the TRR. This tie-in would be coordinated with the existing utility owner to avoid service disruptions. Where service disruptions are unavoidable, they would be temporary and limited in duration. The only known utility that would be in conflict with the proposed action is a gas transmission line. Construction of the pipeline in the vicinity of this gas transmission line would result in a temporary conflict. However, in coordination with the utility owner(s), the pipeline would be bored and jacked under the gas transmission line, preventing the utility relocation and associated disruption in service. There are no other public utilities extending beyond the project area that would be in conflict with or disrupted due to implementation of the proposed action.

There may be numerous irrigation channels and other minor utilities along the pipeline that would be identified prior to construction. These minor utilities would be protected in place wherever possible. If necessary, temporary bypasses would be provided for affected overhead, underground utilities and pumping channels, in coordination with utility providers to avoid service disruptions.

These bypasses are commonly provided by provider, and it is reasonable to expect that the pipeline can be constructed around utility infrastructure without interference. Service disruptions and conflicts would be temporary and would include coordination with utility owners to minimize service disruptions and avoid relocations. As a result, the effect would be not adverse on utilities. No mitigation is required.

Effect Public-5: Increase in Utilities Demand during Construction

Construction of the proposed action would not use water or produce wastewater. The proposed action would, however, produce waste during excavation of surfaces. Some of the excavation material would be stockpiled along the pipeline alignment to stabilize soils or reuse in subsequent projects. The remaining excavated waste, which would not be considered hazardous waste, would be disposed of at one of the solid waste facilities servicing Colusa County. The amount of excavation waste would not represent a substantial amount of waste and could therefore be accepted at one of the existing facilities without causing that facility to exceed or reach its capacity at an earlier date. The contractor would take possession of the excavated material and would be responsible for legally disposing of it off-site.

Implementation of the proposed action would require the use of approximately 300 kilowatt-hours of electricity per day to run machinery and pumps at the TRR during construction. This required energy would be provided by a generator along the pipeline or through a temporary tie-in with an existing PG&E overhead line northeast of the TRR. This energy use would be temporary and would not represent a substantial increase in energy to the existing system. Therefore, it would not exceed the capacity of existing providers.

Waste and energy requirements during construction would be temporary and would not represent a substantial increase in demand compared to existing conditions. Because construction would require but not exceed the capacity of utility providers and would therefore not require the expansion of major utility infrastructure or providers, the effect would be not adverse. No mitigation is required.

Effect Public-6: Increase in Utilities Demand during Operation

Operation of the proposed action would not consume water or produce wastewater or wastes. Implementation of the proposed action would however require the use of 8.0 megawatts (MW) of electricity to run machinery and pumps at the TRR during operation. This required energy would be provided by a generator along the pipeline or through a permanent tie-in with an existing PG&E overhead line northeast of the TRR. This energy use would not represent a substantial increase in energy compared to existing conditions. Because operation would not exceed the capacity of utility providers or require the expansion of major utility infrastructure or providers, the effect would be not adverse. No mitigation is required.

3.13 Socioeconomics

This section describes existing population, employment, and income conditions in the RSA and analyzes the potential socioeconomic effects from the proposed action. Transportation resources and public services and utilities depended upon by populations in the RSA are described in Section 3.10, *Transportation*, and Section 3.12, respectively.

3.13.1 Methods

3.13.1.1 Definition of Resource Study Area

The RSA for socioeconomic effects is Colusa County. Existing population, employment, and income levels are described for the RSA.

3.13.1.2 Method for Effects Analysis

The U.S. Census Bureau's American FactFinder was used to gather existing information on population, employment, and income statistics for Colusa County. The evaluation of potential effects was conducted by comparing the existing condition with anticipated changes from project construction, operation, and maintenance activities. The proportion of construction and operation employees that would be locally supplied from within the RSA was determined through consultations with the engineering staff who developed project cost estimates.

3.13.2 Affected Environment

This section describes the socioeconomic setting for the RSA. Measures of social and economic activity described in this section include population, employment, and income, as well as characteristics of the industries in the RSA.

3.13.2.1 Population

The population density in the RSA is very low. Colusa County is a rural area and comprises 1,150 square miles with 18.6 people per square mile (U.S. Census Bureau 2010). Population size in the RSA has increased by approximately 1 percent per year, increasing by approximately 2,215 people from 2000 to 2016 (DOF 2017a, 2017b, 2017c).

The age distribution within Colusa County is similar to the state of California, The working-age population, between ages 20 and 64, is approximately 12,025 people (U.S. Census Bureau 2017a). School age children (ages 5 to 19), adults (ages 20 to 64), and senior citizens (ages 65 and older) represented approximately 23, 56, and 13 percent, respectively, of the total RSA population in 2016 (U.S. Census Bureau 2017a).

3.13.2.2 Employment

Table 30 presents employment within the RSA compared to the state of California. In 2015, the total labor force in Colusa County was 11,190, which comprises approximately 0.059 percent of the state's total labor force during the same year (approximately 18,981,800 people). The unemployment rates for Colusa County in 2015 were 15.3 percent, which was more than double California's unemployment rate of 6.2 percent.

Table 30. Employment within the Resource Study Area and California in 2015

Area	Civilian Labor Force	Number of Civilians Employed	Unemployment Rate (%)
Colusa County	11,190	9,480	15.3
California	18,981,800	17,798,600	6.2

Source: EDD 2018

The top three industries in Colusa County in 2015, as measured by the number of employees, were agriculture, government, and manufacturing. The wholesale industry had the highest annual growth rate of 4.7 percent, followed by the manufacturing industry, which had a 3 percent annual growth rate (EDD 2018). The mining, logging and construction; transportation, warehousing, and utilities; retail; and financial activities sectors all experienced negative annual growth rates from 2000 to 2015 (EDD 2018).

3.13.2.3 Income

The RSA's economy is rooted in agriculture. Agriculture became the primary economic driver in the region because of the rich soil, ample water supply, and proximity to urban markets. Today, the agricultural sector is still important in the RSA, but changes in mechanization and processing have resulted in a much smaller proportion of residents participating in agriculture than during the early part of the 20th century.

Table 31 summarizes personal income and industry earnings within the RSA as of 2015. Colusa County produced approximately $930,000 in total personal income and $680,000 in total industry output in 2015.

Table 31. Personal Income and Industry Earnings within the Resource Study Area and California in 2015 (2015 Dollars)

Area	Total Personal Income in 2009 (Thousand $)	Earning by Industry in 2009 (Thousand $)
Colusa County	928,809	679,819
California	2,103,669,473	1,521,816,583

Source: BEA 2017

Based on the 2011–2015 American Community Survey, the median household income in Colusa County was $51,268, and per capita income was $21,897 (U.S. Census Bureau 2017b, 2017c). Both the median household income and per capita income were lower than California.

3.13.3 Environmental Consequences

3.13.3.1 No Action

Under the No Action Alternative, neither construction nor operation of the proposed action would occur. Accordingly, there would be no adverse socioeconomic effects under the No Action Alternative.

3.13.3.2 Proposed Action

Population

Effect Socio-1: Increase in Population due to Construction

The proposed action would be constructed over approximately 2.5 years and would require the temporary (short-term) use of workers. Approximately 120 construction workers would be required at the peak of construction. Given the current unemployment rates, the existing population

can likely provide the workers needed to support the construction activities, or populations living outside of the RSA would commute for these jobs. If workers relocate to areas within the RSA, it would not represent a substantial increase in population. As a result, the proposed action would not result in substantial changes to the population of Colusa County or city of Maxwell. Therefore, the effect on socioeconomic resources would be not adverse during construction. No mitigation is required.

Effect Socio-2: Increase in Population due to Operation

Operation and maintenance of the proposed action would require the permanent (long-term) use of workers. Approximately 13 to 14 people (based on three shifts per day) would be required to operate the proposed action. In addition, two people would be responsible for weekly maintenance of pipelines, and four people would be responsible for annual maintenance at the TRR pump. Existing staff would be used to operate and maintain new facilities. If additional employees are needed, given the current unemployment rates, the existing population within the RSA can likely provide the workers needed to support the operation and maintenance activities, or populations living outside of the RSA would commute for these jobs. If workers relocate to areas within the RSA, it would not represent a substantial increase in population. As a result, operation would not result in a substantial increase in population from workers moving to the area, and the effect on socioeconomic resources would be not adverse during operation. No mitigation is required.

Employment

Effect Socio-3: Increase in Jobs due to Construction

The proposed action would employ a peak construction workforce of up to 120 individuals, which is more than the existing number of construction workers in Colusa County (EDD 2018). Although small and temporary, construction of the proposed action would provide a benefit because additional construction jobs would be available to the community.

Effect Socio-4: Increase in Jobs due to Operation

The proposed action would not result in substantial changes to employment because current staff would be adequate to operate and maintain the proposed action. If additional employees are needed, the increase in jobs for operation and maintenance (13 to 14 employees for operation, two employees for weekly maintenance, and four employees for annual maintenance) would not represent a significant increase in employment opportunities in the RSA. Therefore, there is the potential for a small beneficial effect if new employees for operation are hired, although there is more likely no effect on socioeconomic resources during operation due to the use of existing employees, if possible, to fill these positions.

Income

Effect Socio-5: Changes to the Local Economy from Construction and Operation

Because of the short duration of construction activity, indirect and induced economic effects would be minimal and temporary. In the longer term, however, operation of the MWI would increase efficiency and reliability of the water management in the western Sacramento Valley and increase the drought resistance of rural communities. The proposed action would add or improve existing facilities and replace aging infrastructure to facilitate water transfers to increase the drought

resistance of rural communities. It would provide direct benefits to agriculture and indirect benefits to rural communities. The top industry in Colusa County in 2015, as measured by the number of employees, was agriculture (EDD 2018). By directly benefiting agriculture, the proposed action indirectly benefits the people in Colusa County whose wages depend on the industry.

3.14 Environmental Justice

3.14.1 Methods

3.14.1.1 Definition of Resource Study Area

This analysis addresses the potential for the proposed action to adversely affect environmental justice communities, including minority or low-income populations, to a disproportionate degree relative to their representation in the larger population. The environmental justice RSA is the census tract within 1 mile of the proposed TRR and associated facilities. Colusa County is defined as the reference community due to the localized nature of the proposed action.

3.14.1.2 Method for Effects Analysis

To characterize the environmental justice communities identified as minority or low-income populations, population, race, ethnicity, income, and poverty data were obtained from the U.S. Census Bureau for the RSA and the reference community.

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was issued February 11, 1994 (59 FR 7629). EO 12898 "is intended to promote nondiscrimination in Federal programs substantially affecting human health and the environment, and to provide minority communities and low-income communities access to public information on, and an opportunity for participation in, matters relating to human health and the environment." It requires each federal agency to achieve environmental justice as part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects, including social and economic effects, of its programs, policies, and activities on minority and low-income populations.

Pursuant to EO 12898, CEQ prepared Environmental Justice: Guidance Under the Environmental Policy Act (1997) to assist federal agencies with their NEPA procedures "… so that environmental justice concerns are effectively identified and addressed."

In accordance with CEQ and NEPA guidelines established to assist federal and state agencies, the first step undertaken in this environmental justice analysis was to define minority and low-income populations. For this analysis, a minority population was defined to be present in the RSA if: (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage of the affected area is at least 10 percentage points greater than that of the general population in the state. By the same rule, a low-income population exists in the RSA if it consists of 50 percent or more people living below the poverty threshold, as defined by the U.S. Census Bureau, or is significantly greater than the poverty percentage of the general population or other appropriate geographic unit, as a whole, which has been identified for the project as Colusa County.

The second step undertaken in this environmental justice analysis was to determine if a "high and adverse" effect would occur. The CEQ guidance indicates that, when determining whether the effects are high and adverse, agencies are to consider whether the risks or rates of effect "are significant or above generally accepted norms."

The final step undertaken in this analysis was to determine if the effect on the minority and/or low-income population would be disproportionately high and adverse. The CEQ includes a non-quantitative definition stating that an effect is disproportionate if it appreciably exceeds the risk or rate to the general population.

3.14.2 Affected Environment

This section describes the existing environmental justice communities present in the RSA, which is presented on Figure 3.14-1. Table 32 summarizes race and ethnicity of the populations in the RSA. The Hispanic/Latino population represents 35.5 percent of the total population in the RSA, and 55.1 percent of the total population of Colusa County. With reference to the CEQ guidelines, the RSA's percentage of Hispanic/Latino population is lower than Colusa County and would not be considered greater than 50 percent or "meaningfully greater" than the 55.1 percent Hispanic/Latino population countywide. On this basis, there is no minority population identified in the RSA.

Table 32. 2010 Race and Ethnicity in the Resource Study Area

	RSA	Colusa County
Total population (number)	2,495	21,419
Non-white	29%	35.3%
White	71%	64.7%
Black or African American	2%	0.9%
American Indian and Alaska Nativea	3.3%	2.0%
Asian	0.8%	1.3%
Native Hawaiian and Other Pacific Islander	0.2%	0.3%
Some Other Race	20.4%	27.3%
Two or More Races	2.2%	3.6%
Hispanic or Latino (of any race)	35.5%	55.1%
Not Hispanic or Latino (of any race)	64.5%	44.9%

Source: U.S. Census Bureau 2010

Low-income populations are those communities or sets of individuals whose median income is below the current poverty level of the general population. As shown in Table 33, the RSA has lower median family and per capita incomes than Colusa County. However, the RSA does not have 50 percent or more people living below the poverty threshold and the poverty rate is not significantly greater than the poverty percentage of Colusa County. The per capita income is higher for the RSA

and percentage of families living below the poverty level is lower compared to Colusa County. On this basis, there is no low-income population identified in the RSA.

Table 33. Income and Poverty 2012–2016 Five-Year Estimate by Census Tract, County, and State

Location	RSA	Colusa County
Median Household Income	49,087	54,946
Per Capita Income	27,049	25,745
Families Below Poverty Level (%)	6.4%	10.8%
Individuals Below Poverty Level (%)	14.2%	13.5%

Source: U.S. Census Bureau 2016

3.14.3 Environmental Consequences

3.14.3.1 No Action Alternative

Under the No Action Alternative, neither construction nor operation of the proposed action would occur. Accordingly, there would be no adverse environmental justice effects under the No Action Alternative.

3.14.3.2 Proposed Action

There are no identified minority or low-income populations within the RSA. Therefore, there would be no effect on environmental justice communities.

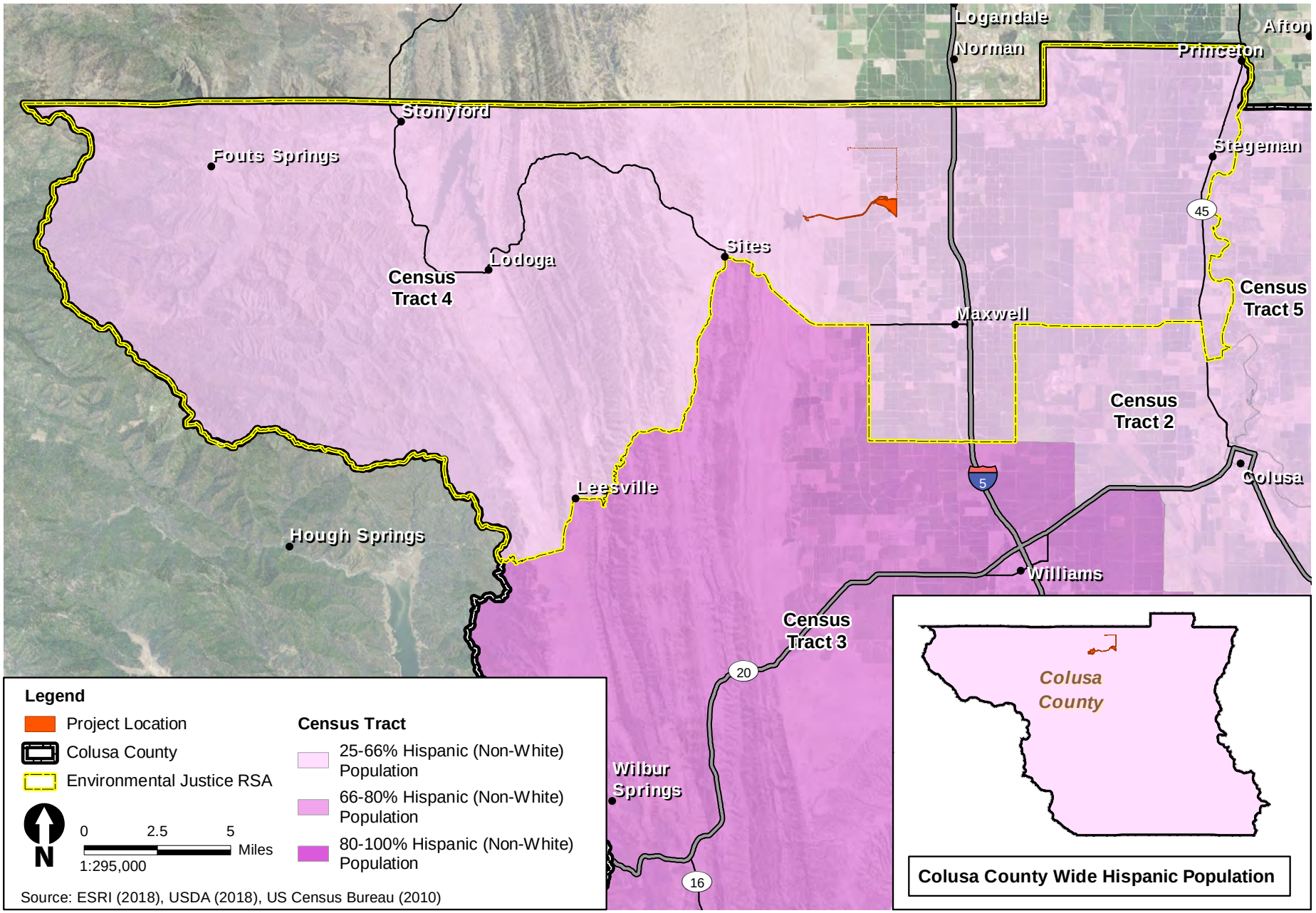

Figure 3.14-1
Environmental Justice - Maxwell Water Intertie Project

Chapter 4
Cumulative Effects

4.1 Land Use

Past, present and reasonably foreseeable projects within the cumulative RSA for land use (Colusa County), including the construction of reservoirs and power facilities, and implementation of reclamation projects, would lead to conflicts with local land use and zoning plans and would result in conversion of Important Farmland or Williamson Act land to non-cultivated uses. Construction of these projects would typically require some acquisition and conversion of land uses in the RSA, which are predominantly agricultural uses. Construction activities under the proposed action would also result in the conversion of Important Farmland to nonagricultural uses and in conflicts with local land use and zoning plans, because the proposed project is inconsistent with properties in Colusa County that are zoned for agricultural uses.

The proposed action would include as part of mitigation coordination with Colusa County to modify or amend the related general plan or zoning ordinances to bring lands into consistency with the uses under the proposed action (Mitigation Measure LU-MM-1). Other present and reasonably foreseeable projects would implement similar mitigation to reduce or avoid adverse effects on land use. As a result, the cumulative effect on land use from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.2 Geology and Paleontological Resources

Past, present and reasonably foreseeable projects within the cumulative RSA for geology and paleontological resources (project area) include reservoirs, power facilities, and reclamation projects. These projects along with the proposed action would lead to increased risk of exposure of people and structures to geologic activities such as earthquakes and liquefaction, increased soil erosion and the loss of topsoil from clearing, grubbing, grading and trenching, and the damage or loss of paleontological resources. Construction of these projects would include project-specific geotechnical investigations and seismic design standards promulgated by state and county building codes that would require structures to meet requirements to withstand geologic events. Prior to construction of these projects, a SWPPP would be implemented that would include measures for controlling and preventing erosion or loss of topsoil. In addition, site investigations would be performed to identify paleontological resources prior to construction, and measures would be implemented to train employees for the identification and protection of paleontological resources if they are found during construction activities. As a result, the cumulative effect on geology or paleontological resources from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.3 Air Quality and Climate Variability

By its very nature, regional air pollution is a cumulative effect. Emissions from past, present, and reasonably foreseeable projects contribute to unfavorable air quality on a cumulative basis. No single project by itself would be sufficient in size to result in regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing adverse air quality effects. Similarly, climate variability is the result of the individual contributions of countless past, present, and future sources. Thus, GHG effects are also inherently cumulative.

Construction and operation of past, present and reasonably foreseeable projects including the proposed action would contribute to air pollution. Neither construction nor operation of the proposed action would violate any air quality standard, which have been adopted to prevent further deterioration of ambient air quality, with implementation of Mitigation Measures AQ-MM-1 and AQ-MM-2. The additional GHG emissions anticipated from implementation of the proposed action would likewise represent a small fraction of state, national, and global emissions. Development occurring throughout Colusa County and the SVAB during construction and operation of the proposed action could generate emissions and affect air quality. The amount and intensity of criteria pollutants and GHGs generated by these projects is not known at this time, although emissions associated with these projects would be reduced through compliance with air district rules, which is required of all development projects. Although the proposed action in combination with past, present and reasonably foreseeable projects would inevitably contribute to adverse effects on air quality and global climate variability from emissions, the changes to air quality would remain small, and the cumulative effect would therefore not be significant.

4.4 Water Resources

4.4.1 Surface Water and Water Quality

The cumulative RSA for surface hydrology and water quality is the Lower Sacramento Valley watershed. Past, present and reasonable foreseeable projects within the cumulative RSA, including reservoirs, water conveyance facilities, development, and reclamation projects, would lead to changes in surface water hydrology and water quality. Construction of the past, present and reasonably foreseeable projects including the proposed action would result in an addition of impervious surface area. Land-disturbing activities and the placement of stockpiles in designated staging areas for these projects may result in a temporary increase in sediment mobility and loads in nearby surface waters during construction. The delivery, handling, and storage of construction materials and wastes (e.g., concrete debris), as well as the use of heavy construction equipment, could also result in stormwater contamination. However, all project construction activities would be subject to existing regulatory requirements that would minimize potential adverse effects. Operation of these projects would comply with local requirements, such as the Colusa County General Plan and other stormwater requirements established in the MS4 Permit. As a result, the proposed action in combination with past, present and reasonably foreseeable projects would not substantially affect drainage patterns or surface water hydrology or supplies, and the cumulative effect on drainage patterns, surface water hydrology, or water quality would not be significant.

4.4.2 Groundwater

The cumulative RSA for groundwater consists of the Colusa Subbasin of the larger Sacramento Valley Groundwater Basin to capture the area in which past, present and reasonably foreseeable projects including the proposed action could affect groundwater supplies. In the RSA, groundwater levels in the subbasin have generally declined, particularly along the northwestern and southwestern basin margins over the last decade. Declines in groundwater levels are likely related to a recent multi-year drought conditions (decreased groundwater recharge) and an increase in groundwater extraction in agricultural areas. Colusa County is involved with California Statewide Groundwater Elevation Monitoring, which tracks seasonal and long-term groundwater elevation trends in groundwater basins statewide and monitors groundwater levels in the County. From 12 shallow wells (less than 200 feet bgs) sampled between summer of 2004 to summer 2017, the maximum increase of groundwater elevation (GWE) was 2.3 feet, the maximum GWE decrease was 28.5 feet, and the average change was a decrease of 5.9 feet (DWR 2017b). However, from 19 shallow wells sampled between the summer 2016 and summer 2017, the maximum GWE increase was 12.0 feet, the maximum GWE decrease was 3.1 feet, and average change was an increase of 2.1 feet (DWR 2017c).

Agencies in Colusa County have formed a Governance Workgroup that has been meeting regularly to determine the best approach to SGMA governance in the county. Avoidance of overdraft is a focus of groundwater management within the Sacramento Valley Basin. In several areas of the larger Sacramento Valley Groundwater Basin, notably in parts of Sacramento County, water level declined significantly in response to groundwater pumping. However, water level declines are generally outside of the Colusa Subbasin (Luhdorff and Scalmanini 2012), and the Colusa Subbasin is not identified as a critically overdrafted subbasin (DWR 2016).

Past, present and reasonably foreseeable projects including the proposed action would comply with basin-wide, county-wide, and regional plans to reduce and avoid changes to groundwater levels. In addition, these projects would reduce impervious areas where feasible to allow groundwater recharge during precipitation events. Changes in groundwater recharge due to new impervious areas and construction of the lined reservoir for the proposed action would be minimal compared to the size of the entire Colusa Subbasin. Further, the proposed action would only increase water conveyance flexibility and would not result in changes to groundwater supplies during construction. Therefore, the cumulative effect on groundwater resources from proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.4.3 Floodplains

The cumulative RSA for floodplains includes the flood-hazard areas within receiving waters of the proposed action's disturbance area. Past, present and reasonably foreseeable development within the cumulative RSA would increase the volume and rate of stormwater runoff from increases in impervious surfaces and ground disturbance including vegetation removal. Such increases to stormwater runoff would increase the risk of localized flooding if stormflows are conveyed to overbank areas where flood storage may not be available, as no stormwater facilities are in the immediate area. A portion of the RSA is located within a FEMA-designated 100-year flood zone. There would be an increase in impervious surfaces relative to existing conditions and a decrease in pervious surfaces during construction of the proposed action that could also contribute to the increased risk of localized flooding from increases stormwater runoff.

All new development is required to handle stormwater in a manner that ensures flooding will not increase and flood flows will not be redirected to other areas that are not currently prone to flooding. All projects would be required to include stormwater management features, such as low-impact development measures into project designs to reduce flows to pre-project conditions. If improvements to storm drainage capacity are needed, the project sponsor would be required to coordinate with local agencies to ensure the appropriate conditions of approval for storm drainage improvements are identified. All development projects would be required to be designed so that post-project peak runoff rates are at or below pre-project peak runoff rates, and any features in surface waterbodies from the projects would be designed to avoid changes to flows and associated flood hazards. In addition, these projects would comply with Colusa County and other flood agency requirements including methods for reducing flood risks and other flood hazard management practices such as restricting uses in designated floodways and preservation of floodway and floodplains.

Design features of past, present and reasonably foreseeable projects would avoid substantial changes in the total stormwater runoff rates, and compliance by these projects to relevant regulations would also reduce or avoid any increased risks to flooding. As a result, the cumulative effect on flooding from the proposed action in combination with other past, present and reasonably foreseeable projects would not be significant.

4.5 Biological Resources

4.5.1 Wildlife and Special-Status Species

The cumulative RSA for special-status wildlife species is Colusa County. Future development within Colusa County is focused on preservation of agricultural land and concentration of growth within incorporated cities. Growth from past, present and future development within the cumulative RSA including the proposed action places additional pressure on special-status wildlife species populations and habitat. During construction of these projects, temporary habitat loss, of which the majority is agriculture, annual grassland, and reservoir, and permanent habitat loss, of which the majority is agriculture land, would occur.

The effects of the proposed action on special-status wildlife habitat in the RSA are small in size due to the limited surface disturbance associated with the proposed action, and all temporarily affected habitat is expected to either passively reestablish (in the case of annual grassland habitat) or be actively restored (in the case of agriculture land). All past, present and reasonably foreseeable projects would be required to implement practices to avoid or restore special-status wildlife species habitat, and employees would in general be trained to identify and avoid sensitive species and habitat prior to construction of these projects. The proposed action would include measures to avoid or protect wildlife species and habitat including employee training to identify and avoid sensitive species and habitat, avoidance of sensitive areas, where feasible, and fencing and monitoring of sensitive areas where work is unavoidable (BIO-MM-1 through BIO-MM-~~22~~20) . Coupled with the abundance of annual grassland and agriculture land in Colusa County, cumulative effects on special-status wildlife species from the proposed action in combination with other past, present and reasonably foreseeable development would not be significant.

4.5.2 Vegetation and Special-Status Plants

The cumulative RSA for vegetation and special-status plant species is Colusa County. Future development within Colusa County is focused on preservation of agricultural land and concentration of growth within incorporated cities.

4.5.2.1 Vegetation

Past, present and reasonably foreseeable projects and development in the cumulative RSA would include crop production, creation/expansion of reservoirs and other water conveyance structures (e.g., canals, aqueducts, ditches), and additional transmission or power lines and associated infrastructure to pump water. These projects along with the proposed action would directly remove or indirectly affect vegetation and result in land conversion during construction.

The changes to vegetation from construction of the proposed action would include temporary removal of approximately 432.0 acres of vegetation and permanent removal of approximately 147.8 acres of vegetation. The majority of vegetation removal during construction of the proposed action would occur on agricultural land, which is an area where the existing vegetation has already been removed and has little biological value. The permanent removal of vegetation under the proposed action would be limited to the TRR, which is used for agricultural production. In addition, bore-and-jack drilling methods would be used during construction of the proposed action to reduce ground disturbance. The upgrade to the 69-kV power line would be completed by replacing power poles within the same permanent footprint to avoid removal of vegetation. These practices would reduce but not avoid removal of vegetation during construction of the proposed action.

The proposed action includes mitigation to reduce adverse effects on vegetation including the implementation of biological resources awareness training prior to construction (BIO-MM-1) and installation of ~~exclusion~~ pin flags, flagging, or flagged stanchion fencing around sensitive biological resources (BIO-MM-2). This mitigation would minimize the proposed action's effects on vegetation during construction. In addition, the effects of the proposed action on the natural and semi-natural vegetation communities in the cumulative RSA are small in size, and all temporarily affected habitat is expected to passively reestablish (in the case of annual grassland habitat). Therefore, the effect on vegetation from the proposed action would be reduced, and the cumulative effect on vegetation from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.5.2.2 Invasive Plant Species

Construction of any past, present, or future construction projects in Colusa County that require land disturbance in areas that support or could support invasive plant species would increase the risk of the introduction of new invasive plant species or the spread of existing invasive plant populations into uninfected areas. Invasive plant species are present in the cumulative RSA and could be spread by construction and operation activities from these projects, including the proposed action. Although the proposed action would avoid ground disturbance in areas containing invasive plan species, it would still contribute to the spread of highly invasive plant species such as black mustard or yellow star thistle.

The proposed action includes mitigation measures such as providing biological resources awareness training prior to construction (BIO-MM-1), the installation of ~~exclusion~~ pin flags, flagging, or flagged

stanchion fencing around sensitive biological resources (BIO-MM-2), and implementation of BMPs to reduce the spread or introduction of invasive plant species (BIO-MM-~~21~~19) would reduce the risk of the proposed action to spread invasive plant species. Therefore, the effect on invasive plant species from the proposed action would be reduced, and the cumulative effect on invasive plant species from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.5.2.3 Special-Status Plant Species

As stated under Section 3.6.2.3., *Environmental Consequences*, the environmental analysis is limited to federally listed species; given that are no federally listed special-status plant species with potential to be present in the RSA (Table 13), there would be no cumulative effect on federally listed special-status plant species from the proposed action in combination with past, present and reasonably foreseeable projects.

4.5.3 Wetlands

The cumulative RSA for wetlands and non-wetland waters is Colusa County. Land conversion for crop production, additional transmission lines and roads, and expansion of rural and suburban developed as part of past, present and reasonably foreseeable projects, including the proposed action, could remove wetland and non-wetland waters from the cumulative RSA or result in effects on the function of value of wetland and non-wetland waters. All projects would be required to comply with regulations for the protection of wetland and non-wetland waters. In addition, the proposed action has been designed to avoid wetlands and non-wetland waters by using bore-and-jack installation of the MWI pipeline under Funks Creek and installing replacement power line poles in the exact footprint of the existing pole. The proposed action would have no permanent effects on wetlands, and any indirect effects from the proposed action would be nominal and short-term. There would be no adverse effects from the proposed action on the function and value of non-wetland waters, and the connectivity of non-wetland waters to the distribution system would be restored once construction is complete. However, the proposed action would still result in the permanent loss of substrate of non-wetland waters (i.e., ditches and canals).

The proposed action includes mitigation, as required by law under the CWA that would reduce or avoid indirect effects on wetlands and effects on non-wetland waters. These include the implementation of biological resources awareness training prior to construction (BIO-MM-1), installation of ~~exclusion~~ pin flags, flagging, or flagged stanchion fencing (BIO-MM-2) and avoidance of wetland during construction and operation activities (BIO-MM-~~22~~20), as well as the preparation and implementation of a SWPPP to control effects on substrate of non-wetland waters. Therefore, the effect on wetlands from the proposed action would be reduced, and the cumulative effect from the proposed action in combination with past, present and reasonably foreseeable development projects would not be significant.

4.5.4 Fisheries

The cumulative RSA for fisheries (waterbodies and water courses in and around the project area that support or contain fish populations that could be affected by the proposed project), is surrounded by agricultural lands, which make up the majority of land uses in the fisheries RSA. These agricultural lands extend well beyond the RSA analyzed here. For example, the TC Canal and GCID Main Canal serve approximately 150,000 and 140,000 acres, respectively, of agricultural land

that span up to four counties. Agricultural operations in the RSA support a variety of permanent and annual crops through the use of herbicides, pesticides, fertilizers, etc. that may be considered hazardous materials. Spills and leaks of these hazardous materials may directly contaminant waterbodies through releases of these chemicals into surface waters or indirectly contaminant waterbodies from the runoff of contaminated soils into waterbodies. As a result, agricultural operations, in addition to construction and operation practices from past, present and reasonably foreseeable projects including the proposed project, can strongly influence water quality conditions and therefore the ability to support healthy fish populations and habitat.

Water quality in the RSA is considered good, suggesting agricultural practices are not contributing to the degradation of water quality. Agricultural operations include efficiency and conservation measures that would, in combination with compliance with regulations, preclude degradation of water quality and therefore fisheries habitat. Construction and operation of the proposed project would also not contribute to the degradation of water quality, because there would be no changes to existing water resources in the RSA, and the proposed project would implement a SWPPP and comply with regulations to avoid the degradation of water quality. Therefore, the cumulative effect on fisheries from the proposed project in combination with past, present and reasonably foreseeable projects would not be significant.

4.6 Cultural Resources

The cumulative RSA for cultural resources is the APE. Cultural resources including built environment resources, archaeological resources, and TCPs, are non-renewable resources, and once they are modified or disturbed through construction or other activities, they cannot be restored to their original condition. Past development has contributed to a steady attrition of cultural resources on local, regional, and national levels, and effects on cultural resources are inherently cumulative.

The development pressure on cultural resources is very low in and near the APE, because the region is rural with the dominant land use being agriculture. Construction of the proposed action is the only past, present or reasonably foreseeable project in or near the APE that would result in potential effects on cultural resources. The GCID Main Canal was recorded as a historic property in the APE. Based on these identifications in the cultural resource RSA, further site investigations during construction of the proposed action or other present and reasonably foreseeable projects could reveal other historic properties. Any effects on cultural resources would be considered adverse due to the inability to restore or replace these resources if they are modified, disturbed, or destroyed.

Implementing regulations for Section 106 of the NHPA, which is required for all development projects, including the proposed action, provide opportunities for reducing or avoiding potential adverse effects on cultural resources. As part of Section 106, a PA would be prepared by the Authority, such as the USDA NPA, and implemented into the design of the proposed action to reduce construction effects to the most feasible extent possible. The PA outlines approaches for identifying potential effects from a proposed project on cultural resources and implementing mitigation measures to reduce those effects. As a result, potential effects on cultural resources would be minimal, and the cumulative effect on cultural resources from the project in combination with past, present and reasonably foreseeable development would not be significant.

4.7 Aesthetics and Visual Resources

Past, present and reasonably foreseeable projects within the cumulative RSA for aesthetics (the area within a 30-mile radius of the project footprint) include any project that would result in a visible change to the existing landscape. Such projects might include individual, smaller-scale development projects to larger-scale, land use programming projects such as the expansion of reservoirs and power facilities.

Construction and operation of present and reasonably foreseeable projects including the proposed action would typically affect sensitive viewers and result in the conversion of existing land uses. These projects would also introduce discordant visual elements into the landscape and result in substantial degradation of existing form, line, color, and texture of the visual landscape and substantial degradation of scenic vistas and views from scenic highways. These changes would decrease the visual quality of the landscape and increase in the amount of light and glare in the RSA due to increased rural and suburban development, lighting of facilities and buildings, removal of vegetation, and increased water surfaces. These changes would also ultimately alter the cultural and regional landscapes.

Present and reasonably foreseeable projects including the proposed action would construct additions to the infrastructure seen in the region while other projects would increase the visual prominence of existing elements, such as utility poles and towers. Industrial-looking facilities, which would be introduced where none presently exist, and the conversion of agricultural lands to other uses associated with development would alter the existing visual character and introduce new sources of light and glare, resulting in changes to nearby viewer groups. Adverse visual effects would result where restoration, enhancement, and management measures require built elements that detract from the visual landscape.

The proposed action in addition to other present and reasonably foreseeable projects would also result in beneficial visual changes. Beneficial visual effects would result where restoration and enhancement activities improve existing visual conditions and increase visual diversity through the reintroduction of habitats lost through the original conversion of natural lands to agriculture. Such changes would increase biodiversity, resulting in benefits to wildlife and increasing opportunities for scenery viewing. While beneficial changes would result from such projects, the amount of adverse changes to visual conditions would outweigh the beneficial effects and remain adverse.

The proposed action would include Mitigation Measure AV-MM-1 to ensure built structures would recede into views and that quality of views would be maintained. In addition, Mitigation Measures AV-MM-1 and AV-MM-2 would ensure structures are painted in a manner to prevent glare from light colors and that appropriate lighting would be implemented to reduce nighttime light and glare. As a result, the effect on aesthetics and visual resources from the proposed action would be reduced, and the cumulative effect from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.8 Noise

There are no reasonably foreseeable projects within the cumulative RSA (the localized area immediately in the vicinity of the project footprint that could experience noises from the proposed project) that could affect noise. However, existing sources of noise are currently present. These

sources of noise include, within 2,000 feet of the proposed action, motorized equipment that operates on agricultural land and existing vehicle traffic on roadways. The geographic context for the analysis of cumulative noise effects is relatively small (within 2,000 feet), because noise diminishes rapidly with distance—6 dBA per doubling of distance for point and stationary sources. Construction equipment and trucks, water pumping facilities, a maintenance road, and a 69-kV power line would be used for the proposed action that would also contribute to noise in the cumulative RSA.

Past, present and reasonably foreseeable sources of noise including the proposed action would be required to adhere to noise limits in the County's municipal code. Because noise effects are localized in nature, it is not likely that a sensitive land use in the cumulative RSA would be affected by temporary or permanent noise from the proposed action in combination with noise from existing or reasonably foreseeable development in the area. Construction of the power line would occur at close distances to residences (as close as 50 feet), but construction would be brief in any single location. As such, it is not likely that there would be noticeable noise from other development in the area that would overlap with the construction noise. As a result, the cumulative effect on noise from the proposed project in combination with past, present and reasonably foreseeable projects would not be significant.

4.9 Transportation

Within the cumulative RSA for transportation (Colusa County), construction or operation of past, present and reasonably foreseeable projects including reservoirs and power utilities could result in additional traffic or changes to existing traffic and traffic infrastructure. Some of these projects would be implemented without substantial changes to existing traffic conditions (e.g., small-scale improvements to existing infrastructure). Other projects that would result in potential changes to transportation would implement plans to establish routes for project construction vehicles and would limit changes to the existing roadway networks in accordance with local plans and policies. The proposed action would not result in substantial changes to transportation and traffic in the cumulative RSA due to the rural nature of the area, small construction- and operation-related traffic, and no need for changes to existing transportation infrastructure. As a result, the cumulative effect on transportation from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.10 Human Health and Safety

4.10.1 Electromagnetic Fields and Electromagnetic Interference

Existing transmission lines are located in the cumulative RSA for EMF and EMI (project area). It is anticipated that as demands increase with growing population and infrastructure, additional transmission and/or power lines and other infrastructure would be constructed capable of producing new or being affected by other EMF and EMI. In addition, a new power line is part of the proposed action that could result in or be disrupted by EMF and EMI. There are no defined or adopted standards for defining health risk from EMF/EMI, and utilities would include design

measures intended to minimize exposure to and interference with EMF/EMI. Thus, the proposed action and other past, present and reasonably foreseeable projects would not result in exposure or interference with existing of EMF and EMI that would lead to safety risks. Therefore, the cumulative effect on or from EMF/EMI from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.10.2 Environmental Risk Management

The cumulative RSA for hazardous materials consists of the project footprint plus a 0.50-mile radius to capture the area in which past, present and reasonably foreseeable projects including the proposed action could result in affects related to existing or new sources of hazardous materials. This includes the area adjacent to or very close to project locations due to the limited potential effect radius associated with the release of hazardous waste into the environment. The construction and operation of reservoirs, power facilities and reclamation projects, and activities under the proposed action would lead to the increased use of hazardous materials and activities in areas where existing hazardous materials may located. Implementation of environmental commitments such as Construction Management Procedures, a SWPPP, and ESA prior to and during construction activities would reduce potential effects associated with existing contaminated media, if present, and the use, storage and handling of existing or new sources of hazardous materials. Moreover, development of related projects in contaminated areas would require remediation in compliance with state and federal environmental regulations, consequently improving overall environmental quality. As a result, past, present and reasonably foreseeable projects including the proposed action would not result in new sources or exposure to existing sources of hazardous materials that could lead to safety risks. Therefore, the cumulative effect related to hazardous materials from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.11 Public Services and Utilities

Past, present and reasonably foreseeable projects within the cumulative RSA for public services and utilities (Colusa County) including reservoirs, power facilities, and reclamation projects, would lead to an increased demand on public services and utilities from increases in workers living or working in the area. Construction and operation of these projects would typically require the use of utilities, including water, wastewater, waste, and energy providers, resulting in a greater demand on these services and associated infrastructure. The proposed action would also result in increased demands on some public services and utilities. However, the proposed action would not cause a substantial increase in demands on public services and utility providers and would not warrant the expansion of services or major facilities. In addition, because local and regional plans and goals include commitments to expand these services and facilities over time to accommodate growth and increased demands, present and reasonably foreseeable projects in combination with the proposed action would not require the expansion of services or facilities due to increased demands. Utility providers have plans in place to minimize or avoid disruptions to utility services, including bypasses and relocations that require the establishment of the new facility before shutting down an old facility. As a result, the cumulative effect on public services and utilities from the proposed action in combination with past, present and reasonably foreseeable projects would not be significant.

4.12 Socioeconomics

Past, present and reasonably foreseeable projects within the cumulative RSA for socioeconomics (Colusa County) include the construction and operation of reservoirs, power facilities, and reclamation projects, which would lead to an expansion of employment opportunities and increases in local income. The existing population in the cumulative RSA, which has an unemployment rate more than double that of the state of California, would be expected to accommodate the majority of new employment opportunities, although some workers may relocate from outside the county to fill vacant positions. These activities would contribute to socioeconomic benefits from increased employment opportunities and related income to the local economy. The proposed action would also result in short-term increases in employment during construction. These employment increases from the proposed action in combination with past, present and other reasonably foreseeable projects would result in a cumulative socioeconomic benefit. In addition, the proposed action would also indirectly contribute induced benefits to the agricultural communities from improvements to infrastructure supporting drought resistance that will lead to increased incomes to agriculture operators. As a result, the cumulative socioeconomic changes from the proposed action in combination with past, present and foreseeable projects would be beneficial.

4.13 Environmental Justice

No minority or low-income communities were identified within the RSA. Therefore, there would be no disproportionately high and adverse human health or environmental effects on minority and/or low-income populations from present and reasonably foreseeable projects, including the proposed action. As a result, there would be no significant cumulative effect on environmental justice communities.

Chapter 5
Summary of Mitigation

No potentially adverse effects on environmental justice communities, fisheries, noise and vibration, transportation, human health and safety, public services and utilities, or population, employment, and income conditions were identified, and mitigation is therefore not required. Potential effects on historic properties will be addressed through implementation of the Section 106 PA; therefore, additional mitigation measures for effects on cultural resources are not required. Mitigation Measures Summary and Implementation Schedule for the proposed project has also been added in Section 5.8, *Mitigation Measures Summary and Implementation Schedule*. The table provides a brief description of the adopted mitigation measures, the timing of their implementation, and who is responsible for their implementation.

5.1 Land Use

The following mitigation measure will be implemented to reduce adverse effects on land use and agricultural lands from construction of the proposed project.

Mitigation Measure LU-MM-1: Work with Colusa County to modify or amend their general plans and/or zoning ordinances to bring lands into consistency with the Proposed Action land uses.

Prior to the start of construction, the Authority will work with Colusa County to request modifications or amendments to their general plans and zoning ordinances to ensure consistency with project land uses.

5.2 Geology and Paleontological Resources

The following mitigation measures would be implemented to reduce or avoid adverse effects related to geology and paleontological resources.

Mitigation Measure PALEO-MM-1a: Retain a Qualified Paleontological Resource Specialist Prior to the Start of Construction

The Authority will retain a qualified Paleontological Resource Specialist at least 90 days prior to the start of construction. The Authority will keep resumes on file for the Paleontological Resource Specialist as well as qualified Paleontological Resource Monitors working on the proposed action. The Paleontological Resource Specialist will meet the minimum or equivalent qualifications for a paleontological resources manager, as described in the SVP guidelines (2010). The experience of the Paleontological Resource Specialist will include the following:

- Ability to recognize and collect fossils in the field
- Geological and biostratigraphic expertise

- Proficiency in identifying vertebrate and invertebrate fossils, and in assessing their scientific significance
- At least 3 years of paleontological resource mitigation and field experience in California and at least 1 year of experience leading paleontological resource mitigation and field activities

The Authority will require that the Paleontological Resource Specialist obtain qualified paleontological resource monitors to monitor construction activities, as the Paleontological Resource Specialist determines necessary. Paleontological Resource Monitors will have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and 1 year of experience monitoring in California
- AS or AA in geology, paleontology, or biology and 4 years of experience monitoring in California
- Enrollment in upper-division classes pursuing a degree in the fields of geology or paleontology and 2 years of monitoring experience in California

Mitigation Measure PALEO-MM-1b: Consultation with the Paleontological Resource Specialist Prior to and during Project Construction

At least 30 days prior to the start of construction, the Authority will provide maps or drawings to the Paleontological Resource Specialist that show the planned construction footprint. Maps will identify all areas of the proposed action where ground disturbance is anticipated. (Site grading plan and plan and profile drawings for the utility lines are appropriate for this purpose). The plan drawings will show the location, depth, and extent of all ground disturbances affecting paleontologically sensitive sediment. If construction proceeds in phases, maps and drawings may be submitted prior to the start of each phase. In addition, the proposed schedule of each proposed action phase will be provided to the Paleontological Resource Specialist. Before work commences on affected phases, the Authority will notify the Paleontological Resource Specialist of any construction phase scheduling changes. If paleontological resources monitoring is ongoing, the Authority will ensure that the Paleontological Resource Specialist or Paleontological Resource Monitor consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week and until ground disturbance is completed.

Mitigation Measure PALEO-MM-1c: Prepare and Implement a Paleontological Resources Monitoring and Mitigation Plan

The Authority will ensure that the Paleontological Resource Specialist prepares a PRMMP to identify general and specific measures to minimize potential effects on significant paleontological resources. Approval of the PRMMP by the Authority will occur prior to any ground disturbance. The PRMMP will function as the formal guide for paleontological resources monitoring, collecting, and sampling activities, and may be modified by the Paleontological Resource Specialist to accommodate new data or changes to the proposed action. This document will be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP will reside with the Paleontological Resource Specialist, each monitor, the Authority's on-site manager, and the Authority.

The PRMMP will be developed in accordance with professional guidelines, and be consistent with those issued by SVP (2010) and will include the following:

- Procedures for the performance and sequence of resource-related tasks, such as any literature searches, preconstruction surveys, appropriate worker environmental training module, construction monitoring, mapping and data recovery, discovery situations, fossil preparation and collection, identification and inventory, preparation of final reports, transmittal of materials for curation, and final report will be provided in the PRMMP, including:

    - A discussion of the geologic units expected to be encountered, the location and depth of the units relative to the project footprint, when known, and the known paleontological sensitivity of those units
    - A discussion of the locations of where the monitoring of construction activities is deemed necessary, and a proposed plan for monitoring and sampling
    - An explanation of why, how, and how much sampling is expected to take place and in what units, including descriptions of different sampling procedures that may be used
    - A discussion of procedures to be followed in the event of a significant fossil discovery, diverting construction away from a find, resuming construction, and how notifications will be performed
    - A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits
    - Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meet SVP standards and requirements for the curation of paleontological resources
    - Identification of the institution(s) that will be approached to receive data and fossil materials collected, and requirements or specifications for materials delivered for curation

The PRMMP will also provide guidance for preparation of a Paleontological Resources Report by the designated Paleontological Resource Specialist at the conclusion of ground-disturbing activities that may affect paleontological resources. The Paleontological Resources Report will include an analysis of the collected fossil materials and related information, including a description and inventory of recovered fossil materials, a map showing the location of paleontological resources encountered, determinations of sensitivity and significance, and a statement by the Paleontological Resource Specialist that effects on paleontological resources have been mitigated to be not adverse.

Mitigation Measure PALEO-MM-1d: Conduct Paleontological Resources Awareness Training

Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the Paleontological Resource Specialist will prepare, and the Authority will conduct, weekly paleontological resources awareness training for the following workers: project managers, construction supervisors, forepersons, and general workers involved with or who operate ground-disturbing equipment or tools. Workers will not excavate in paleontologically sensitive sediments prior to receiving paleontological resources awareness training. Worker training will consist of a video or in-person presentation. The paleontological resources awareness training

module may be combined with other training modules prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern.

The paleontological resources awareness training will address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources. The training will include:

- A discussion of applicable laws and penalties under the law
- Good-quality photographs or physical examples of vertebrate fossils
- Information that the Paleontological Resource Specialist or Paleontological Resource Monitor has the authority to halt or redirect construction in the vicinity of a fossil discovery or unanticipated effect on a paleontological resource
- Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the Paleontological Resource Specialist or Paleontological Resource Monitor
- An informational brochure that identifies reporting procedures in the event of a discovery
- A certification of completion form signed by each worker indicating that he/she has received the training

Mitigation Measure PALEO-MM-1e: Conduct Monitoring during Project Construction and Prepare Monthly Reports

The Authority will ensure that the Paleontological Resource Specialist and Paleontological Resource Monitor(s) monitor construction excavations consistent with the PRMMP in areas where potential fossil-bearing materials have been identified, both at reservoir sites and along any constructed linear facilities associated with the proposed action. In the event that the Paleontological Resource Specialist determines full-time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the Paleontological Resource Specialist will notify the Authority.

The Authority will ensure that the Paleontological Resource Specialist and Paleontological Resource Monitor(s) have the authority to halt or redirect construction if paleontological resources are encountered. The Authority will ensure that there is no interference with monitoring activities, as directed by the Paleontological Resource Specialist.

The Authority will ensure that the Paleontological Resource Specialist prepares and submits monthly summaries of monitoring and other paleontological resources management activities. The summary will include the name(s) of the Paleontological Resource Specialist or Paleontological Resource Monitor(s) active during the month, general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report will include the geologic units or subunits encountered, descriptions of samplings, if any, and a list of identified fossils. A final section of the report will address any issues or concerns about the proposed action relating to paleontological resources mitigation activities, including any incidents of non-compliance or any changes to the monitoring plan by the Paleontological Resource Specialist. If no monitoring took place during the month, the report will include an explanation as to why monitoring was not conducted.

Mitigation Measure PALEO-MM-1f: Ensure Implementation of the Paleontological Resources Monitoring and Mitigation Plan

The Authority, through the designated Paleontological Resource Specialist, will ensure that all components of the PRMMP are adequately performed during construction.

5.3 Air Quality and Climate Variability

The following mitigation measures would be implemented to reduce or avoid adverse effects on air quality and climate variability.

Mitigation Measure AQ-MM-1: Implement a Fugitive Dust Control Plan

The project applicant will develop and implement a Fugitive Dust Control Plan to reduce fugitive dust and particulate matter generated during construction of the proposed action. The plan must include the following information:

- Name(s), address(es), and phone number(s) of person(s) responsible for the preparation, submission, and implementation of the plan.
- Description and location of construction activities.
- Listing of all fugitive dust emissions sources.

The following BMPs may be incorporated into the plan.

- Water will be applied by means of truck(s), hoses, and/or sprinklers as needed prior to any land clearing or earth movement to minimize dust emissions.
- Haul vehicles transporting soil into or out of the property will be covered.
- Water will be applied to disturbed areas a minimum of two times per day or more as necessary.
- A publicly visible sign will be posted with the telephone number and person to contact regarding dust complaints. This person will respond and take corrective action within 24 hours. The telephone number of the local air district will also be included and visible on the sign.
- All excavation, grading, and/or earth-moving activities will be suspended when average wind speeds exceed 25 miles per hour.
- All visibly dry disturbed soil surface areas of operation will be treated with a dust palliative agent and/or watered to minimize dust emissions.
- Existing roads and streets adjacent to the proposed action will be cleaned at least once per day unless conditions warrant a greater frequency.
- Unpaved roads will be graveled to reduce dust emissions, to the extent feasible.
- On-site vehicles will be limited to a speed of 15 miles per hour on unpaved roads.
- Haul roads will be sprayed down at the end of the work shift to form a thin crust. This application of water will be in addition to the minimum rate of application.

- Construction workers will park in designated parking areas(s) to help reduce dust emissions.

Mitigation Measure AQ-MM-2: Implement an Exhaust Reduction Plan

The project applicant will develop and implement an Exhaust Reduction Plan to reduce equipment and vehicle exhaust emissions during construction of the proposed action. The plan must include the following requirements:

- All construction-type equipment will be maintained according to manufacturer's specifications.
- Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure, codified in CCR Title 13, Section 2485).
- During all activities, diesel-fueled portable equipment with maximum power greater than 25 horsepower will be registered under CARB's Statewide Portable Equipment Registration Program.
- All fleets of diesel-fueled off-road vehicles and equipment will comply with emissions standards and requirements pursuant to CCR Title 13, Section 2449. To the extent feasible, operate off-road construction vehicles and equipment with engines certified to the Tier 3 or higher emissions standards. If off-road construction vehicles and equipment with engines that meet Tier 3 or 4 standards is not available, the best available emissions control technology will be used.
- All diesel-fueled on-road trucks will be operated in compliance with the emission standards per CCR Title 13, Section 2025. To the extent feasible, operate on-road trucks with engines certified to the 2012 model year or newer heavy-duty diesel engine emissions standards.
- To the extent feasible, electric equipment will be operated.
- Alternatively fueled equipment will be used, to the extent feasible, such as compressed natural gas, liquefied natural gas, propane, or biodiesel.
- Electricity used to power facilities and equipment will be generated by renewable energy sources with state-of-the-art emissions control systems, to the extent feasible.

5.4 Water Resources

The following mitigation measure would be implemented to reduce or avoid adverse effects on hydrology and water resources.

Mitigation Measure WR-MM-1: Implement a Spill Prevention, Control, and Countermeasure Plan

The Authority or its contractor will develop and implement a SPCCP to minimize the potential for and effects from spills of hazardous, toxic, and petroleum substances during construction and operation activities. The SPCCP will be completed before any construction activities begin. Implementation of this measure will comply with state and federal water quality regulations. The SPCCP will describe spill sources and spill pathways in addition to the actions that will be

taken in the event of a spill (e.g., an oil spill from engine refueling will be cleaned up immediately with oil absorbents) or the exposure of an undocumented hazard. The SPCCP will outline descriptions of containment facilities and practices such as double-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures, and spill response kits. It will also describe how and when employees are trained in proper handling procedure and spill prevention and response procedures.

The Authority will review and approve the SPCCP before onset of construction activities and routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. The Authority will notify its contractors immediately if there is a noncompliance issue and will require compliance.

If a spill is reportable, the contractor's superintendent will notify the Authority, and the Authority will take action to contact the appropriate safety and cleanup crews to ensure that the SPCCP is followed. A written description of reportable releases must be submitted to CVRWQCB and DTSC. This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form.

Mitigation Measure WR-MM-2: Prepare a No-Rise Certificate

An engineered No-Rise certificate completed to FEMA standards will be prepared prior to any excavation work being done in the 100 year flood plain

Mitigation Measure WR-MM-3: Complete a Wetland Delineation

A complete delineation of any potential wetlands in the APE will be completed by a qualified wetland expert. No construction in any wetland will be allowed that will result in the permanent loss of wetlands as restricted by the ConAct.

5.5 Biological Resources

Implementation of the following mitigation measures would reduce the impacts on biological resources to not adverse.

Mitigation Measure BIO-MM-1: Conduct Mandatory Biological Resources Awareness Training for All Project Personnel and Implement General Requirements

No less than 14 days prior to construction, the Authority will submit a request for USFWS approval of the project biologists. The request will include education and experience related to VELB, giant gartersnake, and California red-legged frog if present in disturbance areas. Before any ground-disturbing work (including vegetation clearing, grading, and equipment staging) occurs in the RSA, a USFWS-approved biologist will conduct a mandatory biological resources awareness training for all construction personnel about sensitive biological resources (e.g., nesting birds, VELB, giant gartersnake, and California red-legged frog, if present in disturbance areas). The training will cover the natural history, appearance (using representative photographs), and legal status of species, regulatory protections, penalties for non-compliance, benefits of compliance, as well as the avoidance and minimization measures to be implemented.

Participants will be required to sign a form that states they have received and understand the training. The Authority will maintain this with the project records and make it available to agencies, upon request. If new construction personnel are added to the proposed action, the contractor will ensure that the new personnel receive the mandatory training before starting work.

The Authority or its contractor will clearly delineate the construction limits through the use of survey tape, pin flags, ~~orange barrier fencing~~flagged stanchion fencing, or other means, and prohibit any construction-related traffic outside these boundaries. Requirements that will be followed by construction personnel are listed below.

- Construction vehicles will observe the posted speed limit on hard-surfaced roads and a 10-mile-per-hour speed limit on unpaved roads during travel in the construction area.
- Construction vehicles and equipment will restrict off-road travel to the designated construction areas.
- Construction vehicles and equipment left on-site overnight will be thoroughly inspected each day for frogs and snakes (both underneath the vehicle and in open cabs) before they are moved.
- All food-related trash will be disposed of in closed containers and removed from the construction area daily during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the construction site.
- No pets or firearms will be allowed in the construction area.
- To avoid entrapment of wildlife, all excavated steep-walled holes or trenches more than 1 foot deep will either be properly covered or provided with ~~one or more~~ escape ramps constructed of earth fill at a 3:1 slope at one end of the trench ~~or wooden planks~~ at the end of each workday. If left open overnight, the hole or trench will be inspected by a USFWS-approved biologist prior to it being backfilled.
- The Authority will ensure that all construction equipment is maintained to prevent leaks of fuels, lubricants, or other fluids. To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment within 300 feet of potentially suitable California red-legged frog or giant garter snake aquatic habitat.

The Authority will designate a project representative as the contact for any employee or contractor who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped. The representative will be identified during the environmental awareness program. If a special-status species is found dead, injured, or entrapped in the project area, the project representaive will immediately notify the Authority, who will provide notification to the USFWS Sacramento Endangered Species Office and/or the local CDFW warden or biologist within 3 working days. Notification will include the date, time, and location of the incident or of the finding of the dead or injured animal and any other pertinent information. The USFWS contact is the Sacramento Valley Division of the Sacramento Fish and Wildlife Office, (916) 414-6631.

Mitigation Measure BIO-MM-2: Retain a Biological Monitor

The Authority will retain a USFWS-approved biologist to monitor construction activities adjacent to sensitive biological resources (e.g., elderberry shrubs, California red-legged frog and giant gartersnake habitat, and active nests, if present). No less than 14 days prior to construction, the Authority will submit a request for USFWS approval of the project biologists. The request will include education and experience related to California red-legged frog, giant gartersnake and VELB. Once approved, the biologist will assist the construction crew, as needed, to comply with all proposed action implementation restrictions and guidelines. In addition, the biologist will be responsible for ensuring that the Authority or its contractors maintain the construction barrier flagging or fencing adjacent to sensitive biological resources, including elderberry shrubs. The frequency of monitoring will vary depending on the biological resources that are present and will be determined by the biologist in coordination with USFWS. Buffer-area ~~fences~~ flagging around elderberry shrubs will be monitored weekly during ground-disturbing activities. A full-time monitor may be required for activities conducted in California red-legged frog and giant gartersnake habitat. The frequency of nest monitoring will depend on several factors, including the species present, the size of the buffer area between the nest and the construction activity, the level of noise or construction disturbance, and the line-of-sight between the nest and the disturbance.

Mitigation Measure BIO-MM-3: Conduct a Focused Survey for Elderberry Shrubs within 50 Meters of the Project Footprint

A USFWS-approved biologist will conduct a preconstruction survey for elderberry shrubs, host plant for the VELB, within 50 meters of the construction limits. All elderberry shrubs will be mapped and identified for avoidance with flagging, pin flags, or flagged stanchion ~~or~~ fencing.

Mitigation Measure BIO-MM-4: Implement Measures to Protect VELB and Its Habitat

All construction and staging areas for the proposed action will be located at least 50 meters away from elderberry shrubs. ~~If a staging area or other construction related activity must occur within 50 meters of an elderberry shrub, the shrub~~Shrubs will be ~~fenced~~ flagged and monitored during construction. ~~Orange construction barrier fencing will be placed at the edge of the respective buffer areas. For activities that could kill an elderberry shrub such as trenching or excavation, fencing will be placed 20 feet from the dripline of the shrub. For non-ground-disturbing activities, fencing will be placed at the dripline of the shrub.~~ No construction activities will be permitted in the 50 meter buffer zone other than those activities necessary to erect the ~~fencing~~pin flags or flagging. Signs will be posted along ~~fencing~~ the flagging for the duration of construction and will contain the following information.

> This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.

Buffer area ~~fences~~ flagging around elderberry shrubs will be inspected weekly by a USFWS-approved biological monitor until construction is complete or until the ~~fences~~ flags are removed, as approved by the biological monitor and the resident engineer. The biological monitor will be responsible for ensuring that the contractor maintains the buffer areas ~~fences~~ around elderberry shrubs throughout construction. The biological monitor will also monitor the condition of the shrub, including the presence of dust. Any shrubs ~~inside the 50-meter buffer~~

~~area~~ that become stressed or die will be reported to USFWS. Biological inspection reports will be available to the project lead and USFWS.

The Authority and its contractors will ensure that the project area will be watered down as necessary to prevent dust from becoming airborne and accumulating on elderberry shrubs adjacent to the construction limits.

Mitigation Measure BIO-MM-5: Conduct a Site Assessment and Field Surveys for California Red-Legged Frog

A site assessment and field surveys (presence/absence surveys) will be conducted prior to construction using the methods described in the Revised Guidance on Site Assessments and Field Surveys for the Red-Legged Frog (USFWS 2015). Site assessments and field surveys will be conducted by a USFWS-approved biologist. Survey results are typically considered valid for two years. If California red-legged frogs are detected during surveys, the Authority will minimize and offset effects with Mitigation Measures BIO-MM-6 through BIO-MM-~~12~~11. If USFWS issues a formal biological opinion or a technical assistance letter, the USFWS measures will be implemented instead.

Mitigation Measure BIO-MM-6: Conduct Preconstruction Surveys and Monitoring for California Red-Legged Frog

A USFWS-approved biologist will conduct a preconstruction survey for California red-legged frog within twenty-four hours of initial ground disturbing activities. The survey will consist of walking the project limits and within the project site to ascertain the possible presence of the species within potentially suitable aquatic and upland and dispersal habitat. The USFWS-approved biologist will investigate all potential areas that could be used by the California red-legged frog for feeding, breeding, sheltering, movement, and other essential behaviors. This includes an adequate examination of mammal burrows, such as California ground squirrels or gophers. If any adults, subadults, juveniles, tadpoles, or eggs are found, the USFWS -approved biologist will contact the Service to determine if moving any of the individuals is appropriate. In making this determination the Service will consider if an appropriate relocation site exists. Only biologists with a 10(a)1(A) permit to handle the species will relocate California red-legged frog. If the Service approves moving animals, the Authority will ensure the ~~USFWS-approved~~permitted biologist is given sufficient time to move the animals from the work site before ground disturbance is initiated. ~~Only USFWS-approved biologists will capture, handle, and monitor the California red-legged frog.~~

A USFWS-approved biologist will be on-site during all ground-disturbing activities within suitable California red-legged frog habitat to monitor construction activities and ensure that conservation measures are being implemented properly. For any work occuring within California red-legged frog habitat, the USFWS-approved biologist will search ~~along exclusion fences,~~ in pipes, and beneath vehicles before they are moved. The survey will include a careful inspection of all potential hiding spots, such as ~~along exclusion fencing,~~ large downed woody debris, and the perimeter of ~~ponds~~the reservoir, wetlands, and riparian areas. Any California red-legged frogs found will be captured and relocated to suitable habitat (by a biologist with a federal 10(a)1(A) permit), a minimum of 300 feet outside of the work area that has been identified in the relocation plan (described below under Mitigation Measure BIO-MM-~~10~~09). The biological monitor will prepare daily monitoring logs that include a description of construction activities; areas surveyed and monitored; communication with construction personnel, the

Authority, and wildlife agencies; noncompliance issues and resolutions; and a list of all wildlife species observed during monitoring activities. The biological monitor will also record all observations of federally and state-listed species on CNDDB field sheets and submit to CDFW.~~and approved by a USFWS-approved biologist prior to commencement of construction.~~

Mitigation Measure BIO-MM-7: Initiate Ground-Disturbing Activities within California Red-Legged Frog Upland and Dispersal Habitat During the Dry Season or Conduct Daily Monitoring

Initial ground-disturbing activities within California red-legged frog habitat will be conducted ~~during the dry season~~between ~~(~~April 1 ~~to~~ and October 31~~)~~ in order to avoid the time period when California red-legged frogs are most likely to be moving through upland areas. Once the initial ground disturbance has occurred~~,~~ and the area has been cleared, ~~and exclusionary fencing is in place,~~ work within the disturbed area can occur outside the construction window. ~~If ground-disturbing activities must be initiated between November 1 and March 31, the Authority will ensure that daily monitoring is conducted for California red-legged frog by the USFWS-approved biologist.~~

~~**Mitigation Measure BIO-MM-8: Install and Maintain Exclusion Fencing around Suitable California Red-Legged Frog Habitat**~~

~~The construction specifications will require that the Authority or its contractor retain a USFWS-approved biologist to identify the suitable California red-legged frog aquatic and upland habitat within or adjacent to the construction limits. To reduce the likelihood of frogs entering the construction area, the Authority or its contractor will install exclusion fencing to the extent practicable along the portions of the construction area within 300 feet of suitable aquatic habitat as determined by the USFWS-approved biologist. Preconstruction surveys will be conducted prior to fence installation.~~

~~The exclusion fencing will consist of 3-foot-tall silt fencing buried 4–6 inches below ground level. The exclusion fencing will ensure that California red-legged frog are excluded from the construction area and that suitable aquatic habitat is protected throughout construction. The fencing requirements will be included in the construction specifications, and a USFWS-approved biological monitor will be on-site to direct and monitor exclusion fence installation.~~

~~The biological monitor will be responsible for checking the exclusion fences around the work areas daily to ensure that they are intact and upright. This will be especially critical during rain events, when flowing water can easily dislodge the fencing. Any necessary repairs will be immediately addressed. The amphibian exclusion fencing will remain in place for the duration of construction.~~

~~If the exclusion fence is found to be compromised at any time, a survey will be conducted immediately preceding construction activity that occurs in suitable California red-legged frog habitat or in advance of any activity that may result in take of the species.~~

Mitigation Measure BIO-MM-~~9~~8: Minimize Potential Effects on California Red-Legged Frog and Its Habitat

- To minimize harassment, injury death, and harm in the form of temporary habitat disturbances, all vehicle traffic related to the proposed action will be restricted to established roads, construction areas, equipment staging, and storage, parking, and

stockpile areas. These areas will be included in pre-construction surveys and, to the maximum extent possible, established in locations disturbed by previous activities to prevent further adverse effects.

- Restoration and re-vegetation work for temporary effects will be implemented using native California plant species collected on-site or from local sources (i.e., local ecotype). Native or non-native plant species and material from non-local sources will be utilized only with prior written authorization from the Service. All topsoil from natural lands will be removed, cached, and returned to the site according to Service-approved restoration protocols.
- Loss of soil from runoff or erosion will be prevented with straw bales, straw wattles, or similar means provided they do not entangle, block escape or dispersal routes of the California red-legged frog.
- Insecticides or herbicides will not be applied at the worksite during construction or long-term operational maintenance where there is the potential for these chemical agents to enter creeks, streams, waterbodies, or uplands that contain potential habitat for the California red-legged frog.
- For onsite storage of pipes, conduits and other materials that could provide shelter for California red-legged frogs, an open-top trailer will be used to elevate the materials above ground. This is intended to reduce the potential for animals to climb into the conduits and other materials.
- Plastic monofilament netting (erosion control matting), loosely woven netting, or similar material in any form will not be used at the worksite because California red-legged frogs can become entangled and trapped in such materials. Any such material found on site will be immediately removed by the USFWS-approved biologist or construction personnel. Materials utilizing fixed weaves (strands cannot move), polypropylene, polymer or other synthetic materials will not be used.
- Dust control measures will be implemented during construction, or when necessary in the opinion of the USFWS-approved biologist, USFWS, or their authorized agent. These measures will consist of regular truck watering of construction access areas and disturbed soil areas with water or organic soil stabilizers to minimize airborne dust and soil particles generated from graded areas. Regular truck watering will be a requirement of the construction contract. Guidelines for truck watering will be established to avoid any excessive runoff that may flow into contiguous or adjacent areas containing potential habitat for the California red-legged frog.
- Trenches or pits one (1) foot or deeper that are going to be left unfilled for more than forty eight (48) hours will be securely covered with boards or other material to prevent the California red-legged frog from falling into them. If this is not possible, the Authority will create a 3:1 earthen ramp at one end of the trench or ensure wooden ramps or other structures of suitable surface that provide adequate footing for the California red-legged frog are placed in the trench or pit to allow for their unaided escape. Auger holes or fence post holes that are greater than 0.10 inch in diameter will be immediately filled or securely covered so they do not become pitfall traps for the California red-legged frog. The USFWS-approved biologist will inspect the trenches, pits, or holes prior to their being filled to ensure there are no California red-legged frogs in them. The trench, pit, or hole also will be examined by the USFWS-approved biologist each workday morning at least one hour prior

to initiation of work and in the late afternoon no more than one hour after work has ceased to ascertain whether any individuals have become trapped. If the escape ramps fail to allow the animal to escape, the biologist will remove and transport it to a safe location, or contact the USFWS for guidance.

- Surface-disturbing activities will be designed to minimize or eliminate effects on rodent burrows that may provide suitable cover habitat for California red-legged frog. Surface disturbing activities will avoid areas with a high concentration of burrows to the greatest extent practicable. In addition, when a concentration of burrows is present in a worksite, the area will be staked or flagged by the USFWS-approved biologist to ensure that work crews are aware of their location and to facilitate avoidance of the area.
- No construction activities will occur during rain events or within 24-hours following a rain event, prior to clearing a site ~~and installing exclusionary fencing~~. An approved biologist will ~~check the exclusion fencing daily to ensure it is intact, and if there are any breaches in the fencing, the approved biologist will~~ survey the work area for California red-legged frogs. If the species is found, the ~~USFWS-approved~~ biologist with a federal 10(a)1(A) permit will relocate the frog consistent with an approved relocation plan.
- Any California red-legged frog adults or metamorphs found will be captured and held by a biologist with a federal 10(a)1(A) permit for a minimum amount of time necessary to relocate the animal to suitable habitat a minimum of 300 feet outside of the work area. Prior to and after handling frogs, the biologist will observe the appropriate decontamination procedures to ensure against spread of chytrid fungus or other pathogens.

Mitigation Measure BIO-MM-~~10~~9: Prepare and Implement a California Red-Legged Frog Relocation Plan

At least 15 days prior to any ground disturbance activities, the Authority will prepare and submit a relocation plan for USFWS's written approval. The relocation plan will contain the name(s) of the USFWS-approved biologist(s) that hold a 10(a)1(A) permit for the species to relocate California red-legged frogs, the method of relocation (if different than described), a map, and a description of the proposed release site(s) within 300 feet of the work area or at a distance otherwise agreed to by USFWS, and written permission from the landowner to use their land as a relocation site.

Each encounter with the California red-legged frog will be treated on a case-by-case basis in coordination with the USFWS, but the procedure will follow the pre-approved Relocation Plan and will be conducted is as follows: (1) the animal will not be disturbed if it is not in danger; or (2) the animal will be moved to a secure location if it is in any danger. These procedures are further described below:

- If California red-legged frogs are encountered, all activities that have the potential to result in the harassment, injury, or death of an individual will cease immediately and the designated Project Representative and USFWS-approved biologist will be notified. The USFWS-approved biologist will then assess the situation and select a course of action to avoid or minimize adverse effects to the animal. To the maximum extent possible, contact with the frog will be avoided and the applicant will allow it to move out of the potentially hazardous situation to a secure location on its own volition. This measure does not apply to animals that are uncovered or otherwise exposed or in areas where there is not sufficient

adjacent habitat to support the species should the individual move away from the hazardous location.

- California red-legged frogs that are at risk of being injured or killed will be relocated and released by the ~~USFWS-approved~~ biologist that holds a 10(a)1(A) permit for the species outside the construction area within the same riparian area or watershed. If such relocation is not feasible (e.g., there are too many individuals observed per day), the ~~USFWS-approved~~permitted biologist will relocate the animals to a location previously approved by USFWS. Prior to the initial ground disturbance, the Authority will obtain approval of the relocation plan from the USFWS in the event that a California red-legged frog is encountered and needs to be moved away from the worksite. Under no circumstances will a California red-legged frog be released on a site unless the written permission of the landowner has been obtained.
- The ~~USFWS-approved~~permitted biologist will limit the duration of the handling and captivity of the California red-legged frog to the minimum amount of time necessary to complete the task. If the animal must be held in captivity, it will be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge. The container used for holding or transporting the individual will not contain any standing water.

The USFWS will be immediately notified once the California red-legged frog and the site is secure.

Mitigation Measure BIO-MM-~~11~~10: Restore Temporarily Disturbed California-Red Legged Frog Habitat to Pre-Action Conditions

Upon completion of the proposed action, the Authority or its contractor will restore temporarily disturbed habitat for California red-legged frog to pre-action conditions. Restoration of vegetation and annual grassland will be detailed in a mitigation and monitoring plan that will be submitted for review and approval by the Authority and USFWS prior to the start of construction.

Mitigation Measure BIO-MM-~~12~~11: Compensate for Permanent Loss of California Red-Legged Frog Habitat

The Authority will offset permanent habitat loss consistent with the Section 7 biological opinion if USFWS determines that the project is likely to adversely affect the species.

~~**Mitigation Measure BIO-MM-13: Install and Maintain Exclusion Fencing around Suitable Giant Gartersnake Habitat**~~

~~The construction specifications will require that the Authority or its contractor retain a USFWS-approved biologist to identify the suitable giant gartersnake aquatic and upland habitat to be avoided during construction. To reduce the likelihood of giant gartersnakes entering the construction area, the Authority or its contractor will install exclusion fencing to the extent practicable along the portions of the construction area that are within 200 feet of suitable aquatic habitat and provide suitable upland habitat, as determined by the approved biologist. The exclusion fencing will be installed during the active period for giant gartersnakes (May 1–October 1) to reduce the potential for injury and mortality during this activity.~~

~~The exclusion fencing will consist of 3-foot-tall silt fencing buried 4–6 inches below ground level. The exclusion fencing will ensure that giant gartersnakes are excluded from the construction area and that suitable upland and aquatic habitat is protected throughout construction. The fencing requirements will be included in the construction specifications, and a USFWS-approved biological monitor will be on-site to direct and monitor exclusion fence installation.~~

~~Exclusion fences will be inspected daily by a USFWS-approved biological monitor during ground-disturbing activities and weekly after ground-disturbing activities until construction is complete or until the fences are removed, as approved by the biological monitor. The biological monitor will be responsible for ensuring that the contractor maintains the protective fencing around giant gartersnake habitat throughout construction. Weekly monitoring summary reports will be provided to the project lead and USFWS, as necessary.~~

Mitigation Measure BIO-MM-~~14~~12: Minimize Potential Effects on Giant Gartersnake Habitat

The Authority will implement the following measures to minimize potential effects on giant gartersnake habitat.

- Staging areas and stockpile areas will be located more than 200 feet from suitable giant gartersnake aquatic habitat (as determined by the approved biologist)~~ or will be fenced with exclusion fencing prior to the start of construction and between May 1 and October 1~~.
- The movement of heavy equipment within 200 feet of the banks of suitable giant gartersnake aquatic habitat will be confined to existing access roads to minimize habitat disturbance.

Mitigation Measure BIO-MM-~~15~~13: Restore Temporarily Disturbed Aquatic and Upland Habitat to Pre-Action Conditions

Upon completion of the proposed action, the Authority or its contractor will restore temporarily disturbed habitat for giant gartersnake to pre-action conditions. Restoration of aquatic vegetation and annual grassland will be detailed in a mitigation and monitoring plan that will be submitted for review and approval by the Authority and USFWS prior to the start of construction. Habitat will be restored within one season (defined as May 1–October 1).

Mitigation Measure BIO-MM-~~16~~14: Compensate for Permanent Loss of Giant Gartersnake Habitat

The Authority will compensate for the permanent loss of suitable aquatic habitat and upland habitat for giant gartersnake by purchasing preservation credits at a USFWS-approved conservation bank. The habitat at the conservation bank will be protected in perpetuity for giant gartersnake. Prior to the start of construction, the Authority will provide funding to the mitigation bank for preservation credits. The transaction will take place through a purchase and sale agreement. Funds must be transferred within 30 days, and before any construction activities are initiated. The Authority will provide USFWS with copies of the credit sale agreement and fund transfer.

Mitigation Measure BIO-MM-~~17~~15: Conduct Preconstruction Surveys and Monitoring for Giant Gartersnake

Prior to ground-disturbing activities within suitable giant gartersnake aquatic and upland habitat (ruderal, grassland, or not actively farmed or developed areas within 200 feet of suitable aquatic habitat), a USFWS-approved biologist will conduct a preconstruction survey for giant gartersnake ~~and inspect construction exclusion fencing to ensure it is intact~~ at the beginning of each work day. A USFWS-approved biologist will be on-site during all ground-disturbing activities within suitable aquatic habitat to monitor construction activities and ensure that giant gartersnake protection measures are being implemented properly. If any snakes are observed within the construction area during construction, the biological monitor will be notified immediately so that they can make a positive identification of the snake. If practical, photographs will be taken of any snake found dead or alive in the construction area. If a giant gartersnake is found within the construction area, all project personnel including the biological monitor will have the authority to stop construction activities until appropriate corrective measures have been completed or it is determined that the snake will not be harmed. Giant gartersnakes encountered during construction activities will be allowed to move away from construction activities on their own. If unable to move away on their own, trapped or injured giant gartersnakes will only be removed by a ~~USFWS-approved~~ biologist that holds a 10(a)1(A) permit to~~authorized to~~ conduct relocation activities for the species.

The biological monitor will prepare daily monitoring logs that include a description of construction activities; areas surveyed and monitored; communication with construction personnel, the Authority, and wildlife agencies; noncompliance issues and resolutions; and a list of all wildlife species observed during monitoring activities. The biological monitor will also record all observations of federally and state-listed species on CNDDB field sheets and submit to CDFW.

Mitigation Measure BIO-MM-~~18~~16: Minimize Potential Effects of Dewatering on Giant Gartersnake

The Authority will implement the following measures to minimize potential effects of dewatering channels for trench excavation on giant gartersnake.

- All channels will be inspected for the presence of giant gartersnakes by the approved biologist immediately prior to dewatering. The approved biologist will monitor the dewatering activity until the biologist determines that monitoring is no longer needed (e.g., once the channel is fully dewatered ~~and once exclusion fencing has been installed~~).
- If pumps are required for dewatering, intake screens will be placed on pumps to prevent injury or mortality of snakes.
- Channels within work areas will be sufficiently dry (no standing water) prior to excavating or filling of the dewatered habitat. If the channels within work areas are not fully drained prior to construction, the approved biologist will ~~inspect the exclusion fencing and~~ survey the work area for snakes each morning prior to construction in the area.

Mitigation Measure BIO-MM-~~19~~17: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys

To avoid and minimize effects on nesting special-status and non–special-status migratory birds and raptors, the Authority will implement the appropriate surveys and restrictions.

- To avoid removing or disturbing any active Swainson's hawk nests, other special-status birds' nests, or non-special-status migratory bird nests, tree and shrub removal will be conducted during the nonbreeding season (generally between September 1 and January 31) or after a qualified biologist determines that fledglings have left an active nest. If this is not feasible, it is likely that there will be nesting birds in the project area, which will require a buffer and avoidance during construction until the birds have fledged.
- If construction or vegetation removal will occur during the breeding season (February 1 through August 31), a qualified wildlife biologist with knowledge of the species to be surveyed will be retained to conduct surveys for nesting birds for all trees and shrubs and ground-nesting habitat (including ruderal areas along the borders of canals and agricultural fields and annual grassland) located within 250 feet (0.25 mile for Swainson's hawk) of construction activities.
- The following focused nesting surveys will take place prior to the start of construction and in the appropriate habitat.
    - Swainson's hawk surveys will rely on the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000), with appropriate modifications based on annual differences in site conditions and the timing of Swainson's hawk arrival and nesting. The guidelines recommend that surveys be completed for at least the two survey periods immediately prior to a project's initiation. The survey dates may be adjusted depending on when birds return to the area. The survey periods include Period I: January–March 20, consisting of one survey to identify potential nest sites; Period II: March 20–April 5, consisting of three surveys to identify nesting territories; Period III: April 5–April 20, consisting of three surveys when active nest locations are most easily identified; Period IV: April 21–June 10, only surveys of known nest sites are recommended during this period when birds are laying and incubating eggs; and Period V: Jun 10–July 30, consisting of surveys to observe post-fledging success at the nests. At least one survey will be conducted no more than 48 hours prior to the start of construction to confirm the presence or absence of active nests.
    - A preconstruction survey for burrowing owl will be completed, in accordance with CDFW guidelines described in the 2012 *Staff Report on Burrowing Owl Mitigation*, prior to the start of construction (CDFG 2012). The appropriate survey area will be determined by a qualified biologist coordinating with the Authority to cover any project areas where potentially breeding or non-breeding burrowing owls could be disturbed by project activities. Surveys will be conducted during the nonbreeding season (September 1 through January 31) and breeding season (February 1 through August 31). Surveys will be conducted from 2 hours before sunset to 1 hour after, or from 1 hour before or 2 hours after sunrise. At least one survey will occur within 48 hours of the start of construction.

- Other nesting bird surveys (within 250 feet of construction activities) can be conducted concurrent with Swainson's hawk surveys with at least one survey to be conducted no more than 48 hours from the initiation of project activities to confirm the presence or absence of active nests.

- If the biologist determines that the area surveyed does not contain any active bird or raptor (including Swainson's hawk) nests, construction activities, including removal or pruning of trees and shrubs, can commence without any further mitigation.
- If an active bird or raptor nest is located in the proposed disturbance area, the wildlife biologist will establish a suitable buffer zone. A qualified wildlife biologist will monitor all active nests to determine when the young have fledged and submit the final results in a report to the project lead and USFWS. The biological monitor will have the Authority to cease construction if there is any sign of distress to any raptor or migratory bird. Reference to this requirement and the MBTA will be included in the construction specifications.

Mitigation Measure BIO-MM-~~20~~18: Install Barrier Fencing around Sensitive Resource Areas

To clearly demarcate the project boundary and protect sensitive natural communities, the Authority or its contractor will install pin flags, flagging, or flagged stanchion fencing~~temporary barrier fencing~~ around sensitive habitat areas (e.g., riparian, active bird nests, special-status plant species) adjacent to the construction area, including staging and access roads. Before construction, the contractor will work with the USFWS-approved biologist to identify the locations for the barrier ~~fencing~~ and will place flags or flagging around the areas to be protected to indicate the locations of the ~~barrier fences~~flags or flagged stanchion fencing. The location of the barrier ~~fencing~~ and sensitive habitat areas will be clearly identified on the construction drawings. The ~~fencing~~ pin flags, flagging, or flagged stanchion fencing will be installed the maximum distance practicable from the aquatic habitat areas and will be in place before construction activities (including any vegetation removal or equipment staging) are initiated. ~~Barrier fencing, which is separate from giant gartersnake exclusion fencing, will consist of 4-foot-tall, high-visibility orange construction fencing. To prevent snakes and other ground-dwelling animals from being caught in the orange construction fencing, it will be placed so that there is a 1-foot gap between the ground and the bottom of the orange construction fencing.~~ The Authority will ensure that the ~~temporary~~ pin flags, flagging, or flagged stanchion fencing is continuously maintained until all construction activities are completed and that construction equipment is confined to the designated work areas. Additional areas of silt fencing to prevent sediment from entering canals and riparian areas will be installed where appropriate. The flagging, barrier, and silt fencing will be removed only after construction is completed.

Signage will be placed on the flagging or ~~barrier~~flagged stanchion fencing that will explain the nature of the sensitive resource and warn that no effect on the resource is allowed. The flagging or flagged stanchion fencing will include a buffer zone of at least 20 feet between the resource and construction activities, where feasible. All flagging, barrier, and silt fencing will be maintained in good condition throughout the construction period. The proposed action's special provisions package will provide clear language regarding acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the exclusion zone.

Mitigation Measure BIO-MM-~~21~~19: Avoid and Minimize Spread or Introduction of Invasive Plant Species

A qualified biologist will conduct a survey for invasive plant species with a Cal-IPC rating of High or Moderate. Locations where large infestations of these species are identified will be flagged with pin flags for avoidance. If the invasive plant species cannot be avoided, the biologist will determine the best course of action to avoiding spreading the species throughout the RSA. The qualified biologist will include the results of the surveys in the Worker Awareness Training for Construction Personnel.

In addition, the Authority or its contractor will implement one or more of the following actions to avoid and minimize the spread or introduction of invasive plant species. The Authority will coordinate with the Colusa County Agriculture Commissioner to ensure that the appropriate BMPs are implemented for the duration of the construction of the proposed action.

- Educate construction supervisors and managers about the importance of controlling and preventing the spread of invasive plant infestations.
- Minimize surface disturbance to the greatest extent feasible to complete the work.
- Use native, noninvasive species or non-persistent hybrids in erosion-control plantings to stabilize site conditions and prevent invasive plant species from colonizing.
- Avoid driving vehicles through invasive plant populations, and where necessary, clean mud and debris from vehicles following contact with invasive plant species.
- Use erosion-control materials that are weed-free or contain less than 1 percent weed seed.
- Work with a biologist to avoid the two black mustard patches at the 2-acre spoil placement site on the south side of the MWI pipeline. An alternative solution is to grub and clear the vegetation, and then place black plastic or similar material over the infestation to not spread this invasive weed species.

Mitigation Measure BIO-MM-~~22~~20: Avoid Wetlands During Construction, Operations and Maintenance Activities.

The Authority will retain a qualified biologist to conduct an assessment of affected areas prior to implementation of construction and operations and maintenance activities to ensure ~~the~~ that ~~any~~ all wetlands will be avoided. If it is determined during the assessment that a wetland would be impacted, the Authority will alter the proposed project design to avoid wetlands to comply with the ConAct. ~~If it is determined that wetlands cannot be avoided, the Authority will obtain all relevant permits to allow for construction in wetlands.~~ If construction activities would occur in the same place year after year, this assessment is only required on 5-year intervals to ensure the conditions have not changed, but where new areas are necessary, this assessment will be conducted prior to implementation of the activity. If wetlands are present in or near project activities and can be avoided, the qualified biologist will determine the necessary protection mechanisms (e.g., worker awareness training, exclusion fencing, or biological monitoring).

5.6 Cultural Resources

The following mitigation measure would be implemented to reduce or avoid adverse effects on aesthetics and visual resources.

Mitigation measure CR-MM-1: Comply with National Programmatic Agreement Conditions

The NHPA section 106 process will need to be fully concluded prior to ground disturbing action. The agency invoked the National Programmatic Agreement (NPA) on this project. All terms and conditions of the July 2018 NPA must be complied with prior to construction. The Authority signed the NPA Awareness Certificate on 8/17/2018.

5.7 Aesthetics and Visual Resources

The following mitigation measures would be implemented to reduce or avoid adverse effects on aesthetics and visual resources.

Mitigation Measure AV-MM-1: Paint Structures to Recede into View

Built structures such as the pump station building, bridge, switchyard, pump facility, spillway, creek outlet, the TRR inlet and GCID flow control structure, and ancillary project features such as catwalks, safety guardrails, and land-based signage will be designed to allow these features to blend with the surrounding built and natural environments to complement the visual landscape.

In addition to using neutral colors, close attention will be paid to color selection. At a minimum, new structures will be painted in a shade that is visually cohesive with the general surrounding area. Color selection will be made for the coloring of the most prevalent season. If the color selection is between two or three colors, it is suggested that one of the darker shades be selected. Choosing a darker shade will allow the surface to recede and blend within the visual landscape, whereas lighter colors advance, or are more apparent, within the visual landscape. Therefore, coloring will be slightly darker unless aesthetic design treatments indicate another color selection is appropriate with the intent to specifically improve aesthetics. Refer to the U.S. Department of the Interior Bureau of Land Management's (BLM) *VRM for Fluid Minerals Best Management Practices (June 2007 Edition)* located at https://www.ntc.blm.gov/krc/uploads/52/Notebook%20-VRM%20for%20Fluid%20Minerals%20Video%20%206%208%2007.pdf for more information on color selection techniques and other BMPs and techniques for visual screening. Using this guidance, colors may be chosen from the BLM's Standard Environmental Colors Chart CC-001: June 2008. Employing the use of color panels that are evaluated from key observation points during common lighting conditions (front versus backlighting) will aid in the appropriate color selection. Panels should be a minimum of 3 by 2 feet in dimension and be evaluated from various distances, but within 1,000 feet, to ensure the best possible color selection. The intent is to match the panels to this surrounding coloring and pick a color that best fits.

Paints will be of a dull, flat, or satin finish only. Appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces. The project applicant will maintain the paint color over time.

If any concrete structures or features, such as entrance signs, barriers, or landscape accents are to be located along McDermott Road then such features will receive aesthetic treatments to ensure they enhance views associated with the proposed action. Aesthetic treatments may include mimicking natural material (e.g., stone or rock surfacing) and using integral color to reduce visibility, improve aesthetics, and to ensure that features blend with the landscape rather a utilitarian-looking concrete element.

Mitigation Measure AV-MM-2: Apply Minimum Lighting Standards

All artificial outdoor lighting will be limited to safety and security requirements, designed using Illuminating Engineering Society's design guidelines and in compliance with International Dark-Sky Association approved fixtures. LED lighting will avoid the use of BRWL lamps and use a correlated color temperature that is no higher than 3,000 K (International Dark-Sky Association 2010a, 2010b, 2015). Wherever possible and pragmatic, the lighting designer will select fixtures and lighting control systems that conform to International Dark-Sky Associations Fixture Seal of Approval program. In addition, LED lights will use shielding to ensure nuisance glare and that light spill does not affect sensitive residential viewers.

Lights along perimeter roadways, pathways, and safety lighting at building entrances and loading areas will employ shielding to minimize off-site light spill and glare and be screened and directed away from residences and adjacent uses to the highest degree possible. Nighttime lights along perimeter roadways and pathways will be minimized to the highest degree possible to ensure that spaces are not unnecessarily overlit, while still maintaining minimum adequate lighting to provide necessary visibility for security. For example, the amount of light can be reduced by limiting the amount of light posts to higher-use areas and by using hooded wall mounts on travelways that receive primarily foot traffic.

Technologies to reduce light pollution evolve over time and design measures that are currently available may help but may not be the most effective means of controlling light pollution once the proposed action is designed. Therefore, all design measures used to reduce light pollution will employ the technologies available at the time of project design to allow for the highest potential reduction in light pollution.

5.8 Mitigation Measures Summary and Implementation Schedule

The mitigation measures summarized in the table below correspond to the mitigation measures listed in the Finding of No Significant Impact (FONSI) and the Mitigation Measures Summary and Implementation Schedule for the proposed project. The mitigation measures for Biological Resources have been reorganized in this table to correspond with conservation measures listed in the Biological Opinion issued by USFWS for the proposed project, and are listed as they are shown in the FONSI.

Table 34. Mitigation Measures Summary and Implementation Schedule

Mitigation Measure	Timing	Monitoring Agency(s)	Verification

			(Date & Initial)[c]
LAND USE			
LU-MM-1: Prior to the start of construction, the Authority will work with Colusa County to request modifications or amendments to their general plans and zoning ordinances to ensure consistency with project land uses.	Pre-construction	Sites Project Authority	
GEOLOGY AND PALEONTOLOGICAL RESOURCES			
PALEO-MM-1a: At least 90 days prior to the start of construction, the Authority and USDA will retain a qualified Paleontological Resource Specialist, in addition to Paleontological Resource Monitors to monitor construction activities.	Pre-construction	Sites Project Authority and USDA	
PALEO-MM-1b: At least 30 days prior to the start of and during construction, the Authority will consult with the Paleontological Resource Specialist. The Authority will provide maps or drawings to the Paleontological Resource Specialist that show the planned construction footprint and the locations of ground disturbances affecting paleontologically sensitive sediment.	Pre-construction and during construction	Sites Project Authority and USDA	
PALEO-MM-1c: The Authority will ensure that the Paleontological Resource Specialist prepares a PRMMP, which will be approved prior to ground disturbance. The PRMMP will function as the formal guide for paleontological resources monitoring, collecting, and sampling activities, and as the basis for discussion when on-site decisions or changes are proposed.	Pre-construction	Sites Project Authority and USDA	
PALEO-MM-1d: Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the Paleontological Resource Specialist will prepare, and the Authority will conduct, weekly paleontological resources awareness training for project managers, construction supervisors, forepersons, and general workers involved with or who operate ground-disturbing equipment or tools.	Pre-construction and during construction	Sites Project Authority	

PALEO-MM-1e: During construction, the Authority will ensure that the Paleontological Resource Specialist and Paleontological Resource Monitor(s) monitor construction excavations consistent with the PRMMP in areas where potential fossil-bearing materials have been identified, both at reservoir sites and along any constructed linear facilities associated with the proposed action. The Authority and USDA will ensure that the Paleontological Resource Specialist prepares and submits monthly summaries of monitoring and other paleontological resources management activities.	During construction	Sites Project Authority and USDA	
PALEO-MM-1f: The Authority through the designated Paleontological Resource Specialist, will ensure that all components of the PRMMP are performed during construction.	During construction	Sites Project Authority and USDA	
AIR QUALITY AND CLIMATE VARIABILITY			
AQ-MM-1: The project applicant will develop and implement a Fugitive Dust Control Plan to reduce fugitive dust and particulate matter generated during construction.	Pre-construction	Sites Project Authority	
AQ-MM-2: The project applicant will develop and implement an Exhaust Reduction Plan to reduce equipment and vehicle exhaust emissions during construction of the proposed action.	Pre-construction	Sites Project Authority	
WATER RESOURCES			
WR-MM-1: The Authority or its contractor will develop and implement a SPCCP to minimize the potential for and effects from spills of hazardous, toxic, and petroleum substances during construction and operation activities. The Authority will review and approve the SPCCP before onset of construction activities and routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained.	Pre-construction and during construction	Sites Project Authority and Contractor	
WR-MM-2: An engineered No-Rise certificated completed to FEMA standards will be prepared prior to any excavation work being done in the 100 year flood plain.	Prepared for RD review and approval prior to any excavation work being	Sites Project Authority	

	done in the 100-year flood plain.		
WR-MM-3: Complete delineation of any potential wetlands in the APE will be completed by a qualified wetland expert. No construction in any wetland will be allowed that will result in the permanent loss of wetlands as restricted by the ConAct.	All potential Wetlands will be delineated prior to the start of any construction.	Sites Project Authority	
BIOLOGICAL RESOURCES			
BIO-MM-1: No less than 14 days prior to construction, the Authority will submit a request for USFWS approval of the project biologists. The request will include education and experience related to giant gartersnake, California red-legged frog, and valley elderberry longhorn beetle.	Pre-construction	Sites Project Authority	
BIO-MM-2: Prior to the start of ground-disturbing work (including vegetation clearing, grading, and equipment staging), a USFWS-approved biologist will conduct a mandatory biological resources awareness training for all construction personnel. This training will cover sensitive biological resources. The training will cover the natural history, appearance (using representative photographs), and legal status of species, regulatory protections, penalties for noncompliance, benefits of compliance, as well as the avoidance and minimization measures to be implemented. Participants will be required to sign a form that states they have received and understand the training. The Sites Authority will maintain the record of training and make it available to agencies, upon request. If new construction personnel are added to the proposed action, the contractor will ensure that the new personnel receive the mandatory training before starting work.	Pre-construction	Sites Project Authority and Contractor	
BIO-MM-3: Construction vehicles will observe the posted speed limit on hard-surfaced roads and a 10 mile-per-hour speed limit on unpaved roads during travel in the construction area. Construction vehicles and equipment will restrict off-road travel to the designated construction areas. Construction vehicles and equipment left on-site overnight will be thoroughly inspected each day for snakes	Pre-construction and during construction	Sites Project Authority and Contractor	

(both underneath the vehicle and in open cabs) before they are moved. All construction equipment will be maintained to prevent leaks of fuels, lubricants, or other fluids. To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service or refuel vehicles, construction equipment, or motorized tools within 300 feet of potentially suitable California red-legged frog or giant garter snake aquatic habitat.			
BIO-MM-4: The Authority will follow Service-approved decontamination protocols prior to any staff, equipment, tools, or vehicles enter Project area waters or moist soils associated with waters.	Pre-construction and during construction	USDA	
BIO-MM-5: All food-related trash will be disposed of in closed containers and removed from the construction area daily during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the construction site.	Pre-construction and during construction	Sites Project Authority and Contractor	
BIO-MM-6: No pets or firearms will be allowed in the construction area.	Pre-construction and during construction	Sites Project Authority and Contractor	
BIO-MM-7: A USFWS-approved biologist will conduct a preconstruction survey for elderberry shrubs, host plant for the beetle, within 50 meters of the construction limits. All elderberry shrubs will be mapped and identified for avoidance with flagging or fencing.	Pre-construction	Sites Project Authority	
BIO-MM-8: A site assessment and field surveys for the frog will be conducted prior to the start of Project activities using the methods described in USFWS (2015a). Site assessments and field surveys will be conducted by a USFWS-approved biologist.	Pre-construction	Sites Project Authority	
BIO-MM-9: A Service-approved biologist will conduct surveys for the snake prior to the start of Project activities, following protocols approved by the USFWS.	Pre-construction	Sites Project Authority	
BIO-MM-10: All canals and aquatic areas to be dewatered will be surveyed for the snake by the Service-approved biological monitor immediately prior to dewatering. The biological monitor will oversee the dewatering activity until the channel is fully dewatered.	Pre-construction and during construction	Sites Project Authority and Contractor	

BIO-MM-11: If pumps are required for dewatering, intake screens will be placed on the pump intake to prevent entrainment of snakes.	During construction	Sites Project Authority and Contractor	
BIO-MM-12: An USFWS-approved biologist will be present during all ground-disturbing activities and during any activities involving heavy equipment within 200 feet of potentially suitable Giant garter snake habitat and 300 feet of potentially suitable California red-legged frog habitat. The biological monitor shall permit the frog and snake to move out of the Project area on its own. Should a frog or snake need to be moved, a biologist with a 10(a)(1)(A) permit will trap and relocate the individual to the area designated in the relocation plan for the frog.	During construction	Sites Project Authority	
BIO-MM-13: Should a frog or snake move into the Project area, all personnel including the biological monitor will have the authority to stop construction activities until appropriate corrective measures have been completed or the biological monitor determines that the frog, beetle, or snake will not be harmed. Snakes, beetles, and frogs encountered during construction activities will be allowed to move away on their own.	During construction	Sites Project Authority and Contractor	
BIO-MM-14: To avoid entrapment of wildlife, all steep-walled holes or trenches more than one foot deep will be excavated such that one side will have a 3:1 slope (3 feet horizontal:1 foot vertical). Having one side with a 3:1 slope is anticipated to allow most wildlife that enter or fall in to leave on their own. The biological monitor will inspect any holes or trenches prior to filling.	During construction	Sites Project Authority and Contractor	
BIO-MM-15: All construction and staging areas for the proposed action will be located at least 50 meters away from elderberry shrubs. Signs will be posted along the fencing for the duration of construction indicating the presence of beetle habitat. The biological monitor will be responsible for ensuring the buffer area fences around elderberry shrubs are maintained throughout construction. The biological monitor also will monitor the condition of shrubs (including the	Pre-construction and during construction	Sites Project Authority and Contractor	

presence of dust). Any elderberry shrubs inside the 50-meter buffer area that become stressed or die will be reported to USFWS. Biological inspection reports will be available to the USFWS. Gravel roadways, staging areas, and other applicable areas will be sprayed with water as needed to minimize dust moving onto elderberry shrubs.			
BIO-MM-16: Construction activities will take place no closer than 200 feet from the banks of snake aquatic habitat (Funks Creek and canals that hold water May 1 through October 1). Heavy equipment will be confined to existing roadways when within 200 feet of snake habitat to minimize habitat disturbance. Potential snake habitat within the Project area will be flagged and designated as Environmentally Sensitive Areas. These areas will be avoided by all construction personnel. Construction activity within habitat will be conducted between May 1 and October 1. The Project area will be surveyed for snakes no more than 24 hours prior to the start of construction activities. No exclusionary fencing will be utilized for the snake. A Service-approved biologist will remain on-site during ground-disturbing activities to ensure they do not encroach closer than 200 feet from potentially suitable snake habitat.	During construction During construction Pre-construction During construction	Sites Project Authority and Contractor	
BIO-MM-17: A Service-approved biologist will be present when construction activities occur within 300 feet from the banks of Funk Reservoir and 200 feet from the banks of Funks Creek.	During construction	Sites Project Authority and Contractor	
BIO-MM-18: The Authority will compensate for any permanent impacts (or temporary impacts that extend beyond one season) to snake habitat using the guidelines established in USFWS 1997. Direct impacts to the frog habitat will be compensated by applying a 3:1 ratio (3 acres created: 1 acre lost) for permanent habitat loss.	Post-construction	Sites Project Authority and USDA	

BIO-MM-19: The Sites Authority must ensure compliance with the Terms and Conditions set forth in the Biological Opinion issued by the USFWS dated September 21, 2018.	Pre-construction, during construction and post-construction	Sites Project Authority and USDA	
BIO-MM-20: The Authority will implement the appropriate surveys and restrictions to avoid and minimize effects on nesting special-status and non–special-status migratory birds and raptors.	Pre-construction	Sites Project Authority	
BIO-MM-21: To clearly demarcate the project boundary and protect sensitive natural communities, the Authority or its contractor will install pin flags, flagging, or flagged stanchion fencing around sensitive habitat areas (e.g., riparian, active bird nests, special-status plant species) adjacent to the construction area, including staging and access roads. Before construction, the contractor will work with the USFWS-approved biologist to identify the locations for the flags or flagged stanchion fencing around the areas to be protected.	Pre-construction	Sites Project Authority and Contractor	
BIO-MM-22: The Authority will avoid and minimize the spread or introduction of invasive plant species by having a qualified biologist conduct a survey for invasive plant species with a Cal-IPC rating of High or Moderate. Locations where large infestations of these species are identified will be flagged with pin flags for avoidance. If the invasive plant species cannot be avoided, the biologist will determine the best course of action to avoiding spreading the species throughout the RSA. In addition, BMPs will be implemented during construction to avoid and minimize the spread or introduction of invasive plant species such as worker education, minimization of surface disturbance, vehicle use and management, and use of erosion control.	Pre-construction and during construction	Sites Project Authority and Contractor	
CULTRAL RESOURCES			
CR-MM-01: The NHPA section 106 process will need to be fully concluded prior to ground disturbing action. The agency invoked the National Programmatic Agreement (NPA) on this project. All terms and conditions of the July 2018 NPA must be complied with prior to	Prior to ground disturbance	Sites Project Authority	

construction. The Authority signed the NPA Awareness Certificate on 8/17/2018.			
AESTHETICS AND VISUAL RESOURCES			
AV-MM-1: The Authority will paint built structures to recede into view. Built structures such as the pump station building, bridge, switchyard, pump facility, spillway, creek outlet, the TRR inlet and GCID flow control structure, and ancillary project features such as catwalks, safety guardrails, and land-based signage will be designed to allow these features to blend with the surrounding built and natural environments to complement the visual landscape.	Pre-construction, during construction	Sites Project Authority	
AV-MM-2: The Authority will apply minimum lighting standards. All artificial outdoor lighting will be limited to safety and security requirements, designed using Illuminating Engineering Society's design guidelines and in compliance with International Dark- Sky Association approved fixtures. LED lighting will avoid the use of BRWL lamps and use a correlated color temperature that is no higher than 3,000 K. Wherever possible and pragmatic, the lighting designer will select fixtures and lighting control systems that conform to International Dark-Sky Associations Fixture Seal of Approval program. In addition, LED lights will use shielding to ensure nuisance glare and that light spill does not affect sensitive residential viewers.	Pre-construction, during construction	Sites Project Authority	

Chapter 6
Coordination, Consultation, and Correspondence

The Authority has consulted, or is in the process of consulting, with the federal and state resource management agencies listed below.

- NRCS
- SHPO
- USFWS

The Authority consulted with the NRCS as a step in implementing farmland protection policies specified by the Farmland Protection Policy Act, submitting the LESA Form AD-1006 and supporting documentation to the NRCS on July 16, 2018 (Appendix B). The NRCS provided a response and proposed project scoring on July 17, 2018. The proposed project score was below the threshold for requiring a public notice. The results of the scoring have been incorporated into Section 3.2, *Land Use*, and Form AD-1006 and the supporting documentation are provided in Appendix B. Consultation with the NRCS is considered complete with the receipt of the completed Form AD-1006 and associated score.

USDA intends to implement the USDA NPA and the RECDS PA, as described in Section 3.8, in order to comply with Section 106 of the NHPA. A memorandum serving as notification that application of the USDA NPA will resolve potential adverse effects on cultural resources has been provided to the SHPO (Appendix F). Furthermore, the memorandum requests concurrence from SHPO that the proposed action would have no adverse effects on the GCID Main Canal. Consultation under Section 106 of the NHPA will be complete once concurrence from the SHPO is received.

Section 7 of FESA requires federal agencies, in consultation with USFWS and/or the National Marine Fisheries Service, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. USDA, as the lead agency under NEPA, submitted a biological assessment to USFWS on July 27, 2018, for use in formal consultation under Section 7 of FESA regarding potential effects on giant gartersnake and VELB (Appendix F). USDA and ICF conducted a call with USFWS on August 7th, 2018 to discuss USFWS's recommendation to include the California red-legged frog in the consultation process, and conducted another call on September 7th, 2018 to discuss appropriate conservation measures. A revised Biological Assessment incorporating proposed changes was submitted to USFWS on September 17th, 2018. ~~Consultation will be complete once a~~ A ~~b~~Biological ~~o~~Opinion ~~is~~was issued by USFWS on September 21st, 2018, and the Biological Assessment included in Appendix F was updated to reflect the conservation measures in the Biological Opinion. Also, it was determined that no federally listed fish species would affected by the proposed action, which has been documented in a Memorandum for the Record. The memorandum documents why no endangered or threatened fish species protected under FESA would be affected by the proposed action.

Chapter 7
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Appendix A

Regulatory Setting

Appendix A
Regulatory Setting

The following federal and state regulations apply to the implementation, construction, operation, and maintenance of the proposed action. Local plans and policies are listed for resources which have no applicable federal and state regulations relevant to the proposed action to provide a basis for evaluating potential effects.

A.1 Land Use

A.1.1 Federal

A.1.1.1 Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is implemented by the Natural Resources Conservation Service (NRCS) for the purposes of minimizing the conversion of farmland by federal programs to nonagricultural uses through compatibility with state, local and private programs designed to protect farmland. The FPPA requires federal agencies to examine potential direct and indirect effects on farmland of a proposed action and its alternatives before approving any activity that would convert farmland to nonagricultural use. The U.S. Department of Agriculture (USDA) issues regulations to implement the FPPA.

For the purposes of FPPA, "Important Farmland" includes Prime Farmland, Unique Farmland, and Farmland of Statewide or Local Importance, as defined by Section 1540(c)(1) of the FPPA. Classification standards differ from state to state; each state may set its own criteria for classification in each category. Federal farmland classification criteria may differ from those developed by the California Department of Conservation (DOC). State Farmland subject to FPPA requirements includes forestland, pastureland, cropland, and other land but does not include water or urban built-up land.

The FPPA applies to projects and programs sponsored or financed in whole or in part by the federal government. FPPA implementing regulations identify requirements to ensure that federal programs, to the extent practical, are compatible with state, local, and private programs and policies to protect farmland. The FPPA requires a rating of farmland conversion impacts based on Land Evaluation and Site Assessment (LESA) criteria identified in 7 Code of Federal Regulations [CFR] 658.5. These criteria are addressed through completion of a Farmland Conversion Impact Rating form (NRCS-AD-1006), which requires input from both the federal agency involved and from NRCS.

The FPPA exempts the following land types:

- Lands identified as urban area on U.S. Census Bureau maps
- Areas that do not contain Prime, Unique, Statewide, or Locally Important Farmland
- Lands that receive a combined score of less than 160 points from the LESA criteria

A.1.1.2 Farm and Ranch Lands Protection Program

The Farm and Ranch Lands Protection Program (FRPP) is a volunteer program administered by the NRCS for the purposes of keeping productive farmland in agricultural uses by providing matching funds to state, local or tribal government entities and nonprofit organizations for the purchase of conservation easements. Under the program, participating landowners agree not to convert land to nonagricultural use and retain all rights to use the property for agriculture under conservation easements for a minimum of 30 years. To qualify, farmland or ranch land must meet the following criteria:

- Designated Prime, Unique, or other productive soil;
- Included in a pending offer to be managed under a farmland protection program;
- Privately owned;
- Managed or placed under a conservation plan;
- Sustain agricultural production;
- Accessible to markets for the crop(s) produced; and
- Surrounded by parcels of land that can support long-term agricultural production.

A.1.1.3 Agricultural Conservation Easement Program

The Agricultural Conservation Easement Program, administered by the NRCS, provides financial and technical assistance to help conserve agricultural lands and their related benefits. It comprises two components, the Agricultural Land Easements and the Wetlands Reserve Easements. Under Agricultural Land Easements, NRCS provides financial assistance to eligible partners purchasing agricultural land easements to protect agricultural land use and conservation values of eligible land. Under Wetland Reserve Easements, NRCS provides financial and technical assistance directly to private landowners and Indian tribes to restore, protect, and enhance wetlands through purchase of a wetland reserve easement.

A.1.2 State

A.1.2.1 Williamson Act

The Williamson Act, or the California Land Conservation Act, was adopted in 1965 and is administered and supported by the DOC to encourage preservation of agricultural lands in California and prevent premature conversion of these lands to urban uses. An agricultural preservation contract procedure is applied under the act to preserve the agricultural uses of these lands, preventing their conversion to nonagricultural uses. This contract is self-renewing, although the landowner may cancel the control through cancellation, which is a quicker process that results in a penalty, or through notice of non-renewal or partial non-renewal, which is a process that involves a 9- or 10-year period of tax adjustment to full market value before the land can be converted to urban use. As such, the lands under contract are identified as renewal or non-renewal lands.

A.1.2.2 California Farmland Conservancy Program

The California Farmland Conservancy Program is a statewide grant program administered by the DOC Division of Land Resource Protection to support local efforts to help preserve important

agricultural land resources. This program preserves these agricultural resources through establishment of agricultural easements and planning projects. The California Farmland Conservancy Program was created by the California Farmland Conservancy Program Act of 1995.

A.1.2.3 Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP) is the only statewide agricultural land use inventory conducted on a regular basis. DOC administers the FMMP, under which it maintains an automated map and database system to record changes in agricultural land use.

The FMMP Prime, Statewide, and Unique Farmland categories focus on agricultural land that has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained yields of crops. Farmland of Local Importance can cover a broader range of agricultural uses, and is initially identified by a local advisory committee convened in each county by FMMP in cooperation with the NRCS and the county board of supervisors.

A.2 Geology and Paleontological Resources

A.2.1 Federal

A.2.1.1 Clean Water Act Section 402 (National Pollutant Discharge Elimination System Program)

Clean Water Act (CWA) Section 402 regulates discharges to surface waters through the National Pollutant Discharge Elimination System Program (NPDES) that is administered by the U.S. Environmental Protection Agency (EPA). In California, the State Water Resources Control Board (SWRCB) is authorized by EPA to oversee the NPDES program through the Regional Water Quality Control Boards (RWQCBs). Under the program, a NPDES permit is required for any construction activities that disturb 1 or more acres of land and the potential for discharges into waters of the United States.

A.2.2 State

A.2.2.1 Alquist-Priolo Earthquake Fault Zoning Act

This act requires the State Geologist to provide maps of Earthquake Fault Zones to affected city, county, and state agencies to avoid development of structures for human occupancy across the trace of active faults. The act also facilitates the seismic retrofitting of existing buildings, including historic buildings, against ground shaking.

A.2.2.2 Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 was passed following the Loma Prieta earthquake to reduce threats to public health and safety by identifying and mapping known seismic hazard zones in California. The act directs the California Geological Survey of the DOC to identify and map areas prone to earthquake hazards of liquefaction, earthquake-induced landslides, and amplified ground

shaking. The purpose of the maps is to assist cities and counties in fulfilling their responsibilities for protecting public health and safety.

A.2.2.3 Construction Activities Stormwater General Permit (2010-0014-DWQ Permit)

The SWRCB is the regulatory authority for the NPDES program in California, where it is implemented by the state's nine RWQCBs. Construction activity disturbing 1 acre or more must obtain coverage under the NPDES *General Permit for Storm Water Discharges Associated with Construction and other Land Disturbance Activities*.

The Central Valley Regional Water Quality Control Board (CVRWQCB) administers the NPDES stormwater permit program in Yolo County. Obtaining coverage under the General Permit requires that the project applicant to do the following:

- File a Notice of Intent (NOI) and other permit registration documents to obtain coverage under the General Permit before construction begins.
- Prepare and implement a stormwater pollution prevention plan (SWPPP).
- Conduct inspections, prepare monitoring reports, and possibly conduct water quality monitoring.
- File a notice of termination with the SWRCB when construction is complete and the construction area has been permanently stabilized.

The SWPPP describes proposed construction activities, receiving waters, stormwater discharge locations, and best management practices (BMPs) that will be used to reduce project construction effects on receiving water quality. The components of the SWPPP most relevant to geology and soils are erosion and sediment control measures. More information on the NPDES and SWPPP is provided Section A.4, *Water Resources*.

Dischargers whose actions disturb 1 or more acres of soil, or whose actions disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the General Permit Order 2010-0014-DWQ. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

Coverage under the General Permit is obtained by submitting permit registration documents to the SWRCB that include a risk level assessment and a site-specific SWPPP identifying an effective combination of erosion control, sediment control, and non-stormwater BMPs. The General Permit requires that the SWPPP define a program of regular inspections of the BMPs and, in some cases, sampling of water quality parameters.

A.2.2.4 2010 California Building Standards Code

The California Building Standards Code (CBSC) (24 California Code of Regulations [CCR]) provides the minimum standards for structural design and construction. The CBSC is based on the International Building Code, which is used widely throughout United States (generally adopted on a state-by-state or district-by-district basis) and has been modified for California conditions with numerous, more detailed or more stringent regulations. The CBSC requires that "classification of the

soil at each building site will be determined when required by the building official" and that "the classification will be based on observation and any necessary test of the materials disclosed by borings or excavations." In addition, the CBSC states that "the soil classification and design-bearing capacity will be shown on the (building) plans, unless the foundation conforms to specified requirements." The CBSC provides standards for various aspects of construction, including but not limited to excavation, grading, and earthwork construction; fills and embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss. In accordance with California law, certain aspects of the action would be required to comply with all provisions of the CBSC.

The CBSC requires extensive geotechnical analysis and engineering for grading, foundations, retaining walls, and other structures, including criteria for seismic design.

A.2.2.5 Colusa Basin Watershed Management Plan

The following goals and objectives from the *Colusa Basin Watershed Management Plan* could apply to the proposed action (Colusa County Resource Conservation District 2012).

Goal 1. Protect, maintain and improve water quality

- Objective #4: Recommend BMPs for agricultural and rangeland areas to reduce soil erosion and associated sediment loading into drainages

Goal 6. Enhance soil quality and reduce erosion

- Objective #1: Reduce channel instability and stream bank erosion
- Objective #2: Advocate alternatives to non-vegetated streambanks and irrigation ditches
- Objective #3: Provide natural soil protection measures to reduce soil erosion and improve soil quality on farm land and range land
- Objective #4: Assist land managers with soil erosion reduction measures and soil quality improvements

A.2.2.6 County Grading Ordinance

Many counties have grading and erosion control ordinances that are intended to control erosion and sedimentation caused by construction activities. A grading permit is typically required for construction-related actions in Colusa County. As part of the permit, the project applicant must usually submit a grading and erosion control plan, project vicinity and site maps, and other supplemental information. Standard conditions in the grading permit include an extensive list of BMPs similar to those contained in an SWPPP. Grading activities need to conform to Title 7 of the Colusa County Zoning Code art. V, § 44-5.50 (2017) and to Section 10 of the Colusa County Improvement Standards.

A.3 Air Quality and Climate Change

A.3.1 Federal

A.3.1.1 Climate Change and Greenhouse Gases

There is currently no federal overarching law specifically related to climate change or the reduction of greenhouse gas (GHG) emissions. Under the Obama Administration, the EPA had been developing regulations under the Clean Air Act (CAA) pursuant to EPA's authority under the act.[1] There have also been settlement agreements between EPA, several states, and nongovernmental organizations to address GHG emissions from electric generating units and refineries, as well as the EPA's issuance of an "Endangerment Finding" and a "Cause or Contribute Finding." EPA has also adopted a Mandatory Reporting Rule and Clean Power Plan. Under the Clean Power Plan, EPA issued regulations to control carbon dioxide emissions from new and existing coal-fired power plants. However, on February 9, 2016 the Supreme Court issued a stay of these regulations pending litigation. Former EPA Administrator Scott Pruitt also signed a measure to repeal the Clean Power Plan. The fate of the proposed regulations is uncertain given the change in federal administrations and the pending deliberations in federal courts.

A.3.1.2 Clean Air Act (42 USC 7401)

National Ambient Air Quality Standards

The CAA was first enacted in 1963 and has been amended numerous times in subsequent years (1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as national ambient air quality standards (NAAQS), for six criteria pollutants and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The SIPs must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. Table A-1 shows the NAAQS currently in effect for each criteria pollutant, as well as the California ambient air quality standards (CAAQS) (discussed in Section A.3.2, *State*).

[1] In *Coalition for Responsible Regulation, Inc., et al. v. EPA*, the United States Court of Appeals upheld EPA's authority to regulate GHG emissions under the CAA.

Table A-1. Federal and State Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards[a]	
			Primary	Secondary
Ozone	1-hour	0.09 ppm	None[b]	None[b]
	8–hour	0.070 ppm	0.070 ppm	0.070 ppm
Particulate Matter (PM10)	24-hour	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual mean	20 μg/m^3	None	None
Fine Particulate Matter (PM2.5)	24-hour	None	35 μg/m^3	35 μg/m^3
	Annual mean	12 μg/m^3	12.0 μg/m^3	15 μg/m^3
Carbon Monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide[c]	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day Average	1.5 μg/m^3	None	None
	Calendar quarter	None	1.5 μg/m^3	1.5 μg/m^3
	3-month average	None	0.15 μg/m^3	0.15 μg/m^3
Sulfates	24-hour	25 μg/m^3	None	None
Visibility Reducing Particles	8-hour	-[d]	None	None
Hydrogen Sulfide	1-hour	0.03 ppm	None	None
Vinyl Chloride	24-hour	0.01 ppm	None	None

ppm= parts per million

μg/m^3 = micrograms per cubic meter

[a] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

[b] The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for SIPs.

[c] The annual and 24-hour NAAQS for sulfur dioxide only apply for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.

[d] CAAQS for visibility-reducing particles is defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70%.

Source: CARB 2016.

Conformity Rule

EPA enacted the federal General Conformity regulation (40 CFR 5, 51, and 93) in 1993. The purpose of the General Conformity rule is to ensure that federal actions do not generate emissions that interfere with state and local agencies' SIPs and emission-reduction strategies to ensure attainment of the NAAQS.

The General Conformity rule applies to all federal actions located in nonattainment and maintenance areas that are not exempt from General Conformity (i.e., are either covered by Transportation Conformity or listed in the rule), are not covered by a Presumed-to-Conform approved list[2], or do not have clearly *de minimis* emissions. In addition, the General Conformity rule applies only to direct and indirect emissions associated with the portions of any federal action that are subject to New Source Review (i.e., do not include stationary industrial sources requiring air quality permits from local air pollution control agencies) for which a federal permitting agency has directly caused or initiated, has continued program responsibility for, or can practically control. Because of the involvement of the U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS), all direct and indirect emissions generated by the construction and operation are subject to General Conformity.

A.3.1.3 Mobile Source Air Toxics/Hazardous Air Pollutants

Hazardous air pollutants (HAP) (equivalent to toxic air contaminants [TAC] at the state level) are those known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Through the HAP Program of the CAA Amendments of 1990, EPA has identified approximately 187 pollutants that are known to cause health problems. Of the 187 HAPs, 21 have been identified by EPA as mobile source air toxics (MSAT). MSATs are compounds emitted from motor vehicles and equipment that are known or suspected to cause cancer or other serious health and environmental effects.

A.3.1.4 Nonroad Diesel Rule

EPA has established a series of increasingly strict emission standards for new off-road diesel equipment, on-road diesel trucks, and locomotives. New equipment used for construction activities, including heavy-duty trucks and off-road construction equipment, would be required to comply with the emission standards.

A.3.2 State

A.3.2.1 California Clean Air Act and California Ambient Air Quality Standards

In 1988, the state legislature adopted the California Clean Air Act (CCAA), which established a statewide air pollution control program. The CCAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Unlike the CAA, the CCAA does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. The CAAQS and NAAQS are shown in Table A-1.

The California Air Resources Board (CARB) and local air districts bear responsibility for meeting the CAAQS, which are to be achieved through district-level air quality management plans incorporated into the SIP. In California, EPA has delegated authority to prepare SIPs to CARB, which, in turn, has delegated that authority to individual air districts. CARB traditionally has established state air

[2] Category of activities designated by a federal agency as having emissions below *de minimis* levels or otherwise do not interfere with the applicable SIP or the attainment and maintenance of the NAAQS.

quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures.

A.3.2.2 Mobile Source Air Toxics/Toxic Air Contaminants

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

A.3.2.3 Diesel Particulate Matter Control Measures

CARB has identified diesel particulate matter (DPM) as a TAC and has approved a comprehensive *Diesel Risk Reduction Plan* to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce DPM emissions and the associated health risk by 75 percent by 2010 and by 85 percent by 2020. The plan identifies 14 measures that CARB will implement over the next several years. The proposed action would be required to comply with any applicable diesel control measures from the *Diesel Risk Reduction Plan*.

A.3.2.4 Assembly Bill 1493—Pavley Rules (2002, Amendments 2009, 2012 rulemaking)

Known as *Pavley I*, Assembly Bill (AB) 1493 standards are the nation's first GHG standards for automobiles. AB 1493 requires CARB to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as *Pavley II*, now referred to as the *Advanced Clean Cars* measure) has been proposed for vehicle model years 2017–2025. Together, the two standards are expected to increase average fuel economy to roughly 54.5 miles per gallon by 2025.

A.3.2.5 Executive Order S-3-05 (2005)

Executive Order (EO) S-3-05 asserted that California is vulnerable to the effects of climate change. To combat this concern, the order established the following GHG emissions reduction targets.

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

EOs are legally binding only on state agencies. Accordingly, EO S-3-05 guides state agencies' efforts to control and regulate GHG emissions but has no direct, binding effect on local government or private actions. The secretary of the California Environmental Protection Agency is required to report to the governor and state legislature biannually regarding the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this EO.

A.3.2.6 Assembly Bill 32—California Global Warming Solutions Act (2006)

AB 32 codified the state's GHG emissions target by requiring that the state's global warming emissions be reduced to 1990 levels by 2020. Since AB 32 was adopted, CARB, the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the Building Standards Commission have been developing regulations that will help meet the goals of AB 32. The AB 32 Scoping Plan identifies specific measures to reduce GHG emissions to 1990 levels by 2020, and requires CARB and other state agencies to develop and enforce regulations and other initiatives for reducing GHGs. Specifically, the AB 32 Scoping Plan articulates a key role for local governments, recommending they establish GHG reduction goals for both their municipal operations and the community consistent with those of the state.

A.3.2.7 Executive Order S-01-07—Low Carbon Fuel Standard (2007)

EO S-01-07 essentially mandates: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and (2) that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established in California. CARB approved the LCFS on April 23, 2009, and the regulation became effective on January 12, 2010. The U.S. District Court for the Eastern District of California ruled in December 2011 that the LCFS violates the Commerce Clause of the U.S. Constitution. CARB appealed this ruling in 2012 and on September 18, 2013, the Ninth U.S. Circuit Court of Appeals upheld the LCFS, ruling that the program does not violate the Commerce Clause and remanding the case to the Eastern District.

A.3.2.8 Senate Bill 375

Senate Bill (SB) 375, signed into law by Governor Schwarzenegger on September 30, 2008, became effective January 1, 2009. This law requires the state's 18 Metropolitan Planning Organizations (MPOs) to develop the sustainable communities strategies (SCS) as part of their regional transportation plans (RTPs) through integrated land use and transportation planning, and to demonstrate an ability to attain the GHG emissions reduction targets that the CARB established for the region by 2020 and 2035. This would be accomplished through either the financially constrained SCS as part of the RTP or an unconstrained alternative planning strategy. If regions develop integrated land use, housing, and transportation plans that meet the SB 375 targets, new projects in these regions can be relieved of certain California Environmental Quality Act (CEQA) review requirements.

In accordance with SB 375, the CARB appointed a Regional Targets Advisory Committee on January 23, 2009, to provide recommendations on factors to be considered and methodologies to be used in the CARB's target setting process. The Regional Targets Advisory Committee was required to provide its recommendations in a report to the CARB by September 30, 2009, to include any relevant issues such as data needs, modeling techniques, growth forecasts, jobs-housing balance,

interregional travel, various land use/transportation issues affecting GHG emissions, and overall issues relating to setting these targets. The CARB adopted the final targets in September 2010 and adopted revised targets in March 2018. The CARB must update the regional targets every 8 years (or 4 years if it so chooses) consistent with each MPO's update of its RTP.

A.3.2.9 Senate Bill 32 and Assembly Bill 197

The companion bill to SB 32, AB 197, creates requirements to form a Joint Legislative Committee on Climate Change Policies, requires CARB to prioritize direct emission reductions and consider social costs when adopting regulations to reduce GHG emissions beyond the 2020 statewide limit, requires CARB to prepare reports on sources of GHGs and other pollutants, establishes 6-year terms for voting members of CARB, and adds two legislators as non-voting members of CARB.

A.3.2.10 Statewide Truck and Bus Regulation

Originally adopted in 2005, the on-road truck and bus regulation requires heavy trucks to be retrofitted with particulate matter filters. The regulation applies to privately and federally owned diesel-fueled trucks with a gross vehicle weight rating greater than 14,000 pounds. Compliance with the regulation can be reached through one of two paths: 1) vehicle retrofits according to engine year or 2) phase-in schedule. Compliance paths ensure that by January 2023, nearly all trucks and buses will have 2010 model year engines or newer.

A.3.2.11 State Tailpipe Emission Standards

Like EPA at the federal level, CARB has established a series of increasingly strict emission standards for new off-road diesel equipment, on-road diesel trucks, and harbor craft operating in California. New equipment used for construction activities would be required to comply with the standards.

A.3.2.12 Senate Bills 1078, 107, and 2—Renewables Portfolio Standard (2011)

SBs 1078 (2002), 107 (2006) and 2 (2011), California's Renewables Portfolio Standard (RPS), obligates investor-owned utilities, energy service providers, and Community Choice Aggregators to procure additional retail sales per year from eligible renewable sources with the long-range target of procuring 33 percent of retail sales from renewable resources by 2020. The CPUC and CEC are jointly responsible for implementing the program.

A.3.2.13 Senate Bill 350 (Clean Energy and Pollution Reduction Act of 2015) (2015)

SB 350 requires the following by 2030: (1) an RPS of 50 percent and (2) a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings. These mandates will be implemented by future actions of CPUC and CEC.

A.4 Water Resources

A.4.1 Federal

A.4.1.1 Federal Water Pollution Control Act (Clean Water Act)

The CWA establishes a structure for regulating discharge of pollutants into the waters of the United States and regulating quality standards for surface waters. The CWA establishes the NPDES permit system to protect water quality, requiring each state to identify impaired waters and to carry out actions to restore designated stream uses. It also establishes U.S. Army Corps of Engineers (USACE) review and permitting of projects affecting wetlands.

Clean Water Act Section 303(d) Total Maximum Daily Load

Section 303(d) requires each state to develop a list of impaired surface waters that do not meet or that the state expects would not meet state water quality standards as defined by that section. It also requires each state to develop total maximum daily loads (TMDL) of pollutants for impaired waterbodies. The TMDL must account for the pollution sources causing the water to be listed by the state.

Clean Water Act Section 402 NPDES Permit Compliance

Under Section 402, the NPDES program regulates all point-source discharges, including, but not limited to, construction-related runoff discharges to surface waters and some post-development. In California, project sponsors must obtain an NPDES permit from the SWRCB.

Clean Water Action Section 404

Under Section 404, USACE and EPA regulate the discharge of dredged and fill materials into the waters of the United States. Project sponsors must obtain a permit from USACE for discharges of dredged or fill materials into jurisdictional waters over which the USACE exerts jurisdiction.

A.4.1.2 National Flood Insurance Program

The National Flood Insurance Program (NFIP) is administered primarily under two statutes: the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The Federal Insurance Administration under the Federal Emergency Management Agency (FEMA) administers NFIP. NFIP has two main components: (1) floodplain management assistance and (2) flood insurance assistance. The purpose of flood insurance is to enable property owners to purchase insurance against losses from physical damage or the loss of buildings and their contents caused by floods, flood-related mudslides, or erosion. Insurance is available to property owners belonging to NFIP-participating communities. Participation in NFIP also makes communities eligible for federal flood disaster assistance. For a community to be eligible to participate in NFIP, the community must adopt a local floodplain management ordinance that meets or exceeds the minimum federal standards defined in 44 CFR 60 to 65. Participating communities must adhere to all floodplain management requirements, with oversight from FEMA, for all activities that may affect floodplains within the Special Flood Hazard Areas.

A.4.1.3 Rivers and Harbors Act of 1899

The Rivers and Harbors Act is a federal law regulating activities that may affect navigation on the nation's waterways. Sections 9 and 10 of the Rivers and Harbors Act (33 United States Code [USC] 402 and 403, respectively) and Section 404 of the CWA govern the placement of obstructions and dredge and fill materials in navigable waters of the United States.

Section 14 of the Rivers and Harbors Act (33 USC 408)

Section 14 of the Rivers and Harbors Act (33 USC 408) requires USACE's permission for the use, including modifications or alterations, of any flood control facility built by the United States to prevent impairment of the usefulness of the federal facility. The permission for occupation or use is to be granted by an appropriate real estate instrument in accordance with existing real estate regulations. USACE permission is granted through the issuance of a permit through the Rivers and Harbors Act, which is called a Section 408 permit.

A.4.1.4 NPDES General Construction Stormwater Permit

The General Construction Stormwater Permit deals with stormwater runoff leaving the project site. The General Construction Permit requires the preparation and implementation of a SWPPP. The plan would include specifications for BMPs that would be implemented during project construction to control degradation of surface water through measures to prevent the potential erosion of sediments or discharge of pollutants from the construction area. Additionally, the SWPPP would describe measures to prevent or control runoff after construction is complete and identify a plan to inspect and maintain these facilities or project elements.

A.4.2 State

A.4.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act requires the regulation of all pollutant discharges, including wastes in project runoff and the placement of fill in waters of the state. Any entity proposing to discharge waste must file a Report of Waste Discharge with the appropriate RWQCB or the SWRCB, who are responsible for implementing CWA Sections 401, 402, and 303(d). The Porter-Cologne Water Quality Control Act also provides for the development and periodic reviews of basin plans that designate beneficial uses of California's major rivers and groundwater basins and establish water quality objectives for those waters.

A.4.2.2 1995 and 2006 Water Quality Control Plans for the Sacramento/San Joaquin Delta

The Bay-Delta Plan, and subsequent updates, establishes water quality control measures and flow requirements needed to provide reasonable protection of beneficial uses in the watershed. The SWRCB is involved in efforts to address rapid declines of native aquatic species in the Bay-Delta and the ecosystem they depend upon.

A.4.2.3 Regulations Implemented by the Central Valley Flood Protection Board

The Central Valley Flood Protection Board (CVFPB) regulates specific river, creek, and slough crossings for flood protection. These crossings must meet the provisions of CCR, Title 23. The CVFPB reviews applications for encroachment permits for approval of a new channel crossing or other channel modification. For a proposed crossing or placement of a structure near a federal flood control project, the CVFPB coordinates review of the encroachment permit application with USACE pursuant to assurance agreements with USACE and the USACE Operation and Maintenance Manuals under 33 CFR 208.10 and 33 USC 408.

A.4.2.4 California Fish and Game Code Section 1602 (Streambed Alteration)

The California Fish and Game Code (CFGC) requires notification to the California Department of Fish and Wildlife (CDFW) prior to implementing any project that would divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream (including intermittent streams), or lake.

A.5 Biological Resources

A.5.1 Federal

A.5.1.1 Federal Endangered Species Act

The federal Endangered Species Act (FESA) protects fish and wildlife species and their habitats that have been identified by NMFS or USFWS as threatened or endangered. *Endangered* refers to species, subspecies, or distinct population segments (DPSs) that are in danger of extinction through all or a significant portion of their range. *Threatened* refers to species, subspecies, or DPSs that are likely to become endangered in the near future. FESA is administered by USFWS and NMFS. In general, NMFS is responsible for protection of FESA-listed marine species and anadromous fish, and USFWS is responsible for other listed species. Provisions of Sections 7 and 9 of FESA are relevant to the proposed action and summarized in the following subsections.

Endangered Species Act Authorization Process for Federal Actions (Section 7)

Section 7 of FESA provides a means for authorizing take of threatened and endangered species by federal agencies. Under Section 7, the federal agency conducting, funding, or permitting an action must consult with NMFS and USFWS, as appropriate, to ensure that the proposed project would not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. The resource study area (RSA) supports potential habitat for federally listed valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) and giant gartersnake (*Thamnophis gigas*). Therefore, the proposed action has the potential to result in take of a federally listed species and requires consultation with USFWS.

Endangered Species Act Prohibitions (Section 9)

Section 9 of FESA prohibits the take of any fish or wildlife species listed under FESA as endangered. Take of threatened species also is prohibited under Section 9, unless otherwise authorized by federal regulations.[3] *Take*, as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harm* is defined as "any act that kills or injures the species, including significant habitat modification." In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction.

A.5.1.2 Executive Order 13112: Prevention and Control of Invasive Species

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

A.5.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703–712) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 21; 50 CFR 10). Most actions that result in *take*—defined as hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof—are prohibited under the MBTA. Examples of permitted actions that do not violate the MBTA are the possession of a hunting license to pursue specific gamebirds, legitimate research activities, display in zoological gardens, bird-banding, and other similar activities. USFWS is responsible for overseeing compliance with the MBTA. There is suitable habitat for tree, shrub, and ground-nesting birds in the RSA including multiple cliff swallow (*Petrochelidon pyrrhonota*) nests that were observed on the Funks Reservoir Dam and connection to Funks Creek during the reconnaissance site visit.

A.5.1.4 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668) prohibits take and disturbance of bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) individuals and nests. Take permits for birds or body parts are limited to religious, scientific, or falconry pursuits. However, the BGEPA was amended in 1978 to allow mining developers to apply to USFWS for

[3] In some cases, exceptions may be made for threatened species under FESA Section 4(d); in such cases, USFWS or NMFS issues a "4(d) rule" describing protections for the threatened species and specifying the circumstances under which take is allowed.

permits to remove inactive golden eagle nests in the course of "resource development or recovery" operations.

In 2009, USFWS issued the 2009 Final Rule on new permit regulations that allows take "for the protection of…other interests in any particular locality" and where the take is "associated with and not the purpose of an otherwise lawful activity…" (74 *Federal Register* 46836–46879). The 2009 Final Rule authorized programmatic take (take that is recurring and not in a specific, identifiable timeframe or location) of eagles only if avoidance measures have been implemented to the maximum extent achievable such that take was no longer avoidable.

In 2016, USFWS issued revisions to the Final Rule pertaining to incidental take and take of eagle nests. The Final Rule changed the programmatic take standard to a new standard authorizing "incidental take" if all "practicable" measures to reduce effects on eagles are implemented.

A.5.1.5 Clean Water Act

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

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

Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over impacted waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may impact state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

Permits for Stormwater Discharge (Section 402)

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES program, administered by EPA. In California, the SWRCB is authorized by EPA to oversee the NPDES program through the RWQCBs (see the related discussion under *Porter-Cologne Water Quality Control Act* below). The proposed action alignment is under the jurisdiction of the CVRWQCB.

NPDES permits are required for projects that disturb more than 1 acre of land. The NPDES permitting process requires the applicant to file a public NOI to discharge stormwater and to

prepare and implement a SWPPP. The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

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

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

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

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

In 2006, a federal ruling on two consolidated cases (June 19, 2006; Rapanos v. United States and Carabell v. U.S. Army Corps of Engineers), referred to as the Rapanos decision, determines whether some waters or wetlands are considered jurisdictional under the CWA. In these cases, the U.S. Supreme Court reviewed the USACE definition of waters of the United States and whether or not it extended out to tributaries of navigable waters (TNW) or wetlands adjacent to those tributaries. The decision provided two standards for determining jurisdiction of waterbodies that are not TNWs: 1) if the non-TNW is a relatively permanent water (RPW) or is a wetland directly connected to a RPW, or 2) if the waterbody has *significant nexus* to a TNW. The significant nexus definition is based on the purpose of the CWA ("restore and maintain the chemical, physical, and biological integrity of the Nation's waters").

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

A.5.1.6 Executive Order 11990: Protection of Wetlands

EO 11990, signed May 24, 1977, directs all federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands. A project that encroaches on wetlands may not be undertaken unless the agency has determined that (1) there are no practicable alternatives to such construction, (2) the project includes all practicable measures to minimize harm to wetlands that would be affected by the project, and (3) the impact will be minor.

A.5.1.7 Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801 et seq.)

The amended Magnuson-Stevens Act, also known as the Sustainable Fisheries Act (PL 104-297), requires all federal agencies consult with NMFS on proposed activities authorized, funded, or undertaken by that agency that may adversely affect essential fish habitat of commercially managed marine and anadromous fish species.

A.5.1.8 Fish and Wildlife Coordination Act (16 USC 661–666c)

The U.S. Fish and Wildlife Coordination Act applies to any federal project where any body of water is impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and appropriate state wildlife agency.

A.5.2 State

A.5.2.1 California Fish and Game Code

Section 1602 of the CFGC requires project proponents to notify CDFW before any project diverts, obstructs, or changes the natural flow, bed, channel, or bank of any river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable changes to the project to protect the resources. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

The CFGC provides protection from take for a variety of species, referred to as fully protected species. Section 5050 lists protected amphibians and reptiles. Section 5515 prohibits take of fully protected fish species. Section 3511 prohibits take of fully protected bird species. Fully protected mammals are protected under Section 4700. The CFGC defines *take* as "hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill." Except for take related to scientific research, all take of fully protected species is prohibited. There is potential for the fully protected white-tailed kite (*Elanus leucurus*), bald eagle, and golden eagle, to be present within the RSA.

Section 3503 prohibits the killing of birds or the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests. Many bird species could nest in the affected area or vicinity. The nests would be protected under these sections of the CFGC.

A.5.2.2 California Endangered Species Act

The California Endangered Species Act (CESA) (CFGC 2050 through 2116) states that all native species or subspecies of a fish, amphibian, reptile, mammal, or plant and their habitats that are threatened with extinction and those experiencing a significant decline that, if not halted, would lead to a threatened or endangered designation will be protected or preserved.

Under Section 2081 of the CFGC, a permit from CDFW is required for projects that could result in the take of a species that is state-listed as threatened or endangered. Under CESA, *take* is defined as an activity that would directly or indirectly kill an individual of a species. The definition does not include *harm* or *harass*, as the definition of take under ESA does. As a result, the threshold for take under CESA is higher than that under FESA. For example, habitat modification is not necessarily considered take under CESA.

Section 2055 of the CFGC requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. CDFW administers the act and authorizes take through CFGC 2081 incidental take agreements (except for species designated as fully protected) and 2080.1 consistency determinations. Take of state-listed and candidate species proposed for listing under CESA is prohibited unless the take is authorized in regulations adopted by the California Fish and Game Commission pursuant to CFGC 2084 or CDFW authorizes the take through the issuance of a permit under CFGC 2081 or by other means authorized by CESA. If it is determined that the proposed project would result in take of a state-listed or candidate species, an incidental take permit or consistency determination would be obtained through consultation with CDFW. State-listed wildlife species with the potential to occur include giant gartersnake and Swainson's hawk (*Buteo swainsoni*).

A.6 Cultural Resources

A.6.1 Federal

A.6.1.1 National Historic Preservation Act of 1966 (36 CFR 60, 63, and 800)

The National Historic Preservation Act (NHPA) establishes the federal government policy on historic preservation and the programs, including the National Register of Historic Places (NRHP), through which this policy is implemented. Under the NHPA, significant cultural resources, referred to as *historic properties*, include any prehistoric or historic district, site, building, structure, or object included in, or determined eligible for inclusion in, the NRHP. Historic properties also include resources determined to be National Historic Landmarks, which are designated nationally significant historic places that possess exceptional value or quality in illustrating or interpreting United States heritage. A property is considered historically significant if it meets one of the NRHP criteria and retains sufficient historic integrity to convey its significance. This act also established the Advisory Council on Historic Preservation (ACHP), an independent federal agency that administers Section 106 of the NHPA through procedures to protect cultural resources included in, or eligible for, the NRHP.

Implementing Regulations for Section 106 of the National Historic Preservation Act (36 CFR 800)

Section 106 requires that effects on historic properties be considered for any federal project through a four-step process: (1) initiating the Section 106 process by identifying and initiating consultation with Native American tribes, local governments, and other interested parties, (2) identifying historic properties, (3) assessing adverse effects, and (4) delineating stipulations by which to resolve adverse effects in an agreement document.

Section 106 affords the ACHP and the State Historic Preservation Officer (SHPO), and other consulting parties, a reasonable opportunity to comment on any project that would adversely affect historic properties. SHPOs administer the national historic preservation program at the state level, review NRHP nominations, maintain data on identified but not yet nominated historic properties, and consult with federal agencies during Section 106 review.

A.6.1.2 Archaeological and Historic Preservation Act (16 USC 469–469(c)-2)

This act provides for the preservation of significant historic or archaeological data, including relics and specimens, that may otherwise be irreparably lost or destroyed by construction of a project by a federal agency or under a federally licensed activity or program.

A.6.1.3 American Antiquities Act (16 USC 431–433)

The American Antiquities Act prohibits appropriation, excavation, injury, or destruction of "any historic or prehistoric ruin or monument, or any object of antiquity" located on lands owned or controlled by the federal government. The act also establishes penalties for such actions and sets forth a permit requirement for collection of antiquities on federally owned lands.

A.6.1.4 American Indian Religious Freedom Act (42 USC 1996)

The American Indian Religious Freedom Act protects and preserves the traditional religious rights and cultural practices of American Indians, Eskimos, Aleuts, and Native Hawaiians through policies that respect the free exercise of native religion and accommodate access to and use of religious sites. If a place of religious importance to American Indians may be affected by a project, the American Indian Religious Freedom Act promotes consultation with Indian religious practitioners, which may be coordinated with Section 106 consultation.

A.6.1.5 Archaeological Resources Protection Act (16 USC 470)

This statute was enacted to secure for the present and future benefit of the American people the protection of archaeological resources and sites on federally owned lands and Indian lands. It was also enacted to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals (§ 2(4)(b)).

A.6.1.6 Native American Grave Protection and Repatriation Act (25 USC 3001–3013)

The Native American Grave Protection and Repatriation Act describes the rights of Native American lineal descendants, Indian tribes, and Native Hawaiian organizations with respect to cultural items that show a relationship of lineal descent or cultural affiliation.

A.6.1.7 Presidential Memorandum, Government-to-Government Relations with Native American Tribal Governments, April 29, 1994

This memorandum outlines the principles to be followed during interactions with the governments of federally recognized Native American tribes. It includes provisions for government-to-government relations and consultation, and requires assessment of the impact of federal government plans, projects, programs, and activities on tribal trust resources.

A.6.1.8 Consultation with Indian Tribal Governments (USEO 13175)

This U.S. Presidential Executive Order (USEO) establishes regular and meaningful consultation and collaboration with officials of federally recognized Indian tribes in the development of federal policies that have tribal implications, to strengthen the government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes. It sets forth guiding principles for government-to-government relations with Indian tribes, along with criteria for formulating and implementing policies that have tribal implications.

A.6.2 State

A.6.2.1 California Register of Historical Resources (PRC 5024.1, 14 CCR 4850)

California Public Resources Code (PRC) 5024.1 establishes the California Register of Historical Resources (CRHR). The CRHR lists all California properties considered to be significant historical resources. The CRHR also includes all properties listed or determined eligible for listing in the NRHP, including properties evaluated and determined eligible under Section 106.

A.7 Aesthetics and Visual Resources

A.7.1 Federal

A.7.1.1 National Scenic Byways Program (23 USC 162)

As part of the National Scenic Byways Program, National Scenic Byways, All-American Roads, or America's Byways are recognized through nominations by a state, an Indian tribe, or a federal land management agency as having outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities State

A.7.1.2 California Department of Transportation—California Scenic Highway Program (Streets and Highways Code 260 et seq.)

The California Scenic Highway Program was created in 1963 to preserve and protect scenic highway corridors from actions that would diminish the aesthetic value of adjacent lands. Scenic highways can be nominated by local jurisdictions and are designated on the following factors: the extent of the natural landscape seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. The scenic corridor, the land generally adjacent to and visible from the highway, and jurisdictional boundaries are considered during the nomination of a scenic highway, and ordinances must be established (or existing ordinances or regulations must already exist) to preserve the scenic quality of a corridor. The following are minimum requirements for scenic corridor protection:

- Regulation of land use and density of development
- Detailed land and site planning
- Control of outdoor advertising (e.g., billboard bans)

- Careful attention to and control of earthmoving and landscaping activities
- Careful attention to design and appearance of structures and equipment

A.7.2 Local

A.7.2.1 Colusa County General Plan

No roadways within or near the RSA are designated in local plans as scenic routes worthy of protection for maintaining and enhancing scenic viewsheds. However, Colusa County recognizes that roadways in the county provide viewsheds with high scenic value due to the scenic beauty associated with their rural character, availability of scenic vista views, and views to the surrounding mountains and waterways. The following local regulations from the Colusa County General Plan apply to visual resources in the project area (Colusa County 2012).

Community Character Element

Policy CC 1-15: Preserve and enhance the rural landscape as an important scenic feature of the County.

Policy CC 1-16: Require all new development to protect the scenic beauty of the County, incorporate high quality site design, architecture, and planning so as to enhance the overall quality of the built environment in the County's communities and create a visually interesting and aesthetically pleasing built environment that respects the rural nature of the County.

Policy CC 1-17: Establish design standards, including community-specific policies, to encourage visually attractive development and lessen the visual impact of existing non-conforming uses.

Policy CC 1-18: Upgrade the visual appearance and quality of development on the approaches to each community and prevent development which degrades the aesthetic quality of scenic roadways elsewhere.

Policy CC 1-19: Require architecture and site design to reflect a human-scale that is sensitive, compatible and distinctive to both the site and the community.

Conservation Element

Policy CON 1-7: Conserve and enhance those biological communities that contribute to the County's rich biodiversity including, but not limited to, blue oak woodlands, annual grasslands, mixed chaparral, pine woodlands, wetlands, riparian areas, aquatic habitat, and agricultural lands.

Policy CON 1-8: Conserve existing native vegetation where possible and integrate existing native vegetation into new development if appropriate.

Policy CON 1-22: Maintain lakes, rivers, streams, creeks, and waterways in a natural state whenever possible. These water features may be actively managed and/or improved or modified in order to function as natural flood protection and storm water management features during storms and flooding events.

Policy CON 1-23: Protect and enhance streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat and vernal pools through sound land use planning, community design, and site planning.

Land Use Element

Policy LU 1-4: Locate lands designated for future development based on constraints associated with natural features, such as soil, slope, and drainage, preservation of the County's resources, including agriculture, open space, and scenic views, and by public service availability, such as sewer and water

capability; policies and actions related to these requirements are set forth in more detail in the Safety, Conservation, and Public Facilities and Services Elements.

Policy LU 4-3: Ensure that future land use decisions regarding Sites Reservoir and the surrounding area recognize the needs of the County and existing property owners to address adequate access for existing landowners and persons who travel beyond the area, noise, habitat for displaced species, and recreation and tourist opportunities that are compatible with the surrounding region.

Policy LU 4-4: Support the efforts of the Sites Reservoir Joint Powers Authority, with particular emphasis on landowner relocation assistance and ensuring financial compensation for landowners adversely impacted by the creation of Sites Reservoir.

Open Space Element

Policy OSR 1-5: New development should be designed and constructed to preserve open space features such as scenic corridors, wetlands, riparian vegetation, native vegetation, trees and natural resource areas where feasible and appropriate.

Policy OSR 1-9: Maintain open space for future water and drainage projects.

Policy OSR 1-10: To the maximum extent feasible, maintain and protect views of the County's scenic resources, including water bodies, the Sutter Buttes, Snow Mountain, St. John Mountain, Goat Mountain, unique geologic features, and wildlife habitat areas.

Policy OSR 1-11: To the maximum extent feasible, the significant open space resources in the County, such as the western foothills, Indian Valley, and Bear Valley should remain visually undisturbed.

Policy OSR 1-12: Limit visually intrusive development near scenic resources in order to minimize visual impacts to the greatest extent feasible.

Policy OSR 1-13: Visual impacts to scenic resources, such as regional focal points, from new development or resource extraction activities shall be addressed and mitigated through the CEQA review process.

Policy OSR 1-14: Reduce light and glare from artificial lighting within open space and agricultural areas to the extent that it does not adversely impact the County's rural character.

Policy OSR 1-15: Protect roadway viewsheds with high scenic value and "rural flavor" and encourage the establishment of public viewing areas in areas with rural character and scenic beauty.

Policy OSR-1-16: Protect and preserve the following features along rural character corridors and in scenic areas to the extent appropriate and feasible:

- Trees, wildflowers, and other natural or unique vegetation
- Landforms and natural or unique features
- Views and vistas, including expansive views of open space and agricultural lands
- Historic structures (where feasible), including buildings, bridges, and signs.

Policy OSR 1-17: Provide a greater number of areas along rural character corridors and in scenic areas for public access and recreation, including vistas, rest stops, or picnicking.

Policy OSR 1-18: Discourage non-agricultural or non-recreational roadside commercial and industrial activities along rural character corridors.

Policy OSR 1-19: Design new roads in hillside areas along the lines of the landscape and in a manner which minimizes visual impact from surrounding areas.

Policy OSR 1-20: Prohibit off-site advertising and billboards in rural character and scenic areas outside of communities, unless the off-site signage is part of a Countywide sign program to direct travelers to various recreation and destination points in the County.

Policy OSR 1-21: Rural character policies and requirements shall not be used to impose a hardship on agriculture. Agricultural activities may have adverse visual impacts, but are recognized as necessary and contributors to the rural and agricultural character of the County.

A.8 Noise

A.8.1 Federal

A.8.1.1 Noise Control Act of 1972 (42 USC 4910)

The federal Noise Control Act of 1972 addressed the issue of noise and its threat to human health and welfare, particularly in urban areas. In response to the act, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA Levels). Table A-2 summarizes EPA recommendations for noise-sensitive areas. Ideally, the yearly average equivalent sound level (L_{eq}) should not exceed 70 A-weighted decibels (dBA) to prevent measurable hearing loss over a lifetime, and the day-night sound level (L_{dn}) should not exceed 55 dBA outdoors and 45 dBA indoors to prevent substantial activity interference and annoyance in noise-sensitive areas. In addition to the identified noise levels to protect public health, the EPA Levels identify an increase of 5 dBA as an adequate margin of safety relative to a baseline noise exposure level of 55 dBA L_{dn} before a noticeable adverse community reaction would be expected.

Table 4.F-8. Summary of Noise Levels Identified as Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety

Effect	Level	Area
Hearing loss	L_{eq} (24 hr) < 70 dBA[a]	All areas.
Outdoor activity interference and annoyance	L_{dn} < 55 dBA	Outdoor residential areas and farms as well as other outdoor areas where people spend varying amounts of time and places where quiet is a basis for use.
Outdoor activity interference and annoyance	L_{eq} (24 hr) < 55 dBA	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	L_{dn} < 45 dBA	Indoor residential areas.
Indoor activity interference and annoyance	L_{eq} (24 hr) < 45 dBA	Other indoor areas with human activities, such as schools, etc.

Source: EPA 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Available: <http://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF>. Accessed: December 3, 2015.

[a] Yearly average equivalent sound levels in decibels; the exposure period that results in hearing loss at the identified level is 40 years.

A.8.1.2 Occupational Safety and Health Administration Occupational Noise Exposure (29 CFR 1910.95)

The Occupational Safety and Health Administration regulates worker noise exposure to a time-weighted-average of 90 dBA over an 8-hour work shift. Areas must be designated and labeled as high-noise-level areas and hearing protection required if noise in those areas exceeds 85 dBA and would apply to project construction activities. Construction activities might also elevate noise levels at nearby construction sites to levels that exceed 85 dBA and would therefore require administrative or engineering controls and hearing conservation programs for worker safety, as detailed by the Occupational Safety and Health Administration.

A.8.2 State

A.8.2.1 California Noise Control Act (Health and Safety Code 46010 et seq.)

The Noise Control Act provides guidance to local governments for preparing the required noise elements in city and county general plans, pursuant to California Government Code (Gov. Code) 65302(f).

A.9 Transportation

There are no federal or state transportation regulations applicable to the proposed action.

A.10 Human Health and Safety

A.10.1 Federal

A.10.1.1 Resource Conservation and Recovery Act (42 USC 6901 et seq.)

The Resource Conservation and Recovery Act (RCRA) regulates the identification, generation, transportation, storage, treatment, and disposal of solid and hazardous materials and wastes.

A.10.1.2 Comprehensive Environmental Response, Compensation and Liability Act (42 USC 9601 et seq.)

The Comprehensive Environmental Response, Compensation and Liability Act regulates former and newly discovered uncontrolled waste disposal and spill sites. The act established the National Priorities List of contaminated sites, and the "Superfund" cleanup program.

A.10.1.3 Clean Air Act (42 USC 7401 et seq.)

The CAA protects the general public from exposure to airborne contaminants hazardous to human health. Under the CAA, the EPA established national emissions standards for HAPs including asbestos.

A.10.1.4 Clean Water Act, Section 402(p) (33 USC 1342(p))

The CWA regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater.

A.10.1.5 Safe Drinking Water Act (42 USC 300(f) et seq.)

The Safe Drinking Water Act regulates discharges of pollutants to underground aquifers and establishes standards for drinking water quality.

A.10.1.6 Toxic Substances Control Act (15 USC 2601 et seq.)

The Toxic Substances Control Act regulates manufacturing, inventory, and disposal of industrial chemicals including hazardous materials.

A.10.1.7 Federal Insecticide, Fungicide and Rodenticide Act (7 USC 136 et seq. and 40 CFR 152.1–171)

The Federal Insecticide, Fungicide and Rodenticide Act regulates the manufacturing, distribution, sale, and use of pesticides.

A.10.1.8 Hazardous Materials Transportation Act (49 USC 5101 et seq. and 49 CFR 101, 106, 107, and 171–180)

The Hazardous Materials Transportation Act regulates the transport of hazardous materials by motor vehicles, marine vessels, and aircraft.

A.10.1.9 Hazardous Materials Transportation Uniform Safety Act of 1990 (Public Law 101-615)

The Hazardous Materials Transportation Uniform Safety Act regulates the safe transport of hazardous material in commerce. The statute encourages uniformity among different state and local regulations for the issuance of federal permits to motor carriers of hazardous materials.

A.10.1.10 Emergency Planning and Community Right to Know Act (42 USC 11001 et seq. and 40 CFR 350.1 et seq.)

The Emergency Planning and Community Right to Know Act regulates facilities that use hazardous materials in quantities that require reporting to emergency response officials and provides for notification of emergency releases of chemicals.

A.10.1.11 Federal Compliance with Pollution Control (USEO 12088)

USEO 12088 requires federal agencies to take necessary actions to prevent, control, and abate environmental pollution from federal facilities and activities.

A.10.2 State

A.10.2.1 California Public Resources Code Section 21151.4

The PRC requires the lead agency to consult with any school district with jurisdiction over a school within 0.25 mile of the project about potential safety effects on the school from hazardous substances.

A.10.2.2 California Public Utilities Code Section 768

The California Public Utilities Code establishes health and safety requirements for the construction, operation, and maintenance of public utility lines, plants, systems, equipment, apparatus, tracks, and premises to protect employees, passengers, customers, and the public. The CPUC may prescribe the installation, use, maintenance, and operation of appropriate safety or other devices or appliances, establish standards for construction and equipment, and require the performance of any other act that the health or safety of its employees, passengers, customers, or the public may demand.

A.10.2.3 California Emergency Services Act (Gov. Code 8550 et seq.)

The Emergency Services Act supports the state's mitigation of adverse effects from natural, human-produced, or war-caused emergencies that threaten human life, property, and environmental resources. The act aims to protect human health and safety and to preserve the lives and property of the people of the state.

A.10.2.4 California Occupational Safety and Health Administration Construction Safety Orders (8 CCR 1502 et seq.)

Worksite safety in California is overseen by the California Occupational Safety and Health Administration. Title 8 requires compliance with standard procedures to prevent construction worksite accidents and requires a written workplace injury and illness prevention program to be in place.

A.10.2.5 Porter-Cologne Water Quality Control Act (Cal. Water Code 13000 et seq.)

The Porter-Cologne Water Quality Control Act regulates water quality through the SWRCB and RWQCBs, including water monitoring and contamination cleanup and abatement.

A.10.2.6 Hazardous Materials Release Response Plans and Inventory Law (Cal. Health and Safety Code 25500 et seq.)

This section of the California Health and Safety Code requires facilities using hazardous materials to prepare hazardous materials business plans.

A.10.2.7 Hazardous Waste Control Act (Cal. Health and Safety Code 25100 et seq.)

This act regulates the identification, generation, transportation, storage, and disposal of materials deemed hazardous by the State of California.

A.10.2.8 Safe Drinking Water and Toxic Enforcement Act (Proposition 65, Cal. Health and Safety Code 25249.5 et seq.)

The Safe Drinking Water and Toxic Enforcement Act it regulates the discharge of contaminants to groundwater.

A.10.2.9 Cortese List Statute (Gov. Code 65962.5)

This regulation requires the Department of Toxic Substances Control to compile and maintain lists of potentially contaminated sites located throughout California (the Hazardous Waste and Substances Sites List).

A.11 Public Services and Utilities

A.11.1 Federal

A.11.1.1 Resource Conservation and Recovery Act (42 USC 6901 et seq.)

The RCRA was enacted in 1976 to oversee management of solid and hazardous wastes and facilities. Where facilities are found to be inadequate, necessary facilities and practices would be developed by the responsible state and local agencies or by the private sector. In California, that responsibility was created under the California Integrated Waste Management Act of 1989 and AB 939.

A.11.1.2 Critical Infrastructure Information Act

The Critical Infrastructure Information Act was enacted in 2002 to address protection of high-risk targets. It requires the evaluation and protection of critical infrastructure supporting food and water systems, agriculture, emergency services, energy, among others.

A.11.1.3 National Fire Protection Association 1710 Standard

This standard establishes requirements for the organization and deployment of fire suppression, emergency medical, and special operations to the public by fire departments. This standard addresses the functions and objectives of emergency fire services and requirements for managing resources and systems related to health and safety.

A.11.2 State

A.11.2.1 Health and Safety Code (13000 et seq.)

California Health and Safety Code regulates building standards, fire protection and notification systems and devices, and fire suppression training.

A.11.2.2 Health and Safety Code (13145 and 13146)

California Health and Safety Code implements the State Fire Marshal's regulations, including authority and enforcement responsibilities, and provides wildland fire protection through the California Department of Forestry and Fire Protection.

A.11.2.3 Health and Safety Code (13801 et seq.)

California Health and Safety Code establishes fire districts and their authorization to provide fire protection, ambulance, and rescue services.

A.12 Socioeconomics

There are no federal or state socioeconomic regulations applicable to the proposed action.

A.13 Environmental Justice

A.13.1 Federal

A.13.1.1 Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964 states that "No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Title VI bars intentional discrimination, but also unjustified disparate impact discrimination resulting from policies and practices that are neutral on their face (i.e., there is no evidence of intentional discrimination), but have the effect of discrimination on protected groups.

A.13.1.2 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (USEO 12898)

USEO 12898 requires that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations…." In the memorandum transmitting USEO 12898 to federal agencies, it was further specified that, "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the National Environmental Policy Act [NEPA] of 1969." Guidance on how to implement USEO 12898 and conduct an Environmental Justice analysis has been issued by the CEQ.

A.13.2 State

A.13.2.1 California Government Code 11135(a), 11136

Section 11135(a) of the California Gov. Code prohibits discrimination or the denial of full and equal access to benefits of any program or activity operated or funded by the state or a state agency on the basis of race, national origin, ethnic group identification, religion, age, sexual orientation, color, or disability. This provision requires local agencies to consider fairness in the distribution of environmental benefits and burdens and is enforced through Section 11136, which reduces or eliminates state funding of local government agencies that are determined to be in violation of Section 11135(a).

A.13.2.2 California Government Code 65040.12(e)

Section 65040.12(e) defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." It does not, however, require an analysis of impacts on these populations as part of the CEQA process.

Appendix B

Land Evaluation and Site Assessment Documentation

This appendix describes the Natural Resources Conservation Service's (NRCS's) Land Evaluation and Site Assessment (LESA) analysis of Maxwell Water Intertie (MWI) proposed action effects on agricultural farmland.

Land Evaluation and Site Assessment

The LESA analysis was performed in compliance with Farmland Protection Policy Act (FPPA) requirements. The purpose of the FPPA is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses (7 United States Code 4201). Specifically, the FPPA requires that federal agencies:

- Use criteria (described in this appendix) to identify and take into account the adverse impacts of their programs on the preservation of farmland
- Consider alternative actions, as appropriate, that could lessen adverse impacts
- Make sure that their programs, to the extent practicable, are compatible with state and local government and private programs and policies to protect farmland

As required by the FPPA implementing regulations (7 Code of Federal Regulations [CFR] 658), NRCS staff and proposed action analysts performed LESA calculations using the AD-1006 form to determine an overall farmland conversion score. The LESA analysis is performed by county. Because the MWI proposed action involves one county, one LESA analysis was performed for the proposed action. No LESA analysis was performed for the No Action Alternative. The form criteria are provided below in Methods. The NRCS LESA results are presented below in Farmland Conversion Effects Results.

Using information about the extent of the proposed action provided by a geographic information system (GIS), the NRCS calculated the acreage of Important Farmland affected by the proposed action, percentage of agricultural farmland in the county that would be converted by the proposed action, and the percentage of agricultural farmland in the county with the same or higher relative value. Based on this information, NRCS assigned a land evaluation score, or the relative value of the farmland to be converted, assigning a score of 0 to 100 points, in Part V of the form.

Using information about the extent of the proposed action provided by GIS, input from county agriculture specialists, and NRCS guidance for assigning points for each LESA checklist item, analysts assigned site assessment scores for checklist items, for a total score of 0 to 160 points, in Part VI of the form.

Using the scores from Part V and Part VI of the form, analysts assessed the total LESA rating by adding the land evaluation score (Part V, up to 100 points) and site assessment scores (Part VI, up to 160 points). Analysts then compared the results to significance thresholds established in the FPPA implementing regulations. After determining total LESA scores, the analysts evaluated farmland effects and assessed relative suitability of sites for farmland protection.

The U.S. Department of Agriculture (USDA) recommends the following:

1. Sites with the highest combined scores be regarded as most suitable for protection and the sites with the lowest scores as least suitable for protection. Because only one action alternative is under consideration for the proposed action, this issue is not relevant.
2. Sites receiving a total score of less than 160 points not be given further consideration for protection and no additional sites need to be evaluated.
3. Sites receiving scores totaling 160 points or more be given increasingly higher levels of consideration for protection.
4. When making decisions on proposed actions for sites receiving scores totaling 160 or more points, the following should be considered:
    a. Use of land that is not farmland or use of existing structures
    b. Alternative sites, locations, and designs that would serve the proposed purpose, but would convert either fewer acres of farmland or other farmland that has a lower relative value
    c. Special siting requirements of the proposed action and the extent to which an alternative site fails to satisfy the special siting requirements as well as the originally selected site

Methods

The LESA analysis consists of completing NRCS form AD-1006 with the NRCS. GIS and qualitative analyses were performed to respond to questions on the form. Data and information sources included

- California Department of Conservation Farmland Mapping and Monitoring Program (FMMP) data
- California Department of Conservation Williamson Act and Farmland Security Zone data
- USDA county-level census data on average farm size
- Maxwell Public Utility District mapping
- Colusa County Agricultural Commissioner

Part III

Analysts calculated proposed action acreages using proposed action data in GIS.

A. Total acres to be converted directly. This analysis assessed agricultural farmland that would be permanently removed from agricultural use by the permanent footprint of the new construction of the proposed action. The acreage comprises the Terminal Regulating Reservoir (TRR), TRR Pumping Plant, MWI pipeline, new power poles, and gravel access road.

B. Total acres to be converted indirectly. This analysis assessed any agricultural farmland that would be permanently removed from agricultural use as a result of proposed action implementation. This encompasses acreage that would no longer be farmable, if any, as a result of construction of the gravel access road, assuming that remnant parcels less than 10 acres would be too small to farm.

C. Total acres in site. This analysis assessed the entire footprint of the proposed action, including area that would not affect agricultural farmland. This acreage comprises the TRR, TRR Pumping Plant, MWI pipeline, new power poles, and gravel access road, Funks Reservoir, and dredge placement site.

Part IV

NRCS staff evaluate the Important Farmland as designated by the FMMP that would be permanently affected by the proposed action.

A. Total acres Prime and Unique Farmland

B. Total acres Statewide Important and Local Important Farmland

C. Percentage of farmland in county or local government unit to be converted

D. Percentage of farmland in government jurisdiction with the same or higher value

Part V

NRCS staff provide a land evaluation score based on Part IV of the relative value of the farmland that would be converted, on a scale of 0 to 100 points.

Part VI

Analysts assigned points on checklist items in this section according to criteria established in CFR 658.5(b).

1. Area in nonurban use. How much land is in nonurban use within a radius of 1.0 mile from where the proposed action is intended?
    - More than 90 percent—15 points
    - 90 to 20 percent—14 to 1 point(s)
    - Less than 20 percent—0 points

    This item was assessed using GIS. Analysts generated a buffer of 1 mile around the TRR, TRR Pumping Plant, MWI pipeline, new power poles, and gravel access road, including the temporary construction staging areas, to determine the total acreage of land within a 1-mile radius of the proposed action within the County. The buffer was overlaid on a map of FMMP categories, which include urban and built-up land. For this analysis, urban and built-up land is considered urban use (California Department of Conservation 2017). Then, the acreage within the buffer that is classified as urban and built-up land was calculated using GIS, and the remaining acreage was considered nonurban use.

2. Perimeter in nonurban use. How much of the perimeter of the site borders on land in nonurban use?
    - More than 90 percent—10 points
    - 90 to 20 percent—9 to 1 point(s)
    - Less than 20 percent—0 points

This item was assessed using GIS. The length of the perimeter of the proposed action, including the temporary construction staging areas and the dredge placement site, was measured to determine the total length of the perimeter within the County. Analysts then calculated the proportion of the perimeter that borders on land classified as urban and built-up land, and the remainder was considered to border nonurban use.

3. Percent of site being farmed. How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than 5 of the last 10 years?
    - More than 90 percent—20 points
    - 90 to 20 percent—19 to 1 points(s)
    - Less than 20 percent—0 points

    This item was assessed using the history tool in Google Earth to review past land use practices at the affected parcels.

4. Protection provided by state and local government. Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?
    - Site is protected—20 points
    - Site is not protected—0 points

    This item was assessed using GIS to analyze the footprint of the proposed action with respect to County land use and zoning data. The acreage that the proposed action would occupy, including remnant parcels that would not be suitable for farming after the proposed action is completed, was overlaid on a map of protected farmland, defined as Williamson Act, Farmland Security lands or agricultural conservation easement lands.

5. Distance from urban built-up area. How close is the site to an urban built-up area?
    - The site is 2 miles or more from an urban built-up area—15 points
    - The site is more than 1 mile but less than 2 miles from an urban built-up area—10 points
    - The site is less than 1 mile from, but is not adjacent to an urban built-up area—5 points
    - The site is adjacent to an urban built-up area—0 points

    This item was assessed using GIS. An urban area was defined as a census-designated place with land designed by the FMMP as urban and built-up land.

6. Distance to urban support services. How close is the site to water lines, sewer lines and/or other local facilities and services whose capacities and design would promote nonagricultural use?
    - None of the services exist nearer than 3 miles from the site—15 points
    - Some of the services exist more than 1 but less than 3 miles from the site—10 points
    - All of the services exist within 0.5 mile of the site—0 points

    This item was assessed using GIS to analyze the distance from the footprint of the proposed action to the boundary of the Maxwell Public Utility District (Colusa Local Agency Formation Commission 2017).

7. Size of present farm unit compared to average. Is the farm unit(s) containing the site (before the proposed action) as large as the average-size farming unit in the county.
    - As large or larger—10 points
    - Below average—deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average—9 to 0 points

    This item was assessed by finding the size of all farms—defined as adjacent parcels under the same ownership—that intersected with the proposed action, and then averaging their size. This average farm size was compared to the average farm size in Colusa County from USDA Census of Agriculture 2012 (USDA 2012).
8. Creation of non-farmable farmland. If this site is chosen for the proposed action, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?
    - Acreage equal to more than 25 percent of acres directly converted by the proposed action—10 points
    - Acreage equal to between 25 and 5 percent of the acres directly converted by the proposed action—9 to 1 point(s)
    - Acreage equal to less than 5 percent of the acres directly converted by the proposed action—0 points

    The proposed action includes a road, the construction of which could create remnant parcels that are too small for farming. Proposed action analysts used GIS software to identify whether any remnant parcels would be created that would not be adjacent to other agricultural parcels and thus able to remain in agricultural use.
9. Availability of farm support services. Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?
    - All required services are available—5 points
    - Some required services are available—4 to 1 point(s)
    - No required services are available—0 points

    Information was obtained from the County Agricultural Commissioner’s Office (Hinton pers. comm.).
10. On-farm investments. Does the site have substantial and well-maintained on-farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?
    - High amount of on-farm investment—20 points
    - Moderate amount of on-farm investment—19 to 1 point(s)
    - No on-farm investment—0 points

    This item was assessed using Google Earth to review existing on-farm investments at the affected parcel.

11. Effects of conversion on farm support services. Would the proposed action at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?
    - Substantial reduction in demand for support services if the site is converted—10 points
    - Some reduction in demand for support services if the site is converted—9 to 1 point(s)
    - No significant reduction in demand for support services if the site is converted—0 points

    Information was obtained from the County Agricultural Commissioner's Office (Hinton pers. comm.).
12. Compatibility with existing agricultural use. Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?
    - Proposed action is incompatible with existing agricultural use of surrounding farmland—10 points
    - Proposed action is tolerable to existing agricultural use of surrounding farmland—9 to 1 point(s)
    - Proposed action is fully compatible with existing agricultural use of surrounding farmland—0 points

    This information was obtained from the proposed action's objectives.

Farmland Conversion Effects Results

LESA Analysis Results

Part III

A. The proposed action would directly convert 148 acres of agricultural farmland, defined as Important Farmland designated by FMMP.

B. The proposed action would indirectly convert 25 acres of agricultural farmland, defined as Important Farmland designated by FMMP.

C. Total acres in the site are 580. This encompasses 148 acres of permanent impact, including 134 acres for the holding pond; 432 acres of temporary impact, including 225 acres for the existing Funks Reservoir; and less than 1 acre of no impact, including 0.2 acre for the pipeline.

Part IV

A. The proposed action would affect 168 acres of Prime and Unique Farmland.

B. The proposed action would affect 5 acres of Statewide Important and Local Important Farmland.

C. The Farmland comprising the proposed action represents 0.06 percent of the Farmland in Colusa County.

D. The percentage of Farmland in Colusa County with the same or higher relative value is 25.99 percent.

Part V

The land evaluation score based on the four criteria in Part IV is 68.

Part VI

1. **Area in nonurban use. How much land is in nonurban use within a radius of 1.0 mile from where the proposed action is intended?** The results indicated that 100 percent of the total acreage within the buffer was nonurban use (DOC 2016). This criterion received a score of 15.
2. **Perimeter in nonurban use. How much of the perimeter of the site borders on land in nonurban use?** The results indicated that 100 percent of proposed action perimeter borders on land in nonurban use (DOC 2016). This criterion received a score of 10.
3. **Percent of site being farmed. How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than 5 of the last 10 years?** According to satellite imagery analysis of the area around the proposed action for the years between 2008 and 2018, all affected properties have consistently farmed for the more than 5 of the last 10 years (Google Earth 2017). This criterion received a score of 20.
4. **Protection provided by state and local government. Is the site subject to State or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?** The results indicate that 0 percent of the proposed action is located on land protected by agricultural conservation easement (CCED 2016), and 0 percent of the proposed action is located on land protected by Williamson Act (Colusa County Assessor's Office n.d.). This criterion received a score of 0.
5. **Distance from urban built-up area. How close is the site to an urban built-up area?** The results indicate that the proposed action is 3.1 miles from the closest census-designated place containing FMMP-designated urban and built-up land, Maxwell (U.S. Census Bureau 2010; DOC 2016). This criterion received a score of 15.
6. **Distance to urban support services. How close is the site to water lines, sewer lines and/or other local facilities and services whose capacities and design would promote nonagricultural use?** The results indicate that the proposed action is 2.3 miles from the closest urban utilities network, Maxwell Public Utility District (Colusa LAFCO 2017). This criterion received a score of 10.
7. **Size of present farm unit compared to average. Is the farm unit(s) containing the site (before the proposed action) as large as the average-size farming unit in the county?** The average size farm in Colusa County was 579 acres in 2012 (USDA 2012), the most recent year for which average farm size data are available. The proposed action would occupy acreage currently occupied by farm units that are an average of 1,840 acres, or larger than the average farm unit. This criterion received a score of 10.
8. **Creation of non-farmable farmland. If this site is chosen for the proposed action, how much of the remaining land on the site will become non-farmable because of interference with land patterns?** The results indicated that the acreage of nonviable remnant parcels on

farmable land would total approximately 5 percent of the acreage of the original parcels. This criterion received a score of 1.

9. **Availability of farm support services. Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?** According to the Colusa County Agricultural Commissioner (Hinton pers. comm.), the area in the vicinity of the proposed action has adequate markets and, because it is almost exclusively in agricultural production, does not have other agricultural support services. The proposed action would not have an impact on farm services. This criterion received a score of 0.

10. **On-farm investments. Does the site have substantial and well-maintained on-farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?** According to satellite imagery analysis of the acreage that would be occupied by the proposed action, the overall amount of on-farm investment is moderate (Google Earth 2017). A small number of ancillary agricultural structures were observed on the farms. Soil and water conservation measures have been applied to many of the fields. This criterion received a score of 10.

11. **Effects of conversion on farm support services. Would the proposed action at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?** Considering there are approximately 547,088 acres of Important Farmland and Grazing Land in Colusa County (DOC 2016), the permanent conversion of 518 acres of Important Farmland in Colusa County under this alternative would result in no substantial reduction in demand for farm support services in the area (Hinton pers. comm.). This criterion received a score of 0.

12. **Compatibility with existing agricultural use. Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?** The proposed action is designed to support agricultural activity by improving agricultural water availability. Because the proposed action is proposed for implementation to support agricultural practices, it was assumed that the proposed action is fully compatible with existing agricultural use of surrounding farmland, and a score of 0 points was assigned.

LESA Final Results

Table 1 shows the Land Evaluation, Site Assessment, and total scores for the Proposed Action.

Table 1. Land Evaluation and Site Assessment Scores for the Maxwell Water Intertie Proposed action

Alternative	Land Evaluation Score (Part V)	Site Assessment Score (Part VI)	Total Points
Proposed Action	68	91	159
Source: NRCS-AD-1006 form (see Attachment 1)			

Findings

The final combined LESA score was under the threshold score of 160. Therefore, no evaluation of additional alternatives is required.

References

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California Department of Conservation (DOC). 2016. Farmland Mapping and Monitoring Program data. Colusa County. ftp://ftp.consrv.ca.gov/pub/dlrp/fmmp/2016/.

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Colusa Local Agency Formation Commission (Colusa LAFCO). 2017. Hearing Draft. Maxwell Public Utility District (MPUD), Municipal Service Review (MSR), Sphere of Influence (SOI). September. http://www.colusalafco.org/uploads/1/1/4/5/11454087/hearing_draftmaxwell_pud_msr-soi_9.7.17.pdf. Accessed on July 6, 2018.

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U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request July 16, 2018	
Name of Project Maxwell Water Intertie Project		Federal Agency Involved U.S. Department of Agriculture	
Proposed Land Use Reservoir, pipeline, O&M road		County and State Colusa, California	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS 7/16/2018	Person Completing Form: Ken Oster
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated 260859	Average Farm Size 579
Major Crop(s) Rice, Almonds, Walnuts	Farmable Land In Govt. Jurisdiction Acres: 285689 % 38.6	Amount of Farmland As Defined in FPPA Acres: 27158 % 36.7	
Name of Land Evaluation System Used CA Revised Storie Index	Name of State or Local Site Assessment System None	Date Land Evaluation Returned by NRCS 7/17/2018	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	148			
B. Total Acres To Be Converted Indirectly	25			
C. Total Acres In Site	173			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	168			
B. Total Acres Statewide Important or Local Important Farmland	5			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.06			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	25.99			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	68			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15			
2. Perimeter In Non-urban Use	(10)	10			
3. Percent Of Site Being Farmed	(20)	20			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	15			
6. Distance To Urban Support Services	(15)	10			
7. Size Of Present Farm Unit Compared To Average	(10)	10			
8. Creation Of Non-farmable Farmland	(10)	1			
9. Availability Of Farm Support Services	(5)	0			
10. On-Farm Investments	(20)	10			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	0			
TOTAL SITE ASSESSMENT POINTS	160	91	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	68	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	91	0	0	0
TOTAL POINTS ***(Total of above 2 lines)***	260	159	0	0	0

Site Selected: A	Date Of Selection July 18, 2018	Was A Local Site Assessment Used? YES ☐ NO ☑

Reason For Selection:

The site was selected because it was the closest distance between the two canal systems where an existing regulating reservoir was already available, which meant that only one additional regulating reservoir needed to be constructed to allow conveyance of water between the systems.

Name of Federal agency representative completing this form: Diana Roberts	Date: July 18, 2018

(See Instructions on reverse side) **Form AD-1006 (03-02)**

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map**,** or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

Appendix C

Biological Resources Information

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Sites (3912233) OR Maxwell (3912232))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Perognathus inornatus San Joaquin Pocket Mouse	AMAFD01060	None	None	G2G3	S2S3	
Plegadis chihi white-faced ibis	ABNGE02020	None	None	G5	S3S4	WL
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	

Record Count: 11

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Consultation Code: 08ESMF00-2018-SLI-2701
Event Code: 08ESMF00-2018-E-07873
Project Name: Maxwell Pipeline

July 12, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-2701

Event Code: 08ESMF00-2018-E-07873

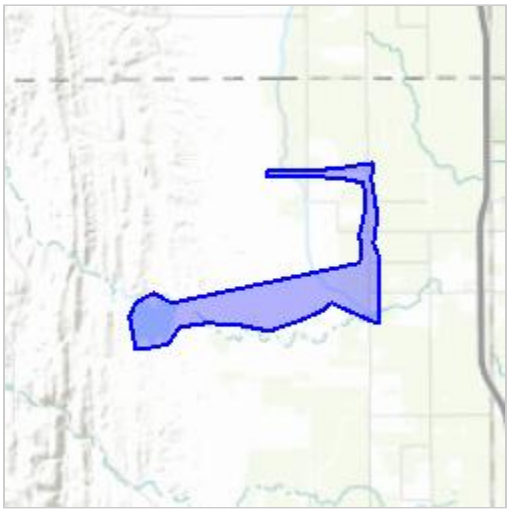
Project Name: Maxwell Pipeline

Project Type: WATER SUPPLY / DELIVERY

Project Description: 2022, Colusa County

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/39.34301415429494N122.22881085124496W



Counties: Colusa, CA

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/7850
Habitat assessment guidelines:
https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio*	Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/8246

Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp *Lepidurus packardi*	Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/2246

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix D

Section 106 Programmatic Agreement

5.0 c) SHPO PROGRAMMATIC AGREEMENT

https://ems-team.usda.gov/sites/RD_CA/sec/Shared%20Documents/ERD%20%20(2017)/PA%20-sign.pdf

NOTE: The Rural Economic and Community Development Services is formally known as USDA Rural Development.

PROGRAMMATIC AGREEMENT
AMONG
THE RURAL ECONOMIC AND COMMUNITY DEVELOPMENT SERVICES,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING THE IMPLEMENTATION OF THE
RURAL ECONOMIC AND COMMUNITY DEVELOPMENT SERVICES'
PROGRAMS IN CALIFORNIA

WHEREAS, the California Offices of the Rural Economic and Community Development Services (RECDS) is authorized under the Consolidated Farm and Rural Development Act (7 U.S.C. 1921, as amended) and the Housing Act of 1949 (42 U.S.C. 1471, as amended) to carry out various activities and programs assisting rural development; and

WHEREAS, the RECDS has determined that the implementation of its activities and programs may have an effect on properties that are listed in or eligible for inclusion in the National Register of Historic Places (National Register), and has consulted with the Advisory Council on Historic Preservation (Council) and the California State Historic Preservation Officer (SHPO) pursuant to Section 800.13 of the regulations, 36 CFR Part 800, implementing Section 106 of the National Historic Preservation Act 16 U.S.C. 470f; and

WHEREAS, many of RECDS' programs and activities subject to compliance with Section 106 of the National Historic Preservation Act have a minimal potential to affect historic properties;

NOW, THEREFORE, the RECDS, the Council, and the SHPO agree that the RECDS shall administer the subject activities and programs in accordance with the following stipulations to satisfy their Section 106 responsibilities for individual undertakings.

STIPULATIONS

The RECDS shall ensure that the following measures are carried out:

I. APPLICABILITY

This Programmatic Agreement (PA) outlines procedures which will substitute for the Section 106 process outlined in the Council's regulations, 36 CFR Part 800, for all RECDS undertakings. This PA does not apply to the Housing Preservation Grants program, that is addressed in a separate agreement between the FmHA, the Council, and the National Conference of State Historic Preservation Officers executed in 1986, and which still applies to the Housing Preservation Grants now administered by the RECDS.

II. DEFINITIONS

A. The definitions included in the Council's regulations at 36 CFR 800.2 apply to this PA, and selected definitions are set out in this Stipulation for reference:

1. UNDERTAKING means any project, activity, or program that can result in changes in the character or use of historic properties, if any such historic properties are located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of the RECDS; or licensed, or assisted by the RECDS to be covered by this PA. Undertakings include new and continuing projects, activities, or programs, and any of their elements.

2. AREA OF POTENTIAL EFFECT (APE) means the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist.

3. HISTORIC PROPERTY means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register.

4. INDIAN TRIBES means the governing body of any Indian tribe, band, nation, or other group that is recognized as an Indian tribe by the Secretary of the Interior and for which the United States holds land in trust or restricted status for that entity or its members.

B. Other selected definitions included for reference have been set out or are implicit in the descriptions of the participants in the Section 106 process included in 36 CFR 800.1(c):

1. INTERESTED PERSONS are those organizations and individuals that are concerned with the effects of an undertaking on historic properties. For purposes of this PA, Indian tribes shall be described as interested persons, but retain the rights to participate in the Section 106 review detailed in this PA pursuant to 36 CFR 800.1(c)(ii).

2. APPLICANTS for RECDS assistance include private individuals, businesses, not-for-profit groups, and public agencies that are applying for financial assistance or approval actions from the RECDS. The requested assistance or approvals may relate to housing, small rural businesses, or rural community facilities and infrastructure improvements. RECDS may request that the Applicant prepare the necessary information and analyses to fulfill the requirements of this PA, and may permit the Applicant to consult with the SHPO to define and perform the RECDS's identification efforts under Stipulation V.A.

III. IDENTIFICATION OF UNDERTAKINGS AND THE AREA OF POTENTIAL EFFECTS

The RECDS shall determine if the activity it intends to permit, fund, or carry out constitutes an undertaking. If the RECDS determines that an activity is an undertaking, it shall establish the APE for each undertaking. The APE will be redefined, if needed, to include the entire historic structure, site, or object, when any portion of that structure, site, or object, is within an APE.

IV. PROGRAM ACTIVITIES AND INDIVIDUAL PROJECTS EXEMPT FROM SHPO OR COUNCIL REVIEW

A. For purposes of this PA, the RECDS has reviewed the current programs, projects, and activities in consultation with the SHPO and the parties have agreed that the undertakings and activities included in Appendix A of this PA will not be reviewed by the SHPO or Council pursuant to Section 106. RECDS will report such activities to the SHPO under the process outlined in Stipulation IX. of this PA. RECDS is not required to determine an APE for programs, projects, or activities listed in Appendix A.

B. If RECDS determines that a proposed undertaking is not exempt from review pursuant to Stipulation IV. A., it will request a records search from the appropriate Information Center of the California Historical Resources File System (Information Center) to identify historic properties that may be located in the APE. If the Information Center does not identify historic properties in the APE and: 1) does not recommend that RECDS perform an archeological survey; or 2) if RECDS performs the archeological survey recommended by the Information Center and does not identify properties that may be eligible for inclusion in the National Register, then RECDS may determine that no historic properties are located in the APE, document the finding, and proceed with the undertaking without review by the SHPO or Council.

V. IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES

A. If the Undertaking is not exempted from review pursuant to Stipulation IV. A. or RECDS determines that historic properties may be located in the APE pursuant to Stipulation IV. B., RECDS or the Applicant acting on RECDS' behalf shall consult with the appropriate Information Center and Interested Persons to identify historic properties within the APE. These identification efforts shall extend to all buildings, structures, objects, archeological sites, and sites that may have special importance to Native Americans or other Interested Persons and that appear to be fifty (50) or more years old. RECDS will assess the recommendations of the Information Center and conduct any surveys that RECDS determines necessary. RECDS will forward the information to the SHPO regarding the basis and results of the RECDS's identifications efforts with its determination of National Register eligibility pursuant to Stipulation V.B.

B. The RECDS shall evaluate each property identified pursuant to Stipulation V. A. by applying the National Register Criteria, 36 CFR 60.4, in consultation with the SHPO to each property within the APE. The RECDS shall notify the SHPO in writing of its determination regarding the National Register eligibility, and the SHPO shall, within thirty (30) days, notify the RECDS if it agrees or disagrees with its determination. The SHPO may request that the RECDS reevaluate a previously evaluated property if warranted by the passage of time or changing perceptions of significance.
C. If the RECDS and SHPO do not agree on the National Register eligibility of a property, or if the Council or the Secretary of the Interior request, the RECDS shall obtain a determination from the Secretary of the Interior pursuant to applicable National Park Service regulations.

VI. ASSESSMENT OF EFFECTS TO HISTORIC PROPERTIES

A. The RECDS shall apply the Criteria of Effect and Adverse Effect, in accordance with 36 CFR 800.9 to all Historic Properties located in the APE. This consultation with the SHPO should take place as early as possible in the planning stages of the undertaking, when the widest range of project alternatives is open for consideration. The RECDS will provide the SHPO with a full description of the undertaking and its possible effects to Historic Properties, including maps, photographs, drawings, archaeological site records and reports, and the views of the Applicant, affected local governments, Indian tribes, Federal agencies, interested persons, and the public as appropriate:

1. If the RECDS determines that an undertaking will have No Effect on historic properties, the RECDS will notify the SHPO in writing of this finding. If the SHPO does not object to the finding within fifteen (15) days, the undertaking may proceed without further review.

2. If the RECDS determines that an undertaking will not adversely affect a historic property or the undertaking meets one of the exceptions to the Criteria of Adverse Effect, 36 CFR 800.9(c), the RECDS will notify the SHPO of the finding. If the SHPO does not object to the finding within thirty (30) days, the undertaking may proceed without further review.

3. The RECDS shall consult further with the SHPO or Council, as appropriate, if: (a) any person requests that the Council review RECDS findings in accordance with 36 CFR 800.6(c); (b) the undertaking changes in ways that could affect historic properties; (c) previously undocumented historic properties are discovered during the implementation of the undertaking or if a known historic property will be affected in an unanticipated manner; (d) a historic property that was to be avoided has been inadvertently or otherwise affected; or (e) any condition of the undertaking; such as a delay in implementation or implementation in phases over time, may justify reconsideration of the current National Register status of historic properties within the APE.

4. If RECDS determines that the project will adversely affect a historic property, it will determine if the property will be treated according to the Standard Mitigation Measures set in Stipulation VII. or if the consultation process set out in 36 CFR 800.5(e) should be followed and will notify the SHPO in writing of its decision. The consultation process set out in 36 CFR 800.5(e) will be followed and RECDS will provide the Council with an adverse effect notice if:

a. RECDS determines not to implement the standard mitigation measures;
b. the SHPO withdraws from consultation;
c. the undertaking will adversely affect a National Historic Landmark;
d. the undertaking has known public opposition relating to historic properties;
e. the undertaking may affect a historic property containing human remains;
f. the SHPO objects in writing within thirty (30) calendar days after receipt of RECDS's notice that it will proceed with the Standard Mitigation Measures; or
g. The SHPO determines that the effects of an undertaking cannot be adequately addressed by the Standard Mitigation Measures set out below.

VII. STANDARD MITIGATION MEASURES

A. A Standard Mitigation Measures Agreement (SMMA) will be developed according to the following procedures:

1. RECDS, SHPO, the Applicant and other interested parties, if appropriate, shall consult to develop a written agreement that establishes the mitigation and recordation measures, such as but not limited to the salvage, storage, and reuse of any significant architectural features that may otherwise be demolished. The Council will not be a party to this agreement. The SMMA shall be signed by RECDS, SHPO, and other consulting parties, including the Applicant, to acknowledge that all specified measures shall be fulfilled as a condition of RECDS assistance. An SMMA shall include one or more of the following measures, modified as necessary, to consider the effects of the specific undertaking:

a. Recordation: RECDS shall ensure that the historic property is recorded prior to its demolition or alteration according to a Recordation Plan developed in consultation with the SHPO. At a minimum this plan will establish recordation methods and standards, and designate the appropriate archives for the deposit of this material. RECDS and the SHPO may mutually agree to waive the recordation requirement if the affected historic property will be rehabilitated in substantial, although not complete conformance with the Standards.

b. Curation: If the property will be demolished, RECDS, the SHPO, and the property owner will consult to determine if the property contains significant architectural features that could be reused or curated. If such features exist, RECDS, the SHPO, and the property owner will develop measures to ensure that the selected features are removed in a manner that minimizes damage and are delivered to an appropriate party for curation or reuse.

c. Data Recovery: If an archeological property will be affected by the undertaking, RECDS, the SHPO, and the property owner will consult to develop a data recovery plan consistent with the Secretary of the Interior's Standards and Guidelines for Archeological Documentation (48 FR 44734-37) and take into account the Council's publication, "Treatment of Archeological Properties."

VIII. DISCOVERIES AND UNFORESEEN EFFECTS

A. The RECDS should plan for discoveries made during project implementation, particularly when an undertaking will take place within an area where buried archaeological deposits may be encountered. Such discovery plans shall be prepared in consultation with the SHPO and interested Native American groups and shall be submitted to the SHPO for review and approval prior to the commencement of the undertaking.

B. If the RECDS completes the review process established by this Programmatic Agreement and finds, after implementing the undertaking, that it will affect a previously unidentified property that may be eligible for inclusion in the National Register or will affect a known historic property in an

unanticipated manner, the RECDS shall direct the Applicant to take all reasonable measures to avoid or minimize harm to the property until the RECDS concludes consultation with the SHPO. If the newly discovered property has not previously been included in or determined eligible for the National Register, the RECDS may assume that the property is eligible for purposes of this PA. The RECDS will notify the SHPO at the earliest possible time of the discovery and will coordinate with the Applicant to develop actions that will take the effects of the undertaking into account. The RECDS will notify the SHPO of any time constraints, and the RECDS and SHPO will mutually agree upon the timeframe for this consultation. The RECDS will provide the SHPO with written recommendations reflecting its consultation with the SHPO. If the SHPO does not object to the RECDS' recommendations within the agreed upon timeframe, the RECDS will ensure that the Applicant modifies the scope of work as necessary to implement the recommendations.

IX. REPORTING

A. The RECDS will notify the SHPO of its determinations made under Stipulation IV. A. and B. through its NEPA Finding of No Significant Impact (FONSI) public notification process, as required by RECDS' environmental procedures contained in FmHA Instruction 1940-G. If the SHPO does not notify RECDS within fifteen (15) days that it disagrees with the FONSI, RECDS may proceed with the undertaking.

B. The RECDS shall provide the SHPO and the Council with an initial biannual report on November 30, 1997 that summarizes the actions taken to implement the terms of this PA and recommends any action or revisions that should be considered during the next reporting period. The parties will review this information to determine if amendments to the PA are necessary. Subsequent reports will be developed by RECDS at the request of the Council.

X. PUBLIC INVOLVEMENT AND RESOLVING PUBLIC OBJECTIONS

A. The RECDS shall develop a public participation program in accordance with the guidance contained in the Council's publication, "Public Participation in Section 106 Review: A Guide for Agency Officials" (February 1989) to effectively notify and involve the public and interested persons in undertakings that may affect historic properties. The public participation program shall be incorporated into the RECDS' existing public involvement procedures. The RECDS shall consult with the Council and the SHPO to help develop this program, and will provide the Council and the SHPO with an opportunity to review and comment on the program.

B. At any time during the implementation of the measures contained in this PA should an objection to any such measure or the manner in which it is implemented be raised by a member of the public, the RECDS shall consult with the objecting party, the SHPO, and the Council, as to address the objection. If the objection pertains to the RECDS' decision to implement standard mitigation measures pursuant to Stipulation VII. above, the RECDS shall terminate the abbreviated consultation process and initiate consultation with the SHPO and the Council pursuant to 36 CFR 800.5(e).

XI. DISPUTE RESOLUTION

Should the SHPO or the Council object within the timeframes provided by this PA to any plans, specifications, or other documentation provided for review pursuant to this PA, the RECDS shall consult with the SHPO or the Council to resolve the objection. If the RECDS determines that the objection cannot be resolved, the RECDS shall forward all documentation regarding the dispute to the Council. Within thirty (30) days of receipt of the documentation, the Council will either (1) provide the RECDS with recommendations which the RECDS will take into account in reaching a decision on the dispute, or (2) notify the RECDS that it will comment pursuant to 36 CFR 800.6(b), and proceed to comment. Any Council recommendation or comment will be understood to pertain only to the dispute, and the RECDS's responsibility to carry out all actions under this PA that are not the subject of the dispute will remain unchanged.

XII. ANTICIPATORY DEMOLITION

The RECDS agrees that it will not grant assistance to an Applicant who, with the intent to avoid the requirements of this PA or the National Historic Preservation Act, has intentionally significantly adversely affected a historic property to which the assistance would relate, or having legal power to prevent it, allowed such significant adverse effect to occur. The RECDS may, after consultation with the Council, determine that circumstances justify granting such assistance despite the adverse effect created or permitted by the Applicant.

XIII. IMPLEMENTATION AND TRAINING

The RECDS will notify all appropriate RECDS staff of the execution of this PA and develop

management procedures to ensure that its terms are implemented. The SHPO and the Council may provide occasional basic historic preservation assistance to RECDS staff and representatives. This may include, but not be limited to, the implementation of this PA and the application of the Secretary of the Interior's Standards and Guidelines for Rehabilitation 36 CFR Part 67, and the Secretary of the Interior's Standards and Guidelines for Archeological Documentation.

XIV. MONITORING

The SHPO and the Council may monitor any activities carried out pursuant to this PA, and the Council will review such activities as requested. The RECDS will cooperate with the SHPO and the Council in carrying out these monitoring responsibilities.

XV AMENDMENTS

Any party to this PA may request it be amended, whereupon the parties will consult in accordance with 36 CFR 800.13 to consider such an amendment.

XVI. TERMINATION

Any party to this PA may terminate it by providing thirty (30) days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the RECDS will comply with 36 CFR 800.4 through 800.6 with regard to individual undertakings covered by this PA.

XVII. FAILURE TO COMPLY WITH THIS AGREEMENT

In the event the RECDS does not carry out the terms of this PA, the RECDS will comply with 36 CFR 800.4 through 800.6 with regard to individual undertakings covered by this PA.

EXECUTION AND IMPLEMENTATION of this PA evidences that the RECDS has afforded

the Council a reasonable opportunity to comment on the administration of its various programs and further evidences that the RECDS has satisfied its Section 106 responsibilities for all individual undertakings of the programs.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: Robert D. Bush, Executive Director date: 12/06/95

RURAL ECONOMIC AND COMMUNITY DEVELOPMENT SERVICES

By: Michael M. Reyna, State Director date: 11-1-95

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

By: Cherilyn Widell, State Historic Preservation Officer date: 11/17/95

APPENDIX A
LIST OF ACTIVITIES EXCLUDED FROM THE INFORMATION CENTER AND SHPO REVIEW

A. GENERAL ACTIVITIES

1. Financial assistance which does not involve structures that appear to be fifty (50) or more years old; and
2. Financial assistance which will not result in changes in the use of land.

B. HOUSING ASSISTANCE

1. Financial assistance for the purchase of an existing single or multi-family dwelling;
2. Single or multi-family home construction in existing improved subdivisions that does not require additional ground disturbance;
3. RECDS' approval to build an individual structure on an improved lot within a previously built subdivision;
4. Self-help Technical Assistance Grants;
5. Technical Supervisory Assistance Loans and Grants; and
6. Weatherization of any housing unit that does not appear to be fifty (50) or more years old or otherwise eligible for inclusion in the National Register of Historic Places, either individually or as a contributing member of a historic district.

C. COMMUNITY AND BUSINESS PROGRAMS

1. New or replacement utilities within previously disturbed road right-of-way or utility corridors that do not involve excessive ground disturbance;
2. New or replacement water wells and related facilities, provided they do not involve extensive ground disturbance;
3. Modifications to existing water or wastewater treatment plants where the area is disturbed by previous construction, and do not involve extensive ground disturbance;
4. For business and community facility projects:
    a. Construction on sites where the ground has been extensively disturbed; or
    b. Construction that does not involve extensive ground disturbance on developed parcels or parcels located within developed industrial or commercial areas.
5. Water storage facilities that do not involve extensive ground disturbances.

NATIONWIDE PROGRAMMATIC AGREEMENT AMONG THE U.S. DEPARTMENT OF AGRICULTURE RURAL DEVELOPMENT PROGRAMS, NATIONAL CONFERENCE OF STATE HISTORIC PRESERVATION OFFICERS, AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION FOR SEQUENCING SECTION 106

WHEREAS, the United States Department of Agriculture's (USDA) Rural Development (RD) programs offer low interest loans, grants, and loan guarantees to support essential services such as housing, economic development, health care, first responder services and equipment, and water, electric, and telecommunications infrastructure; and promote economic development by supporting loans to businesses through banks, credit unions, and community–managed lending pools; and

WHEREAS, RD has a loan portfolio of more than $220 billion to bring enhanced economic opportunity to the Nation's rural communities; and

WHEREAS, RD is authorized under the Rural Electrification Act of 1936, as amended; the Consolidated Farm and Rural Development Act of 1961, as amended; the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act of 2000; the Agriculture Risk Protection Act of 2000, as amended; the Farm Security and Rural Investment Act of 2002, as amended; the Food, Conservation, and Energy Act of 2008; the Agricultural Act of 2014; the Food Security Act of 1985; the Housing Act of 1949, as amended; and 7 U.S.C. §§ 2008u, 8103, 8104, 8105, and 8107 to carry out 59 programs and services in support of its borrower or applicant's (applicant) activities, by providing financial assistance in rural America that provides much–needed infrastructure or infrastructure improvements to rural communities, in the areas of business–cooperative services, housing, water and waste treatment, electric power, and telecommunications services; and

WHEREAS, RD is divided into the Rural Utilities Service, Rural Business–Cooperative Service, and Rural Housing Service with unique missions to bring prosperity and opportunity to rural areas; and

WHEREAS, the USDA Rural Utilities Service (RUS) administers programs that provide much–needed infrastructure or infrastructure improvements to rural communities. These programs include water and waste treatment through the Water and & Environmental Programs (WEP), electric power (Electric) and telecommunications (Telecom) services. All of these services play a critical role in helping to expand economic opportunities and improve the quality of life for rural residents; and

WHEREAS, the USDA Rural Business–Cooperative Service (RBS) offers programs to support business development and job training opportunities for rural residents. RBS programs help provide capital, technical support, educational opportunities, and entrepreneurial skills that can help rural residents start and grow businesses or access jobs in agricultural markets and in the bio–based economy. RBS programs connect rural residents to the global economy by: supporting business growth and development; facilitating sustainable renewable energy development; developing regional food systems; generating and retaining jobs through recreation and natural resource restoration, conservation, and management; and increasing access to broadband. These investments support the nation's long–term prosperity by ensuring that rural communities are self–sustaining, repopulating, and thriving economically; and

WHEREAS, the USDA Rural Housing Service (RHS) offers a variety of programs to build or improve housing and essential community facilities in rural areas. RHS offers loans, grants, and loan guarantees for facilities such as single– and multi–family housing, child care centers, fire and police stations, hospitals, libraries, nursing homes, schools, first responder vehicles and equipment, and housing for farm laborers. RHS provides technical assistance loans and grants in partnership with non–profit organizations, Indian tribes, state and federal government agencies, and local communities; and [1]

WHEREAS, RD has determined that projects receiving financial assistance under RD programs are undertakings subject to review under Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 300101 et seq., and its implementing regulations (36 CFR Part 800); and

WHEREAS, due to the distinct nature of RD's three (3) main agencies RUS, RHS, and RBS, and those RD agencies and programs with similar mission areas that may be amended or added in the future, the appendices have been divided by each agency for undertakings, programs, and services that do not have the potential to cause effects on historic properties, based upon consultation with the signatories of this agreement, assuming such historic properties were present. These appendices will address program efficiencies, tribal engagement, public outreach, and the conclusion of the Section 106 four step process; and

WHEREAS, the appendices are separated as follows: RUS (Appendix A); RBS (Appendix B); RHS (Appendix C); and

WHEREAS, each appendix will be completed in consultation with the appropriate RD Federal Preservation Officer (FPO), Advisory Council on Historic Preservation (ACHP), National

[1] Rural Development may hold title to foreclosed properties but reserves the right, in consultation with the Secretary and the Advisory Council on Historic Preservation, to determine the extent of federal ownership and control for the reasonable application of 36 CFR 800.5(a)(2)(vii).

Conference of State Historic Preservation Officers (NCSHPO), Indian tribes and Native Hawaiian organizations as appropriate, and other consulting parties, to make an amendment to the executed Nationwide Programmatic Agreement (NPA). This consultation for the appendices will occur subsequently following the execution of the NPA. Until these appendices are approved as an amendment to the NPA, the activities and programs that they address will follow the four step Section 106 process as set forth in 36 CFR Part 800, or as outlined in existing state agreements; and

WHEREAS, the resulting consultations on the appendices will only cover the information in a given appendix; and

WHEREAS, each appendix will be developed and completed by 2020; and

WHEREAS, the nature of RD funding means that costs for environmental reviews such as for the National Environmental Policy Act (NEPA) and NHPA, are incurred by RD applicants and passed to their customers in utility/usage costs, and are limited to the allocation of the overall project budget; and

WHEREAS, RD defines "obligation" as the approval of financial assistance and each RD program has the authority to de–obligate funding prior to or after award or construction if certain conditions are not met in the RD program's legally binding agreement documents; and

WHEREAS, the schedule for RD projects may span one to five years or longer, and can be composed of multiple projects that are rarely staked or precisely located, and the nature of the undertaking is often unclear, prior to the obligation of funds; and

WHEREAS, RD applicants often do not have the financial wherewithal to fund Section 106 reviews, or the analysis of alternatives, without some level of confidence that RD's low interest funding or grants will be available to assist them; and

WHEREAS, RD applicants are legally bound to apply project funding as stipulated by the conditions of the loan or grant; and

WHEREAS, the current sequencing of the Section 106 process necessitates that RD execute a NPA pursuant to 36 CFR 800.14(b), to obligate funds for borrower assurance prior to the completion of the Section 106 process and to tailor the process to better align with the timing of obligation and completion of the program's Section 106 review, which does not typically synchronize with the normal four step Section 106 process as set forth in 36 CFR Parts 800.3 through 800.7; and

WHEREAS, RD has delegated authority to their applicants pursuant to 36 CFR § 800.2(c)(4) and 7 CFR § 1970.5(b)(2) of the regulations, "Environmental Policies and Procedures" (7 CFR

Part 1970), to comply with the 4 step Section 106 process and advocates for the direct interaction between its borrowers and the State Historic Preservation Officer (SHPO) and Tribal Historic Preservation Officer (THPO), and Indian tribes, including federally recognized Indian tribes, Native Hawaiian organizations, and Alaska Native Corporations (Indian tribe) to support and encourage the consideration of impacts to historic properties early in project planning; and

WHEREAS, Indian tribe means an Indian tribe, band, nation, or other organized group or community, including a native village, regional corporation, or village corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians; and

WHEREAS, Native Hawaiian organization (NHO) means any organization which serves and represents the interests of Native Hawaiians; has as a primary and stated purpose in the provision of services to Native Hawaiians; and has demonstrated expertise in aspects of historic preservation that are significant to Native Hawaiians; and

WHEREAS, this delegation does not include tribal consultation where the tribe specifically asks for government–to–government consultation with RD; and

WHEREAS, Industry, NCSHPO, THPOs, Indian tribes, NHOs, and other stakeholders are invited to be consulting parties, and sign the NPA as an Invited signatory or Concurring party, as appropriate; and [2]

WHEREAS, the public outreach process has been coordinated through information on RD program/agency websites and to RD applicant's communities via their newsletters, and other outlets etc.; and

WHEREAS, RD uses and coordinates the National Environmental Policy Act public participation requirements under 7 CFR Part 1970.14(b) to assist the agency in satisfying the public involvement requirements under Section 106 of the NHPA pursuant to 36 CFR Part 800.2(d)(3); and

NOW, **THEREFORE**, RD, NCSHPO, the ACHP, and others agree that RD will comply with the provisions of this NPA in order to take into account the effects of these undertakings on historic properties and afford the ACHP an opportunity to comment.

[2] Industry means Telecommunications, Electric, Water, Housing and Business applicants and the groups that represent them.

STIPULATIONS

RD, in coordination with its applicants, will ensure that the following stipulations are carried out by someone who meets Secretary of the Interior's (SOI) Professional Qualification Standards (62 FR 33707, June 20, 1997) where appropriate:

I. Conditions of Obligation

RD may approve financial assistance (obligate) for undertakings as defined in 36 CFR 800.16(y) covered by this NPA and its appendices prior to completion of Section 106 review so long as RD agrees to:

A. Condition obligations in RD program's legally binding agreement documents, to ensure that no federal funds for construction are released prior to completion of Section 106 review.

B. Retain the ability to de–obligate RD funding and withdraw RD awards for an undertaking until completion of the Section 106 review.

C. Require applicants to initiate Section 106 no later than ninety (90) business days after the announcement of their obligation if they have not done so already; and to notify the appropriate RD agency that Section 106 has been initiated in accordance with 36 CFR Part 800.2(c)(4), and 7 CFR Part 1970.5(b)(2) of the regulations, "Environmental Policies and Procedures" (7 CFR Part 1970).

D. Require applicants to submit Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 (d)), as amended in 1998 (508 compliant) hard copy or electronic Section 106 documentation to SHPOs, THPOs, Indian tribes, and NHOs based on the preference of the receiving party.

E. Encourage RD applicants to initiate consultation early in the planning process when the greatest number of options are available to avoid historic properties.

F. Ensure applicants comply with the anticipatory demolition requirements, as set forth in Section 110kof NHPA as failure to comply may lead to the de–obligation of RD funds.

II. Deobligation of Funding

A. It is imperative that applicants who intend to receive funding from RD do not engage in activities that could be interpreted to be in violation of Section 110(k) of the NHPA. Violation of Section 110(k) applies to any applicant who, with the intent to avoid the requirements of Section 106, has intentionally, significantly adversely affected a historic property to which the grant or loan would relate, or having the legal power to prevent it, allowed such significant adverse effects to occur.

B. Violation of Section 110k includes anticipatory demolition. Anticipatory demolition occurs when an applicant intentionally destroys a historic property in order to avoid compliance with Section 106 of NHPA. Section 110(k) of the NHPA that was adopted in 1992 to discourage anticipatory demolition by prohibiting Federal agencies from providing grants, loans, permits, or other assistance to any applicant who intentionally destroys a historic property in order to avoid compliance with Section 106 of NHPA, unless the agency consulted with the Council to determine whether such assistance was nevertheless justified. If the applicant is in violation of Section 110(k) of the NHPA, their RD funding may be revoked and the applicant may be unable to receive RD funds to reimburse them for project activities that were done upfront.

III. Roles and Responsibilities

A. The SHPO shall follow those roles and responsibilities established through the NHPA and 36 CFR Part 800.2. The SHPO shall work with RD applicants who contact them through RD's delegation of authority pursuant to 36 CFR § 800.2(c)(4) and 7 CFR § 1970.5(b)(2) of the regulations, "Environmental Policies and Procedures" (7 CFR Part 1970) (Appendix D). The applicant should refer to RD's applicant guidance as well as the respective SHPO guidance regarding submissions to consulting parties.

B. THPOs, Indian tribes, and NHOs shall follow those roles and responsibilities established through the NHPA and 36 CFR Part 800.2. The THPO, Indian tribes, and NHOs are encouraged to coordinate with RD applicants who contact them through our delegation of authority pursuant to 36 CFR § 800.2(c)(4) and 7 CFR § 1970.5(b)(2) of the regulations, "Environmental Policies and Procedures" (7 CFR Part 1970) to engage tribes and NHOs early in the planning process and so that THPOs, Indian tribes, and NHOs shall be engaged in the Section 106 process in the same manner that SHPOs are engaged. The delegation of authority set out in RD's Environmental Policies and Procedures 7 CFR § 1970.5(b)(2) allows RD applicants to coordinate, not consult, with THPOs and does not include tribal consultation where the tribe specifically asks for government–to–government consultation with RD.

    1. RD recognizes that THPOs, Indian tribes, and NHOs have consultative roles in the Section 106 process pursuant to 36 CFR 800.2(c)(2).

    2. RD acknowledges that THPOs, Indian tribes, and NHOs may prefer to work with the identified RD agency contact person(s) rather than RD applicants.

C. The ACHP shall provide technical guidance, participate in dispute resolution, and monitor the effectiveness of this agreement, as appropriate, pursuant to the NHPA, 54 U.S.C. § 300101 et seq. and 36 CFR 800.2(b).

D. RD Loan Technicians and Specialists generally work with RD applicants in the RUS–WEP, RBS, and RHS programs to do loan originating, processing, and servicing. They may also assist the applicant in their outreach.

E. RD State Engineers, are responsible for controlling program costs, managing risks, assisting applicants and borrowers to develop and maintain technical capabilities and project sustainability, and ensuring regulatory requirements like modesty in size, cost, and design are met where required.[3]

F. RD State Architects, review projects for architectural design logic, harmony and integration of all building design and construction elements, compliance with regulations, building construction codes, handicap accessibility and standards applicable to the specific building type, program/scope of project and location /site. Project reviews include a review of all phases of the project from conception to completion.

G. RD State Environmental Coordinators (SECs) are responsible for the state environmental review processes for RUS–WEP, RBS, and RHS. The SEC may often also be the State Engineer or Architect. The environmental review includes Section 106 consultation with the SHPO and engagement with THPOs, Indian tribes, NHOs and other consulting parties as appropriate.

H. RD General Field Representatives (GFRs) provide information and support relating to the programs to a broad range of existing and potential borrowers in assigned areas within the RUS Electric and Telecom programs on a regional level.

I. The Engineering and Environmental Staff (EES) are responsible for reviewing all RUS–Electric and RUS Telecom program projects and RUS WEP projects that meet certain internal criteria. The EES staff includes the RUS FPO, Archaeologists, and Environmental Protection Specialists, and Scientists.

J. The Program Support Staff (PSS) completes environmental reviews and provides expert management and technical consulting services to continuously improve the effectiveness of RD business functions which create prosperity and self–sustainability for all rural Americans. The FPOs for both RHS and RBS work within PSS.

[3] The titles of the RD staff and their duties are subject to change.

K. As National Office staff, which includes the agencies FPOs and other staff that also meets the Secretary of the Interior's (SOI) Professional Qualification Standards for Archaeology and Historic Preservation is responsible for overseeing their respective programs administration at the regional, state, and local level. In accordance with 36 CFR 800, RD recognizes they are responsible for conducting government–to–government consultation for their programs. The responsibility of government–to–government consultation may not be delegated to any other staff, nor carried out on behalf of RD by an applicant, or another federal agency. This does not preclude an applicant from early coordination with Indian tribes if they agree to participate in such discussions. Further, in accordance with 36 CFR 800.2(c)(2)(ii)(E), a tribal nation can enter into a two party agreement with RD to establish tribal consultation protocols with their nation.

L. The applicant is the party submitting an application for financial assistance from RD. The applicant shall provide technical historic property information to RD for use in Section 106 findings and determinations, after appropriate consultations with the SHPO, engagement with Indian tribes and NHOs, and discussions with the landowner. RD will provide the applicant with Section 106 template documents and guidance to ensure they know what Section 106 information should be submitted to consulting parties.

    1. Applicants may use professional cultural resources contractors or consultants who meet the SOI Professional Qualification Standards to prepare Section 106 information, analyses, and recommendations and contact and submit information on their behalf per the delegation of authority pursuant to 36 CFR § 800.2(c)(3) and (4) and 7 CFR § 1970.5(b)(2).

    2. RD applicants must involve the FPO for the RD program which they are applying when:

        i. The project crosses Federal land so RD can coordinate with that agency.

        ii. The project crosses tribal lands so RD can coordinate with the THPO or Cultural Resources staff.

        iii. The SHPO and RD agree there will be adverse effects to historic properties or a program alternative needs to be created.

        iv. The SHPO, THPO, Indian tribe, and/or NHO disagrees with a recommended effect finding or determination of eligibility.

        v. A THPO or Indian tribe requests government–to–government consultation.

vi. An inadvertent discovery is made.

IV. Professional Qualifications and Documentation Standards

A. RD shall ensure that identification, evaluation, treatment, assessment and resolution of adverse effects are carried out by persons meeting the SOI Professional Qualification Standards in the appropriate discipline.

B. Indian tribes and NHOs have special expertise in identifying historic properties that may possess religious and cultural significance to them (36 CFR § 800.4(c)(1)), and the National Register of Historic Places (NRHP) considers the information obtained from a tribe or NHO's recognized expert to be a valid line of evidence in considering determinations of significance and eligibility. Therefore, the requirements for SOI Professional Qualification Standards may be waived or amended in recognition of this special expertise.

C. Submissions from applicants must identify the RD agency and contact. Submissions should follow the project description and APE guidelines provided in RD National Office guidance.

V. Lead Federal Agency

A. For any undertaking, as defined in 36 CFR 800.19(y), that has multiple Federal agencies excluding land managing agencies, RD is the designated lead federal agency for compliance with the requirements of Section 106 pursuant to 36 CFR 800.2(a)(2) and the ACHP's *Frequently Asked Questions About Lead Federal Agencies in Section 106 Review*. RD staff shall follow the terms of this NPA.

B. In cases where RD agency is not the lead agency, but is funding the project in whole or in part, RD funds may be obligated under the terms of this NPA prior to the completion of the Section 106 review and consistent with Stipulation I on state and private lands.

VI. Use of the NPA by Other Federal Agencies

A. For any undertaking where a federal agency other than RD is considering funding, permitting, licensing or approving a portion of a project funded in whole or in part by RD, that agency may use the terms of this NPA to obligate funds or grant a permit, license, or other approval prior to the completion of Section 106 review when the agency has the authority to de-obligate or retract the permit, license, or approval through regulation or a letter of conditions.

B. If a federal agency determines it is appropriate for the terms of this NPA to apply to their actions, they will notify the RD, FPOs, SHPOs, THPOs, Indian tribes, NHOs, and the ACHP.

C. If the federal agency decides to use only portions of the NPA rather than the document in its entirety, the federal agency will consult with RD, the respective SHPO, THPOs, Indian tribes, and the ACHP to develop an MOA or PA. The federal agency will circulate the MOA or PA for signature as an amendment to the NPA as appropriate in accordance with Stipulation XIV.

VII. Consultation on Federal Lands

A. The terms of this NPA do not apply to undertakings which will be located or constructed on federally managed lands, including national parks, wildlife refuges, forests, conservation areas, monuments, wildernesses, historic sites, memorials, military parks, battlefields, battlefield sites, recreation sites, wild and scenic rivers, seashores, lakeshores, and trails.

B. Federal Land managing agencies who act as the lead federal agency, other than RD, may use the full terms of this NPA to obligate funds before Section 106 is complete for an RD funded undertaking if the agency has the authority to de–obligate or retract funding either through regulation or a letter of conditions.

C. If a federal land managing agency, determines it is appropriate for the terms of this NPA to apply to actions on their managed lands, they will notify the RD, FPOs, SHPOs, THPOs, Indian tribes, NHOs, and the ACHP in writing that they agree to adhere to the terms of the NPA.

VIII. Consultation on Tribal Lands

A. The terms of this NPA do not apply to undertakings that will be located or constructed on tribal lands as defined pursuant to 36 CFR § 800.16(x).

B. If an Indian tribe, determines it is appropriate for the terms of this NPA to apply to actions on those lands, the THPO or official representative of the tribe will notify the RD FPOs and the ACHP.

C. If the Indian tribe, chooses, they may sign a two party agreement which uses as a basis, this NPA and RD will submit it to the ACHP for their records. This allows the agreement to be tailored to tribal protocols 36 CFR § 800.2(c)(ii)(E).

1. If the tribe has no THPO designated pursuant to 101(d)(2) of NHPA, the SHPO office located in the state of their tribal office, may execute the agreement on

behalf of the tribe pursuant to 36 CFR 800.2(c)(2)(b), and RD will submit it to the ACHP.

2. Indian tribes and THPOS as appropriate will participate in inadvertent discovery situations.

IX. Emergency and Disaster Management Procedures (Response to Emergencies)

RD agencies will follow the procedures set forth in 36 CFR 800.12 and 7 CFR 1970.18 in responding to emergencies.

A. RD agencies shall follow established state, tribal, county, and/or local procedures related to emergency and disaster management.

B. RD agencies shall coordinate with other federal agencies to assist in the Unified Federal Review (UFR) process when applicable for emergencies and disaster management activities.

C. RD shall adhere to these provisions when carrying out emergency activities under supplemental appropriations provided to RD agencies under The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act).

D. Expedited review for emergency undertakings

1. Determining need for expedited review

i. Pursuant to 36 CFR § 800.12(d), RD may conduct expedited review of emergency undertakings within thirty (30) days from the beginning of the incident period.

ii. Should RD determine that it is necessary to extend the expedited review period for emergency undertaking beyond the initial thirty (30) days, RD shall, in thirty (30)–day increments, as needed, notify in writing the applicant, SHPO and ACHP.

2. Conducting expedited reviews:

i. If the emergency undertaking is an immediate rescue and salvage operation conducted in response to an event to preserve life and property, RD has no Section 106 consultation responsibilities in accordance with 36 CFR § 800.12(d); or

ii. If the emergency undertaking meets one or more of the exemptions in Appendices A–C of this Agreement, RD shall consider the Section 106 review process complete.

iii. If RD determines that the undertaking would adversely affect a historic property during this expedited review period:

1. To the extent practicable RD shall propose treatment or mitigation measures that would address adverse effects to historic properties during implementation, and request the comments of the SHPO and appropriate THPOs, Indian tribes, and NHOs within three (3) business days of receipt of this information unless RD determines the nature of the emergency warrants a shorter time period.
2. RD may provide this information through written requests, telephone conversations, meetings, or electronic media. In all cases, RD shall clarify that an "expedited review" is being requested for the undertaking.
3. RD shall take into account any timely comments provided by the SHPO, appropriate THPOs, Indian tribes, and NHOs in making a decision on how to proceed.
4. Should the SHPO and appropriate THPOs, Indian tribes, and NHOs not comment within three (3) business days, RD shall complete Section 106 for the undertaking based on the available information.
5. RD shall notify the SHPO and appropriate THPOs, Indian tribes, or NHOs of the final decision, indicating how any comments received were considered in reaching that decision.

X. Training

A. RD shall require its staff who have active roles in the Section 106 review process to take Section 106 training through the National Office, ACHP webinars and other on–site training, e–learning, or other reputable sources.

B. RD shall provide training and guidance to each program to develop their appendices and use the NPA.

C. RD shall continue to provide guidance and training to new and continuing staff regarding RD environmental review processes and working with SHPO, Indian tribe, and NHO staffs.

D. RD shall prepare a training on the release of funds under the terms of the NPA.

E. RD may invite the SHPOs, Indian tribes, NHOs or staff to participate in presentations at agency classrooms or field trainings.

F. RD shall encourage all personnel conducting or overseeing cultural resources work to take additional specialized training provided by the SHPO, Indian tribes, NHOs, the ACHP, National Park Service, or other agencies, as feasible and relevant.

G. RD shall work on a training that collects and presents case studies and best management practices.

XI. Dispute Resolution

Should any signatory or concurring party to this NPA object at any time to any actions proposed or the manner in which the terms of this NPA or how Section 106 review is implemented for undertakings covered under this NPA, RD shall consult with such party to resolve the objection. If RD determines that such objection cannot be resolved, RD will:

A. Forward all relevant documentation of the dispute, including RD's proposed resolution, within 30 business days to the ACHP. The ACHP shall provide RD with its advice on the resolution of the objection within 30 business days of receiving adequate documentation. Prior to reaching a final decision on the dispute, RD shall prepare a written response within 30 business days that takes into account any timely advice or comments regarding the dispute from the ACHP. Signatories, invited signatories, and concurring parties will be provided a copy of the written response from RD. RD may then proceed with the undertaking in accordance with their final decision.

B. If the ACHP does not provide its advice regarding the dispute within the 30 business days, RD may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, RD shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories, invited signatories, and concurring parties to the NPA. A copy of the written response will be provided to all consulting parties and the ACHP.

C. RD's responsibilities to carry out all other actions subject to the terms of this NPA that are not the subject of the dispute remain unchanged.

XII. Duration of Programmatic Agreement

This NPA will be in effect for 10 years from the date of execution, and can be extended an additional 10 years by amending the NPA in accordance with Stipulation XI, if signatories agree in writing.

XIII. Reporting and Monitoring

A. RD will submit an annual report to the signatories, National Association of Tribal historic Preservation Officers (NATHPO) and the National Trust, which summarizes the number of projects reviewed under this NPA by state within that calendar year, a summary of metrics and public–private partnerships and effect determinations; disputes; two party agreements and interagency work; number of cases where funds will be deobligated; the number of projects that fell under each of the Appendices A, B, and C; as well as the number of activities that resulted in adverse effects to historic properties. The annual report also will indicate whether any agreements regarding the applicability of this NPA on tribal lands have been developed in the past calendar year, and which THPOs and Indian tribe(s) is a signatory. Annual reports will be submitted January 15th of each year, commencing in 2019.

B. RD will schedule a meeting to discuss the yearly report if any signatory requests one.

XIV. Amendment

A. This NPA may be amended if agreed to in writing by all signatories within 30 business days or other agreed upon time period. The amendment will be effective on the date the document is signed by all of the signatories, including RD, NCSHPO, THPOs, Indian tribes, or NHOs as appropriate, and the ACHP.

B. Amendments to add the appendices will not reopen consultation on the main body of the PA.

C. Consultation to amend the NPA to add the appendices may begin without requiring the written notification of all of the signatories. RD should notify the ACHP, however.

XV. Termination.

A. If within 30 business days, or other time period agreed upon by the signatories, an amendment cannot be agreed upon, any signatory or the ACHP may terminate the agreement upon written notification to the other signatories. Once the NPA is terminated, RD must either 1) execute another NPA pursuant to 36 CFR 800.14(b); 2) proceed in accordance with any applicable alternative process under 36 CFR 800.14 or 3) proceed in accordance with 36 CFR 800.3 through 800.7 on a project by project basis and cannot use

the efficiencies outlined in this PA. RD shall notify the other signatories, NCSHPO, NATHPO, and consulting parties as to the course of action they will pursue.

B. If the NPA is terminated after the completion of the appendices, the terms of the appendices may be converted to be used as a statewide protocol if agreed to in writing by the respective SHPO and RD. RD will be responsible for notifying all consulting parties.

C. If this NPA is terminated, or expires without being extended via the amendment process described above, and prior to continuing work on any undertaking, RD shall comply with the requirements of 36 CFR Part 800 for all individual undertakings covered by the NPA.

Execution of this NPA and implementation of its terms is evidence that RD has taken into account the effects of RD federally–funded or assisted undertakings on historic properties and afforded the ACHP an opportunity to comment on them.

Signatory Pages follow.

SIGNATORY PAGE

NATIONWIDE PROGRAMMATIC AGREEMENT AMONG THE U.S. DEPARTMENT OF AGRICULTURE RURAL DEVELOPMENT PROGRAMS, NATIONAL CONFERENCE OF STATE HISTORIC PRESERVATION OFFICERS, AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION FOR SEQUENCING SECTION 106

Signatory

UNITED STATE DEPARTMENT OF AGRICULTURE –RURAL UTILITIES SERVICE

Signature: Kellie M. Kubena Date: 7/2/18

Kellie M. Kubena
Director, Engineering and Environmental Staff, RUS

SIGNATORY PAGE

NATIONWIDE PROGRAMMATIC AGREEMENT AMONG THE U.S. DEPARTMENT OF AGRICULTURE RURAL DEVELOPMENT PROGRAMS, NATIONAL CONFERENCE OF STATE HISTORIC PRESERVATION OFFICERS, AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION FOR SEQUENCING SECTION 106

Signatory

UNITED STATE DEPARTMENT OF AGRICULTURE – RURAL BUSINESS–COOPERATIVE SERVICE AND RURAL HOUSING SERVICE

Signature: EDWARD DUVAL Digitally signed by EDWARD DUVAL Date: 2018.07.02 14:48:49 -04'00' Date: _____

Edward G. Duval
Director, Program Support Staff, RBS and RHS

SIGNATORY PAGE

NATIONWIDE PROGRAMMATIC AGREEMENT AMONG THE U.S. DEPARTMENT OF AGRICULTURE RURAL DEVELOPMENT PROGRAMS, NATIONAL CONFERENCE OF STATE HISTORIC PRESERVATION OFFICERS, AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION FOR SEQUENCING SECTION 106

Signatory

NATIONAL CONFERENCE OF STATE HISTORIC PRESERVATION OFFICERS

Signature: Mark Wolfe Date: 7/2/18
Mark Wolfe
President, NCSHPO

SIGNATORY PAGE

NATIONWIDE PROGRAMMATIC AGREEMENT AMONG THE U.S. DEPARTMENT OF AGRICULTURE RURAL DEVELOPMENT PROGRAMS, NATIONAL CONFERENCE OF STATE HISTORIC PRESERVATION OFFICERS, AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION FOR SEQUENCING SECTION 106

Signatory

ADVISORY COUNCIL ON HISTORIC PRESERVATION

Signature: John M. Fowler Date: 7/3/18

John M. Fowler
Executive Director, ACHP

APPENDIX A: RURAL UTILITIES SERVICE (RUS) PROGRAM EFFICIENCES

The NPA and this appendix cover the following RUS programs and those that may be amended or added in the future.

Rural Utilities Service – Telecommunications Programs

- Community Connect Grants
- Distance Learning & Telemedicine Grants
- Farm Bill Broadband Loans & Loan Guarantees
- Telecommunications Infrastructure Loans & Guarantees

Rural Utilities Service – Electric Programs

- Denali Commission High Energy Cost Grants
- Distributed Generation Energy Project Financing
  - Electric Infrastructure Loan & Loan Guarantee Program (FFB)
  - Energy Efficiency & Conservation Loans
  - High Energy Cost Grants
  - Rural Energy Savings Program
  - State Bulk Fuel Revolving Loan Fund
  - Energy Resource Conservation

Rural Utilities Service – Water & Environmental Programs

- Circuit Rider Program
- Emergency Community Water Assistance Grants
- Grants for Rural and Native Alaskan Villages
- Household Water Well System Grants
- Individual Water & Wastewater Grants
- SEARCH – Special Evaluation Assistance for Rural Communities and Households
- Solid Waste Management Grants
- Water & Waste Disposal Grants to Alleviate Health Risks on Tribal Lands and Colonias
- Water & Waste Disposal Loans & Grants
- Water & Waste Disposal Loan Guarantees
- Water & Waste Disposal Predevelopment Planning Grants
- Water & Waste Disposal Revolving Loan Funds
- Water & Waste Disposal Technical Assistance & Training Grants

APPENDIX B: RURAL BUSINESS–COOPERATIVE SERVICE (RBS) PROGRAMS EFFICIENCES

The NPA and this appendix cover the following RBS programs and those that may be amended or added in the future.

Rural Business–Cooperatives Service

- Business & Industry Loan Guarantees
- Intermediary Relending Program
- Rural Business Development Grants
- Rural Business Investment Program
- Rural Economic Development Loan & Grant Program
- Rural Microentrepreneur Assistance Program
- Socially–Disadvantaged Groups Grants
- Value Added Producer Grants
- Delta Health Care Services Grants
- Rural Cooperative Development Grants
- Advanced Biofuel Payment Program
- Repowering Assistance Program
- Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program
- Rural Energy for America Program (REAP) Energy Audits & Renewable Energy Development Grants
- Rural Energy for America Program (REAP) Renewable Energy & Energy Efficiency Loans & Grants
- Strategic Economic and Community Development

APPENDIX C: RURAL HOUSING SERVICE (RHS) PROGRAMS EFFICIENCES

The NPA and this appendix cover the following RBS programs and those that may be amended or added in the future.

Rural Housing Service – Community Facilities

- Community Facilities Direct Loans & Grants
- Community Facilities Loan Guarantees
- Community Facilities Relending Program
- Community Facilities Technical Assistance and Training Grant
- Economic Impact Initiative Grants
- Rural Community Development Initiative Grants
- Tribal College Initiative Grants

Rural Housing Service – Multi–Family Housing

- Farm Labor Direct Loans & Grants
- Housing Preservation & Revitalization Demonstration Loans & Grants
- Housing Preservation Grants
- Multi–Family Housing Direct Loans
- Multi–Family Housing Loan Guarantees
- Multi–Family Housing Rental Assistance
- Rural Housing Site Loans

Rural Housing Service – Single–Family Housing

- Mutual Self–Help Housing Technical Assistance Grants
- Single Family Housing Direct Home Loans
- Single Family Housing Home Loan Guarantees
- Single Family Housing Repair Loans & Grants

APPENDIX D: 7 CFR 1970

RD 1970 Environmental Policies and Procedures

- 1970–A Environmental Policies
- 1970–B NEPA Categorical Exclusions
- 1970–C NEPA Environmental Assessments
- 1970–D NEPA Environmental Impact Statements
- 1970–E Guidance for Conducting Environmental Justice and Socioeconomic Analyses
- 1970–F Floodplain Management
- 1970–G Wetland Protection
- 1970–H Historic and Cultural Resources
- 1970–I Intergovernmental Review
- 1970–J Environmental Risk Management
- 1970–L Land Use and Formally Classified Land
- 1970–N Biological Resources
- 1970–O Miscellaneous Resources

Appendix E

Environmental Justice and Civil Rights Impact Analysis Certification

Close

Form RD 2006-38
(Rev. 07-07)

Rural Development
Environmental Justice (EJ) and Civil Rights Impact Analysis (CRIA)
Certification

1 . Applicant's name and proposed project description: Sites Project Authority - Facilities that would allow for the efficient bi-directional exchange of water.

2. Rural Development's loan/grant program/guarantee or other Agency action: Community Facility Loan

3. ☑ Attach a map of the proposal's area of effect identifying location or EJ populations, location of the proposal, area of impact or

☐ Attach results of EJ analysis from the Environmental Protection Agency's (EPAs) EnviroMapper with proposed project location and impact footprint delineated.

4. Does the applicant's proposal or Agency action directly, indirectly or cumulatively affect the quality and/or level of services provided to the community?

☐ Yes ☑ No ☐ N/A

5. Is the applicant's proposal or Agency action likely to result in a change in the current land use patterns (types of land use, development densities, etc)?

☐ Yes ☑ No ☐ N/A

6. Does a demographic analysis indicate the applicant's proposal or Agency's action may disproportionately affect a significant minority and/or low-income populations?

☐ Yes ☑ No ☐ N/A

If answer is no, skip to item 12. If answer is yes, continue with items 7 through 12.

7. Identify, describe, and provide location of EJ population

8. If a disproportionate adverse affect is expected to impact an EJ population, identify type/level of public outreach implemented.

9. Identify disproportionately high and adverse impacts on EJ populations.

10. Are adverse impacts appreciably more severe or greater in magnitude than the adverse impacts expected on non-minority/low-income populations?

☐ Yes ☐ No ☐ N/A

11. Are alternatives and/or mitigation required to avoid impacts to EJ populations?

☐ Yes ☐ No ☐ N/A

If yes, describe

12. I certify that I have reviewed the appropriate documentation and have determined that:

☑ No major EJ or civil rights impact is likely to result if the proposal is implemented.
☐ A major EJ or civil rights impact is likely to result if the proposal is implemented.

Lisa M. Butler, Area Specialist — Name and Title of Certifying Official

07-20-2018 — Date

Close

Sites Project Authority, also known as the Sites Joint Powers Authority

The proposed action is comprised of a set of new project features or facilities that would allow for the efficient bi-directional exchange of water from two existing, large water management systems in the western portion of the Sacramento Valley of California.

These components are described as.

1. A 1,200-acre-foot capacity Terminal Regulating Reservoir (TRR) covering 130 acres with a spillway to the local irrigation ditch system and bottom drain, both of which ultimately connect to Funks Creek.
2. A TRR Pumping Plant with 900 cubic feet per second (cfs) maximum pumping capacity, a 1-acre Electrical Switchyard adjacent to the plant, and a 3.5-mile power line.
3. A GCID Main Canal Connection to TRR including a gated inlet control structure, short inlet channel, and concrete canal lining in the GCID Main Canal immediately upstream and downstream of the TRR connection.
4. A 3.5-mile Maxwell Water Intertie (MWI) pipeline sized for 900 cfs pumped capacity and 900 cfs gravity flow capacity, private access bridge over the GCID Main Canal for construction access and maintenance of the pipelines, and a 2.7-mile gravel access road that would run most of the length of the MWI pipeline alignment.

1.1.1 Environmental Consequences

1.1.1.1 No Action

Under the No Action Alternative, neither construction nor operation of the proposed action would occur. Accordingly, there would be no adverse socioeconomic effects under the No Action Alternative.

1.1.1.2 Proposed Action

1.1.1.3 Population

The population density in the RSA is very low. Colusa County is a rural area and comprises 1,150 square miles with 18.6 people per square mile (U.S. Census Bureau 2010). Population size in the RSA has increased by approximately 1 percent per year, increasing by approximately 2,215 people from 2000 to 2016 (DOF 2017a, 2017b, 2017c).

The age distribution within Colusa County is similar to the state of California, the working-age population, between ages 20 and 64, is approximately 12,025 people (U.S. Census Bureau 2017). School age children (ages 5 to 19), adults (ages 20 to 64), and senior citizens (ages 65 and older) represented approximately 23, 56, and 13 percent, respectively, of the total RSA population in 2016 (U.S. Census Bureau 2017a).

1.1.1.4 Employment

Table 11-1 presents employment within the RSA compared to the state of California. In 2015, the total labor force in Colusa County was 11,190, which comprises approximately 0.059 percent of the

state's total labor force during the same year (approximately 18,981,800 people). The unemployment rates for Colusa County in 2015 were 15.3 percent, which was more than double California's unemployment rate of 6.2 percent.

Table 11-1 Employment within the Resource Study Area and California in 2015

Area	Civilian Labor Force	Number of Civilians Employed	Unemployment Rate (%)
Colusa County	11,190	9,480	15.3
California	18,981,800	17,798,600	6.2

Source: EDD 2018

The top three industries in Colusa County in 2015, as measured by the number of employees, were agriculture, government, and manufacturing. The wholesale industry had the highest annual growth rate of 4.7 percent, followed by the manufacturing industry, which had a 3 percent annual growth rate (EDD 2018). The mining, logging and construction; transportation, warehousing, and utilities; retail; and financial activities sectors all experienced negative annual growth rates from 2000 to 2015 (EDD 2018).

1.1.1.5 Income

The RSA's economy is rooted in agriculture. Agriculture became the primary economic driver in the region because of the rich soil, ample water supply, and proximity to urban markets. Today, the agricultural sector is still important in the RSA, but changes in mechanization and processing have resulted in a much smaller proportion of residents participating in agriculture than during the early part of the 20th century.

Table 11-2 summarizes personal income and industry earnings within the RSA as of 2015. Colusa County produced approximately $930,000 in total personal income and $680,000 in total industry output in 2015.

Table 11-2 Personal Income and Industry Earnings within the Resource Study Area and California in 2015 (2015 Dollars)

Area	Total Personal Income in 2009 (Thousand $)	Earning by Industry in 2009 (Thousand $)
Colusa County	928,809	679,819
California	2,103,669,473	1,521,816,583

Source: BEA 2017.

Based on the 2011–2015 American Community Survey, the median household income in Colusa County was $51,268, and per capita income was $21,897 (U.S. Census Bureau 2017b, 2017c). Both the median household income and per capita income were lower than California.

1.1.2 Environmental Consequences

1.1.2.1 No Action

Under the No Action Alternative, neither construction nor operation of the proposed action would occur. Accordingly, there would be no adverse socioeconomic effects under the No Action Alternative.

1.1.2.2 Proposed Action

Population

Effect Socio-1: Increase in Population due to Construction

The proposed action would be constructed over approximately 2.5 years and would require the temporary (short-term) use of workers. Approximately 120 construction workers would be required at the peak of construction. Given the current unemployment rates, the existing population can likely provide the workers needed to support the construction activities, or populations living outside of the RSA would commute for these jobs. If workers relocate to areas within the RSA, it would not represent a substantial increase in population. As a result, the proposed action would not result in substantial changes to the population of Colusa County or city of Maxwell. Therefore, the effect on socioeconomic resources would be not adverse during construction. No mitigation is required.

Effect Socio-2: Increase in Population due to Operation

Operation and maintenance of the proposed action would require the permanent (long-term) use of workers. Approximately 13 to 14 people (based on three shifts per day) would be required to operate the proposed action. In addition, two people would be responsible for weekly maintenance of pipelines, and four people would be responsible for annual maintenance at the TRR pump. Existing staff would be used to operate and maintain new facilities. If additional employees are needed, given the current unemployment rates, the existing population within the RSA can likely provide the workers needed to support the operation and maintenance activities, or populations living outside of the RSA would commute for these jobs. If workers relocate to areas within the RSA, it would not represent a substantial increase in population. As a result, operation would not result in a substantial increase in population from workers moving to the area, and the effect on socioeconomic resources would be not adverse during operation. No mitigation is required.

Employment

Effect Socio-3: Increase in Jobs due to Construction

The proposed action would employ a peak construction workforce of up to 120 individuals, which is more than the existing number of construction workers in Colusa County (EDD 2018). Although small and temporary, construction of the proposed action would provide a benefit because additional construction jobs would be available to the community.

Effect Socio-4: Increase in Jobs due to Operation

The proposed action would not result in substantial changes to employment because current staff would be adequate to operate and maintain the proposed action. If additional employees are needed, the increase in jobs for operation and maintenance (13 to 14 employees for operation, two employees

for weekly maintenance, and four employees for annual maintenance) would not represent a significant increase in employment opportunities in the RSA. Therefore, there is the potential for a small beneficial effect if new employees for operation are hired, although there is more likely no effect on socioeconomic resources during operation due to the use of existing employees, if possible, to fill these positions.

Income

Effect Socio-5: Changes to the Local Economy from Construction and Operation

Because of the short duration of construction activity, indirect and induced economic effects would be minimal and temporary. In the longer term, however, operation of the Maxwell Water Intertie would increase efficiency and reliability of the water management in the western Sacramento Valley and increase the drought resistance of rural communities. The proposed action would add or improve existing facilities and replace aging infrastructure to facilitate water transfers to increase the drought resistance of rural communities. It would provide direct benefits to agriculture and indirect benefits to rural communities. The top industry in Colusa County in 2015, as measured by the number of employees, was agriculture (EDD 2018). By directly benefiting agriculture, the proposed action indirectly benefits the people in Colusa County whose wages depend on the industry.

1.1.3 References

California Department of Finance (DOF). 2017a. Forecasting. Demographics. Estimates. E-4 Historical Population Estimates for Cities, Counties and the State, 2001-2010 with 2000 and 2010 Census Counties. Accessed March 23, 2017. http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-4/2001-10/.

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U.S. Census Bureau. 2017c. 2015 American Community Survey (ACS) 5-Year Estimates – Per Capita Income in the Past 12 Months (in 2015 Inflation-Adjusted dollars). Accessed March 27, 2017. https://factfinder.census.gov/.

1.2 Environmental Justice

1.2.1 Methods

1.2.1.1 Definition of Resource Study Area

This analysis addresses the potential for the proposed action to adversely affect environmental justice communities, including minority or low-income populations, to a disproportionate degree relative to their representation in the larger population. The environmental justice resource study area (RSA) is the census tract within 1 mile of the proposed Terminating Regulating Reservoir (TRR) and associated facilities. Colusa County is defined as the reference community due to the localized nature of the proposed action.

1.2.1.2 Method for Effects Analysis

To characterize the environmental justice communities identified as minority or low-income populations, population, race, ethnicity, income, and poverty data were obtained from the U.S. Census Bureau for the RSA and the reference community.

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was issued February 11, 1994 (59 *Federal Register* 7629). EO 12898 "is intended to promote nondiscrimination in Federal programs substantially affecting human health and the environment, and to provide minority communities and low-income communities access to public information on, and an opportunity for participation in, matters relating to human health and the environment." It requires each federal agency to achieve environmental justice as part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects, including social and economic effects, of its programs, policies, and activities on minority and low-income populations.

Pursuant to EO 12898, the President's Council on Environmental Quality (CEQ) prepared Environmental Justice: Guidance Under the Environmental Policy Act (1997) to assist federal agencies with their National Environmental Policy Act (NEPA) procedures "... so that environmental justice concerns are effectively identified and addressed."

In accordance with CEQ and NEPA guidelines established to assist federal and state agencies, the first step undertaken in this environmental justice analysis was to define minority and low-income populations. For this analysis, a minority population was defined to be present in the RSA if: (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage of the affected area is at least 10 percentage points greater than that of the general population in the state. By the same rule, a low-income population exists in the RSA if it consists of 50 percent or more people living below the poverty threshold, as defined by the U.S. Census Bureau, or is significantly greater than the poverty percentage of the general population or other appropriate geographic unit, as a whole, which has been identified for the project as Colusa County.

The second step undertaken in this environmental justice analysis was to determine if a "high and adverse" effect would occur. The CEQ guidance indicates that, when determining whether the effects

are high and adverse, agencies are to consider whether the risks or rates of effect "are significant or above generally accepted norms."

The final step undertaken in this analysis was to determine if the effect on the minority and/or low-income population would be disproportionately high and adverse. The CEQ includes a non-quantitative definition stating that an effect is disproportionate if it appreciably exceeds the risk or rate to the general population.

1.2.2 Affected Environment

This section describes the existing environmental justice communities present in the RSA. Table 13-1 summarizes race and ethnicity of the populations in the RSA. The Hispanic/Latino population represents 35.5 percent of the total population in the RSA, and 55.1 percent of the total population of Colusa County. With reference to the CEQ guidelines, the RSA's percentage of Hispanic/Latino population is lower than Colusa County and would not be considered greater than 50 percent or "meaningfully greater" than the 55.1 percent Hispanic/Latino population countywide. On this basis, there is no minority population identified in the RSA.

Table 13-1 2010 Race and Ethnicity in the Resource Study Area

	RSA	Colusa County
Total population (number)	2,495	21,419
Non-white	29%	35.3%
White	71%	64.7%
Black or African American	2%	0.9%
American Indian and Alaska Native[a]	3.3%	2.0%
Asian	0.8%	1.3%
Native Hawaiian and Other Pacific Islander	0.2%	0.3%
Some Other Race	20.4%	27.3%
Two or More Races	2.2%	3.6%
Hispanic or Latino (of any race)	35.5%	55.1%
Not Hispanic or Latino (of any race)	64.5%	44.9%

Source: U.S. Census Bureau 2010

Low-income populations are those communities or sets of individuals whose median income is below the current poverty level of the general population. As shown in Table 13-2, the RSA has lower median family and per capita incomes than Colusa County. However, the RSA does not have 50

percent or more people living below the poverty threshold and the poverty rate is not significantly greater than the poverty percentage of Colusa County. The per capita income is higher for the RSA and percentage of families living below the poverty level is lower compared to Colusa County. On this basis, there is no low-income population identified in the RSA.

Table 13-2 Income and Poverty 2012–2016 Five-year Estimate by Census Tract, County, and State

Location	RSA	Colusa County
Median Household Income	49,087	54,946
Per Capita Income	27,049	25,745
Families Below Poverty Level (%)	6.4%	10.8%
Individuals Below Poverty Level (%)	14.2%	13.5%

Source: U.S. Census Bureau 2016

1.2.3 Environmental Consequences

1.2.3.1 No Action Alternative

Under the No Action Alternative, neither construction nor operation of the proposed action would occur. Accordingly, there would be no adverse environmental justice effects under the No Action Alternative.

1.2.3.2 Proposed Action

There are no identified minority or low-income populations within the RSA. Therefore, there would be no effect on environmental justice communities.

1.2.4 References

U.S. Census Bureau. 2010. Census 2010. Accessed June 22, 2018. https://factfinder.census.gov/.

———. 2016. 2012–2016 American Community Survey 5-Year Estimates. Accessed June 22, 2018. https://factfinder.census.gov/.

U.S. Department of the Interior, Bureau of Indian Affairs (BIA). 2014. 2013 Indian Population and fgLabor Force Report. January 16.

1.3 Socioeconomics

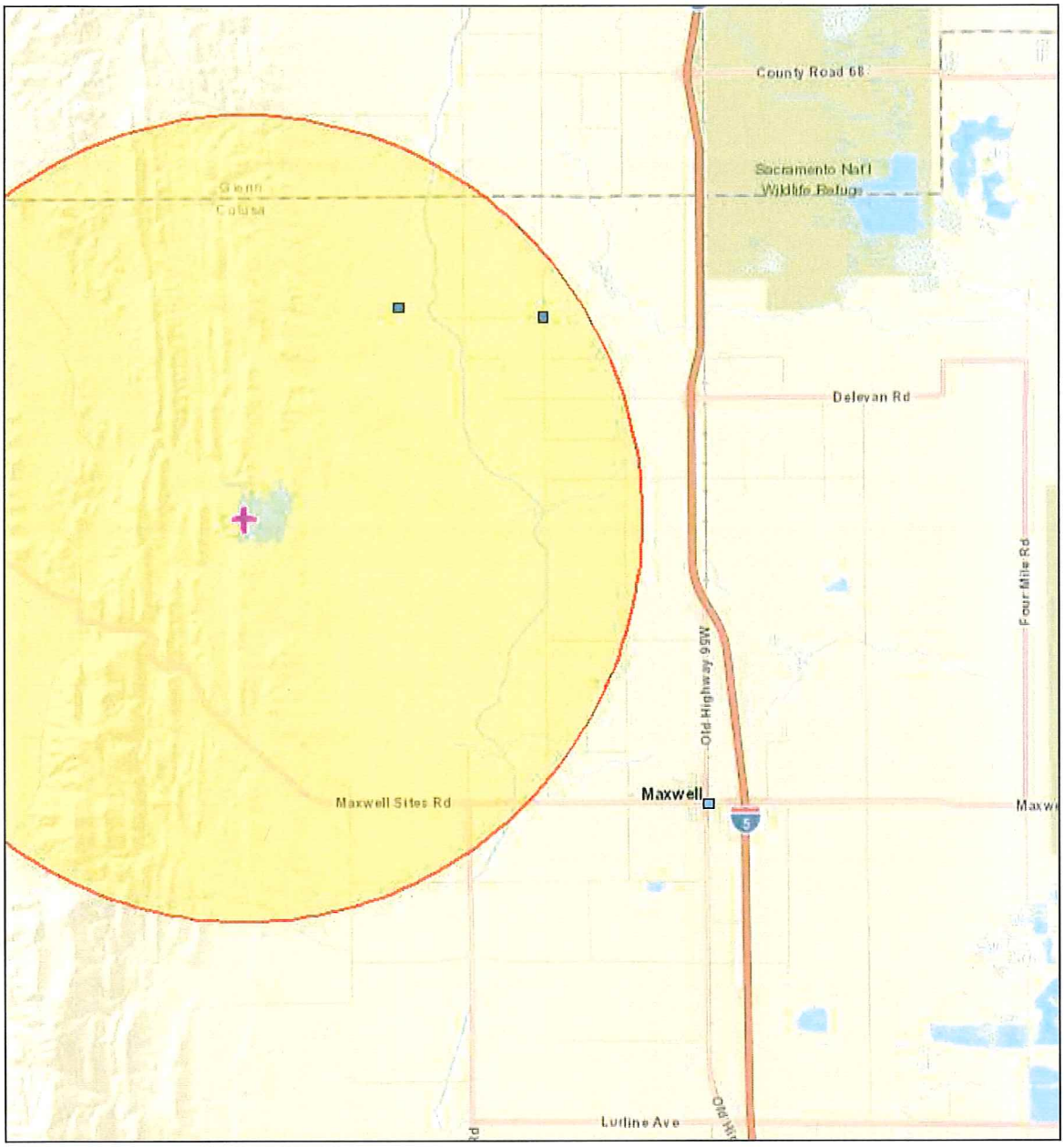
Present and reasonably foreseeable projects within the cumulative RSA for socioeconomics (Colusa County) include the construction and operation of reservoirs, power facilities, and reclamation projects, which would lead to an expansion of employment opportunities and increases in local income. The existing population in the cumulative RSA, which has an unemployment rate more than double that of the state of California, would be expected to accommodate the majority of new

employment opportunities, although some workers may relocate from outside the county to fill vacant positions. These activities would contribute to socioeconomic benefits from increased employment opportunities and related income to the local economy. The proposed action would also result in short-term increases in employment during construction. These employment increases from the proposed action in combination with present and other reasonably foreseeable projects would result in a cumulative socioeconomic benefit. In addition, the proposed action would also indirectly contribute induced benefits to the agricultural communities from improvements to infrastructure supporting drought resistance that will lead to increased incomes to agriculture operators. These benefits in combination with similar benefits from present and foreseeable projects would result in cumulative socioeconomic benefits.

1.4 Environmental Justice

No minority or low-income communities were identified within the RSA. Therefore, there would be no disproportionately high and adverse human health or environmental effects on minority and/or low-income populations from present and reasonably foreseeable projects, including the proposed action. As a result, there would be no adverse cumulative effect on environmental justice communities.

Sites Project Authority- EPA



July 20, 2018

1:144,448

0 1.25 2.5 5 mi

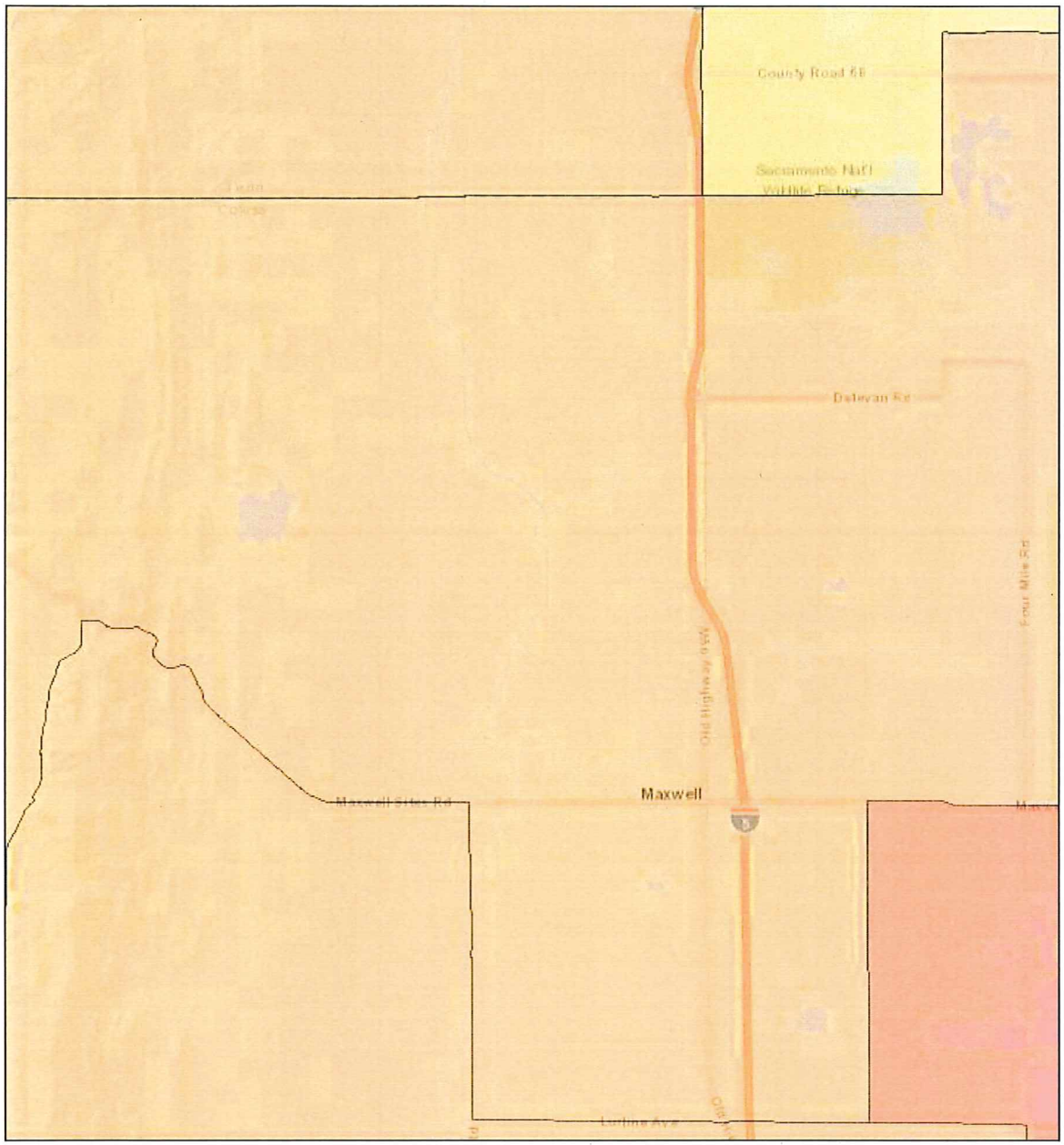
0 2 4 8 km

- Buffer Area
- Digitized Point
- Superfund
- Toxic releases
- Water dischargers
- Air pollution
- Brownfields

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community
EPA OEI

EJSCREEN 2017

Sites Project Authority- Pct Below Poverty



July 20, 2018

1:144,448

0 1.25 2.5 5 mi

0 2 4 8 km

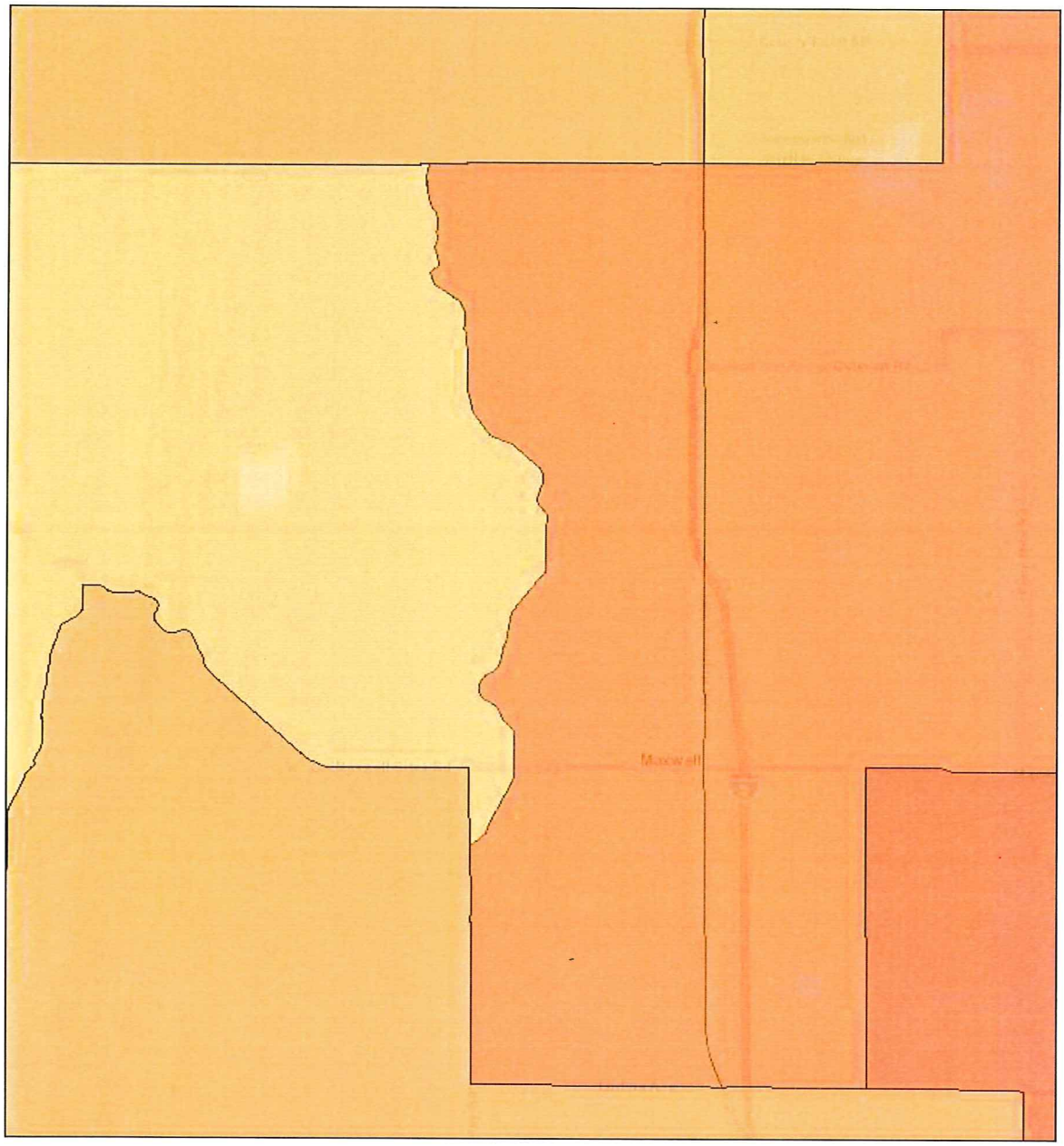
by Tract

- 0.00 - 6.09
- 6.09 - 10.72
- 10.72 - 16.55
- 16.55 - 26.24
- 26.24 - 100.00

EPA
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

EJSCREEN 2017

Sites Project Authority - pct Minority Population



July 20, 2018

by Block Group

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- 8.19 - 21.12
- 21.12 - 41.43
- 41.43 - 74.13
- 74.13 - 100.00

by Tract

- 0.00 - 6.09
- 6.09 - 10.72
- 10.72 - 16.55
- 16.55 - 26.24
- 26.24 - 100.00

1:144,448

0 1.25 2.5 5 mi

0 2 4 8 km

EPA
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

EJSCREEN 2017

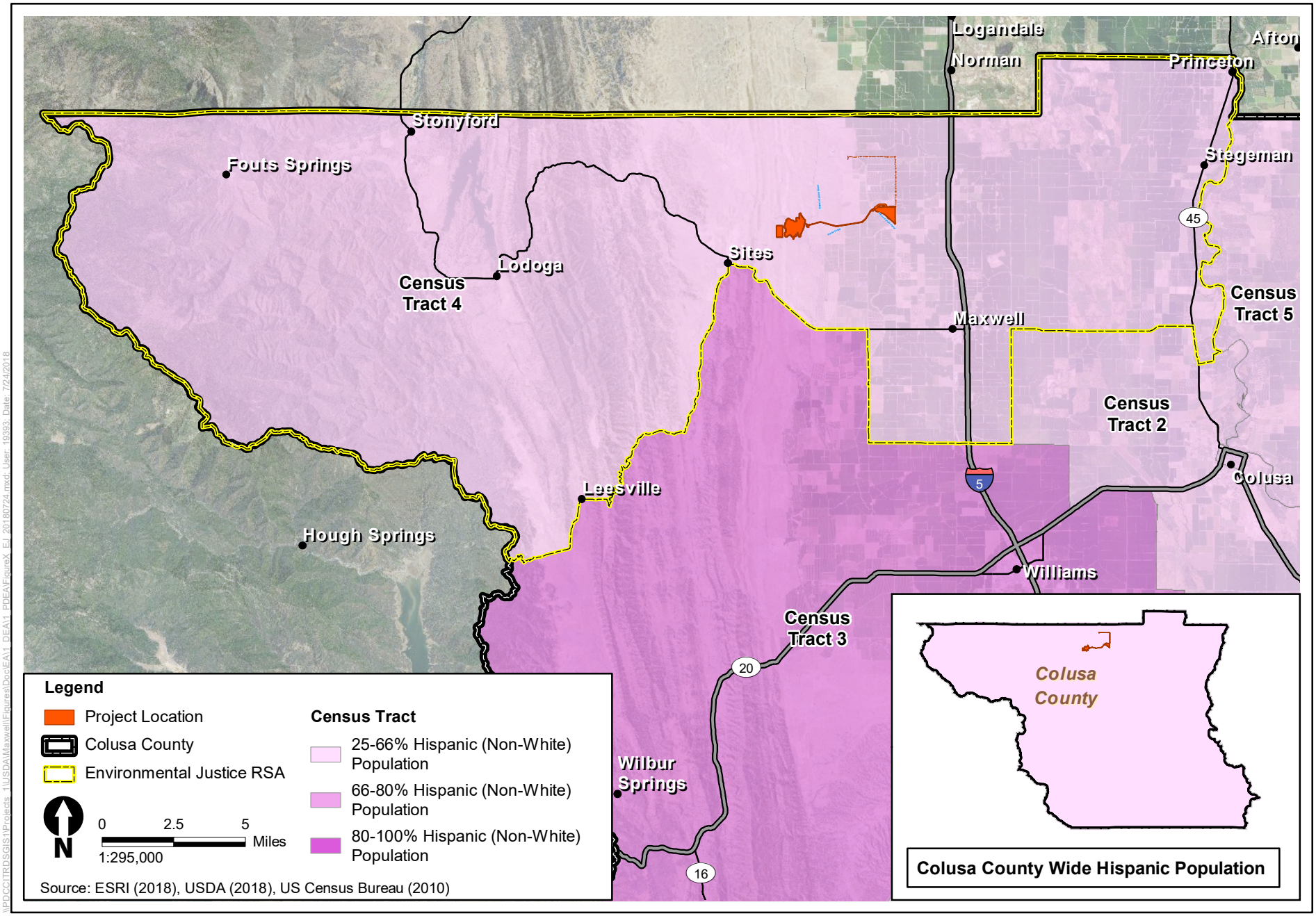

Figure X
Environmental Justice - Maxwell Water Intertie Project

Appendix F

Consultation Correspondence

United States Department of Agriculture

To: Julianne Polanco
State Historic Preservation Officer

OFFICE OF HISTORIC PRESERVATION
1725 23rd Street, Suite 100
Sacramento, CA 95816

From: Richard Brassfield
State Environmental Coordinator, Rural Development

8/17/2018

Subject: Notification of Intent to Use the *Programmatic Agreement among the U.S. Department of Agriculture Rural Development Programs, National Conference of State Historic Preservation Officers, Tribal Signatories, and The Advisory Council on historic Preservation for Sequencing Section 106* (NPA)

Dear State Historic Preservation Officer Polanco:

The Sites Project Authority (Authority) is seeking financial assistance from the USDA Rural Development (RD), Rural Housing Service (RHS) under its Community Facilities loan program for the Maxwell Water Intertie (Project).

This memo is to inform you that the RHS has chosen to apply the *Programmatic Agreement among the U.S. Department of Agriculture Rural Development Programs, National Conference of State Historic Preservation Officers, Tribal Signatories, and The Advisory Council on historic Preservation for Sequencing Section 106* (NPA) for the Project construction work plan.

RHS is applying the NPA because:

☒ Because the schedule may span one to five years or longer, can be composed of multiple projects that are rarely staked or precisely located and/or the nature of the undertaking is often unclear, prior to the obligation of funds.
☒ The applicant does not have the financial wherewithal to fund Section 106 reviews, and/or the analysis of alternatives, without some level of confidence that RD's low interest funding or grants will be available to assist them.
☐ To avoid an impending pooling, interest rate change, or another financial deadline.

If RHS elects to fund the Project construction work plan, it will become an undertaking subject to review under Section 106 of the National Historic Preservation Act, 54 U.S.C. 306108, and its implementing regulations, 36 CFR Part 800.

Once we have determined the final Area of Potential Effect (APE) RHS and the Authority will initiate a section 106 review and provide you with a complete project description and a description of the APE.

I have attached a copy of the National Programmatic Agreement for your review. Should you have any questions, please contact me at (559) 754-3149 or at Richard.Brassfield@ca.usda.gov.

Richard Brassfield

State Environmental Coordinator, Rural Development, U.S. Department of Agriculture
3530 W. Orchard CT, Visalia CA 93277
Phone: 559.754.3149| Fax: 844.206.7019 | Cell: 559.709.2699

CC: Janis Offermann, MA, RPA Cultural Resources Practice Leader
Monique Briard, Project Manager, ICF International
Jim Watson, General Manager, Sites Project Authority
Tristan Tozer, State Historian, CA Office of Historic Preservation

USDA

United States Department of Agriculture

NPA Applicant Awareness Certification

Project Name: Maxwell Water Intertie
Borrower Name: Sites Project Authority
Program: Community Facilities **Fiscal Year: 2018** | **Calendar Year: 2018**

1. As the applicant the Sites Project Authority (Authority) understands that to use the NPA it must "initiate Section 106 no later than ninety (90) business days after the announcement of the Authority's obligation if it has not done so already; and to notify the appropriate RD agency that Section 106 has been initiated in accordance with 36 CFR Part 800.2(c)(4), and 7 CFR Part 1970.5(b)(2) of the regulations, "Environmental Policies and Procedures" (7 CFR Part 1970)", per Stipulation I.C of the NPA.

2. As the applicant the Authority understand that to use the NPA it needs to "to submit Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 (d)), as amended in 1998 (508 compliant) hard copy or electronic Section 106 documentation to SHPOs, THPOs, Indian tribes, and NHOs based on the preference of the receiving party", per Stipulation I.D of the NPA.

3. As the applicant the Authority certifies that it has been made aware of Stipulation II (Deobligation of Funding) of the NPA.

4. As the applicant the Authority certifies that it has been made aware of its responsibilities under Stipulation III.M (Roles and Responsibilities) of the NPA.

5. As the applicant the Authority certifies that it has been made aware of the RD template letters and guide available to help me through the Section 106 process.

Name/Title: General Manager

Signature: Jon C Wate **Date:** 8/17/2018

United States Department of Agriculture

September 17th 2018

Kaylee Allen, Field Supervisor
U.S. Fish and Wildlife Service
San Francisco Bay-Delta Fish and Wildlife Office
650 Capitol Mall, Suite 8-300
Sacramento, CA 95814

Subject: Request for Formal Consultation

Dear Ms. Allen:

In accordance with 50 C.F.R., Part 402, the United States Department of Agriculture (USDA) Rural Development hereby requests to initiate formal consultation under Section 7 of the Endangered Species Act for issuance of a loan to be used for the Maxwell Water Intertie (MWI) Project located in unincorporated Colusa County, California. The proposed action would consist of the granting of a loan from the USDA to assist in the financing of the proposed project. The project is located approximately 2.5 miles southwest of the town of Delevan. The proposed Project is located in Sections 13, 14, and 15 of Township 17 North, Range 4 West, and Sections 7 and 18 of Township 17, Range 3, Mount Diablo Base and Meridian. This location occurs in the Sites and Maxwell Quadrangles. A general area map is attached.

Based on the available information (see attached revised Biological Assessment), and your August 7th 2018 teleconference we have revised our previous determination and determined the proposed project is likely to adversely affect the federally listed giant gartersnake (*Thamnophis gigas*), and may affect but is not likely to adversely affect the federally listed valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) and the federally listed California red-legged frog (*Rana draytonii*). Other federally listed species evaluated that we believe the proposed action will not affect include: conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp *(Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), northern spotted owl (*Strix occidentalis caurina*), and delta smelt (*Hypomesus transpacificus*). If new information becomes available indicating that other listed species or critical habitat may be affected, further consultation would be necessary.

The following information is included in support of formal consultation:

1. **A description of the action to be considered:** The Sites Project Authority (Authority) is proposing the MWI Project, which would consist of constructing the MWI pipeline and the Terminal Regulating Reservoir (TRR) Complex, constructing an access bridge and a pipeline maintenance road, and the conversion of an existing power line to a 69-kilovolt (kV) power line alignment. A complete description of the proposed action is provided in Section 2.2 of the attached Biological Assessment.

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Phone: (559)-754-3149 ● Fax: (844) 206-7019 ● TDD: (530) 792-5848

The proposed project would increase the efficiency and reliability of water management in the western Sacramento Valley by adding to or improving existing facilities to facilitate greater flexibility in water conveyance, which would increase the drought resistance of rural communities. The MWI pipeline would connect existing canal systems west of the Sacramento River (the Glenn-Colusa Irrigation District [GCID] Main Canal and the Tehama-Colusa [TC] Canal) to achieve this flexibility.

2. **A description of the specific area that may be affected by the action:** The action area encompasses a 1-mile buffer around the western portion of the project footprint and a 200-foot buffer around the eastern portion of the project footprint (Figure 1 of the attached Biological Assessment). The action area is intended to capture all of the project elements that could directly or indirectly affect federally listed wildlife species during construction, operations, and maintenance of the proposed action.

3. **A description of any listed species or critical habitat that may be affected by the action:**

Giant gartersnake

Within the action area, suitable aquatic habitat consists of irrigation and drainage canals, rice fields, and Funks Creek. Some of the irrigation and drainage canals where construction would occur may not hold sufficient water during the snake's active season (May 1 through October 1) to provide suitable aquatic habitat for the snake during a dry water year. There are occurrences of giant gartersnakes in connected waterways and it is likely that snakes may be using the canals in the action area for dispersal although some canals may also provide foraging opportunities for the species. The highest value giant gartersnake habitat in the action area is in the canals and rice fields along the power line corridor along McDermott and Dirks Roads. The GCID Main Canal and Funks Reservoir are not suitable aquatic habitat for giant gartersnake.

Upland habitat for the snake consists of suitable land cover types (annual grassland, ruderal vegetation, riparian vegetation bordering Funks Creek) that occur within a 200-foot radius of aquatic habitat. Snakes may use upland areas in the action area for basking or hibernation. Canal banks contains interstitial spaces that provide cover from predators and that also may aid in thermoregulation.

There are seven CNDDB records of giant gartersnake occurrences within 5 miles of the action area including two occurrences within the action area along McDermott Road.

California red-legged frog

The California red-legged frog is considered to be extirpated from the valley floor (USFWS 2002) which constitutes the majority of the action area with the exception of the western portion surrounding Funks Reservoir. There are no CNDDB records of California red-legged frog occurrences within 50 miles of the action area (CDFW 2018). However, USFWS has indicated that California red-legged frogs may be potentially present within the reservoir and Funks Creek. Potentially suitable associated upland habitat includes grassland and riparian land cover within 300 feet of aquatic habitat. Potentially suitable dispersal habitat consists of all land cover types within 1 mile of aquatic habitat. Presence/absence surveys have not yet been conducted in the action area. Therefore, there is a low potential that California red-legged frog could be present within the action area.

Valley elderberry longhorn beetle

Within the action area, suitable habitat for valley elderberry longhorn beetle consists of elderberry shrubs located within agricultural, ruderal, or riparian areas. Elderberry shrubs within the action area will be assumed to be occupied by the valley elderberry longhorn beetle and would provide all life history needs for the species. Valley elderberry longhorn beetles could occur in between shrubs during the flight season, which is March through July. Focused surveys for elderberry shrubs have not been conducted in the action area, but will be conducted prior to construction (see Section 2.3, Conservation Measures, in the attached Biological Assessment). The dispersal ability of the species is thought to be fairly limited. Dispersal distance of an adult valley elderberry longhorn beetle from its emergent site is reported to be approximately to be 164 feet or less. The nearest CNDDB occurrence of valley elderberry longhorn beetle is approximately 11 miles southeast of the action area. However, the lack of CNDDB occurrences cannot be used to infer absence of a species therefore there is potential for elderberry shrubs, if present in the action area, to be occupied by valley elderberry longhorn beetle.

4. **A description of the manner in which the action may affect any listed species or critical habitat and analysis of any cumulative impacts:**

Giant gartersnake

Construction of the proposed project features would result in the temporary and permanent loss of giant gartersnake aquatic and upland habitat. However, loss of aquatic and associated upland habitat would not be expected to reduce the fitness of the resident population of giant gartersnakes because there is higher-quality habitat (e.g. densely vegetated canals providing superior foraging opportunities and cover from predators) in waterways that are connected to these canals. In addition to habitat loss, construction activities in and adjacent to suitable habitat could result in the injury, mortality, or disturbance of giant gartersnakes. Giant gartersnakes could be injured or crushed by construction equipment working in or near suitable aquatic and upland habitat, and dewatering channels using pumps could result in mortality of individual snakes by being entrained in the pump. Construction of the proposed project is not expected to have any indirect effects on giant gartersnake.

California red-legged frog

Construction of the proposed project features would result in the temporary and permanent loss of potential California red-legged frog upland habitat. However no aquatic habitat would be permanently or temporarily removed as a result of the proposed action. The conversion of cultivated lands to a permanent access road and temporary impacts from work areas and the soil stockpile area would not be expected to impair dispersal to and from other suitable habitat areas. Potential adverse effects on California red-legged frog and its habitat from construction and maintenance activities would be avoided by implementing the project conservation measures. Construction of the proposed project is not expected to have any indirect effects on California red-legged frog.

Valley elderberry longhorn beetle

Elderberry shrubs may be present within the riparian corridor along Funks Creek or within agricultural lands or grasslands within the action area. As the host plant for valley elderberry longhorn beetle, and with the assumption that all shrubs may be inhabited, any mortality or damage to elderberry shrubs could adversely affect the beetle. Soil disturbance adjacent to shrubs

could affect the roots and health of elderberry shrubs, and dust could affect the foraging success of adult valley elderberry longhorn beetles or the survival of exposed larvae as well as the health of their host plant. Damage or loss of elderberry shrubs could result in death or reduced fitness of adult valley elderberry longhorn beetle or the larvae. However, no riparian vegetation or elderberry shrubs would be trimmed or removed during construction. Potential adverse effects on valley elderberry longhorn beetle and its habitat from construction and maintenance activities would be avoided by implementing the project conservation measures. Construction of the proposed project is not expected to have any indirect effects on valley elderberry longhorn beetle.

Cumulative

Cumulative effects are future state, local, and private actions not involving a federal action that are reasonably certain to occur within the action area under consideration. No other actions within the action area are reasonably certain to occur at this time. Therefore no cumulative effects on valley elderberry longhorn beetle, California red-legged frog, giant gartersnake or their habitat would result from the proposed action.

Alternate locations have been checked for the MWI pipeline and TRR and this location produces the least impact and other effects on special-status species habitat and the ecosystem.

5. **Relevant reports:**
ICF Biological Assessment August 2018
FWS Consultation Report
Proposed Conservation and Mitigation Measures for Maxwell Water Intertie

Based on the above information, we request that the Service concur that, with implementation of the mitigation measures described in the attached report, the project is likely to adversely affect the giant gartersnake (*Thamnophis gigas*), and that the project may affect, but with mitigation measures is not likely to adversely affect the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), the California red-legged frog (*Rana draytonii*), or other federally listed species.

Thank you for your assistance in this matter. If you have any questions or need additional information, please contact me at (559) 754-3149 or you may also contact the ICF Biologist for this project, Rachel Gardiner at (916) 505-3890.

Sincerely,

Richard Brassfield
State Environmental Coordinator

Attachments: Biological Assessment, Dated September 2018
Maxwell Water Intertie Overview Map
FWS Consultation Report
Conservation and Mitigation Measures for Maxwell Water Intertie

cc: Monique Briard, Andrew Humphrey, Rachel Gardiner, ICF, Sacramento CA
Jim Watson, Sites Authority, Maxwell CA
Pete Yribarren, WEP Program Director, USDA, Santa Maria CA
Lisa Butler, Assistant State Environmental Coordinator CF, USDA, Visalia CA

BIOLOGICAL ASSESSMENT FOR THE MAXWELL WATER INTERTIE PROJECT

PREPARED FOR:

U.S. Department of Agriculture
Rural Development
3530 West Orchard Court
Visalia, CA 93277
Contact: Richard Brassfield
(559) 754-3149

PREPARED BY:

ICF
630 K Street, Suite 400
Sacramento, CA 95864
Contact: Rachel Gardiner
(916) 737-3000

September 2018

ICF. 2018. *Biological Assessment for the Maxwell Water Intertie Project*. September. Sacramento, CA. Prepared for the U.S. Department of Agriculture, Rural Development.

Contents

Tables and Figures

Figures (Appendix B)

Acronyms and Abbreviations

Authority	Sites Project Authority
BA	Biological Assessment
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
FESA	federal Endangered Species Act
FR	Federal Register
GCID	Glenn-Colusa Irrigation District
I-	Interstate
kV	kilovolt
MWI	Maxwell Water Intertie
PG&E	Pacific Gas and Electric Company
proposed project	Maxwell Water Intertie Project
SPCCP	spill prevention, control, and countermeasure plan
TC	Tehama-Colusa
TCCA	Tehama-Colusa Canal Authority
TRR	Terminal Regulating Reservoir
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WAPA	Western Area Power Administration

Chapter 1
Introduction

The Sites Project Authority (Authority) is proposing the Maxwell Water Intertie (MWI) Project (proposed project), which would consist of constructing the MWI pipeline, an access road, the Terminal Regulating Reservoir (TRR) Complex, an access bridge, and the conversion of an existing power line to a 69-kilovolt (kV) power line alignment. USDA would grant a loan (proposed action) for financing the proposed project, and this funding would qualify as a federal action requiring consultation with the United States Fish and Wildlife Service (USFWS) pursuant to Section 7 of the federal Endangered Species Act.

The proposed project would increase the efficiency and reliability of water management in the western Sacramento Valley by adding to or improving existing facilities to facilitate greater flexibility in water conveyance, which would increase the drought resistance of rural communities. The MWI pipeline would connect existing canal systems west of the Sacramento River (the Glenn-Colusa Irrigation District [GCID] Main Canal and the Tehama-Colusa [TC] Canal) to achieve this flexibility.

1.1 Species Considered

An official list of species federally listed as threatened, endangered, and proposed threatened or endangered with the potential to occur in the vicinity of the action area in Colusa County was obtained from the USFWS website (USFWS 2018) (Appendix A). The following eight federally endangered and threatened species were included on the USFWS species list and were considered for inclusion in this Biological Assessment (BA) due to habitat availability and potential for presence.

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)—threatened.
- Conservancy fairy shrimp (*Branchinecta conservatio*) —endangered.
- Vernal pool fairy shrimp *(Branchinecta lynchi*)—threatened.
- Vernal pool tadpole shrimp (*Lepidurus packardi*)—endangered.
- California red-legged frog (*Rana draytonii*)—threatened.
- Giant gartersnake (*Thamnophis gigas*)—threatened.
- Northern spotted owl (*Strix occidentalis caurina*)—threatened.
- Delta smelt (*Hypomesus transpacificus*)—threatened.

Information collected during field surveys, review of existing documents and California Natural Diversity Database (CNDDB) species occurrence records (CDFW 2018), presence of suitable habitat, and professional judgment were used to determine potential presence of the above federally listed species evaluated in this BA.

1.1.1 Species Eliminated from Consultation

The action area does not contain suitable habitat for Conservancy fairy shrimp, vernal pool fairy shrimp or vernal pool tadpole shrimp. Therefore, it has been determined that the proposed action would have no effect on Conservancy fairy shrimp, vernal pool fairy shrimp or vernal pool tadpole shrimp; no further evaluation is needed, and there is no need for consultation on these species (50 Code of Federal Regulations [CFR] 402.12).

The action area does not contain suitable habitat for northern spotted owl. Therefore, it has been determined that the proposed action would have no effect on northern spotted owl; no further evaluation is needed, and there is no need for consultation on the species (50 CFR 402.12).

The action area is north of the known range of Delta smelt and critical habitat for the species extends to just north of Interstate (I-) 80, south of the action area. Therefore, it has been determined that the proposed action would have no effect on the Delta smelt; no further evaluation is needed, and there is no need for consultation on this species (50 CFR 402.12).

1.1.2 Species Analyzed in this Biological Assessment

Of the eight federally listed species considered for inclusion in this BA, valley elderberry longhorn beetle, California red-legged frog, and giant gartersnake have the potential to occur in the action area and may be affected by the proposed action.

1.2 Critical Habitat

Critical habitat is defined in Section 3(5)A of the federal Endangered Species Act (FESA) as the specific areas within the geographical area occupied by a species on which are found physical or biological features essential to the conservation of the species and that may require special management considerations or protection (15 United States Code 1632A).

Critical habitat was designated for valley elderberry longhorn beetle in the initial listing of the species on August 8, 1980 (45 *Federal Register* [FR] 52803). Critical habitat was initially designated for California red-legged frog in 2001, which was subject to legal challenges and resulted in substantial modifications and a final ruling in 2006 (71 FR 19244). Further subsequent challenges resulted in additional modifications and a new final ruling in 2010 (75 FR 12816). Critical habitat has not been designated for giant gartersnake. There is no proposed or designated critical habitat within the action area. Accordingly, critical habitat is not discussed further in this BA.

1.3 Consultation to Date

An official list of species federally listed as threatened, endangered, with the potential to occur in the vicinity of the action area in Colusa County was obtained from the USFWS website (USFWS 2018) on July 12, 2018. USDA and ICF conducted a call with USFWS on August 7th, 2018 to discuss USFWS's recommendation to include the California red-legged frog in the consultation process. USFWS provided a list of comments and questions on the BA to USDA on September 4, 2018 that USDA and ICF responded to and held a conference call on September 7, 2018 to review.

Chapter 2
Proposed Action and Conservation Measures

2.1 Action Area

The regulations governing consultations under FESA define action area as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (51 FR 19957). The action area should be determined based on all direct and indirect effects of the proposed action (50 CFR 402.02 and 402.14[b][2]).

The action area encompasses a 1-mile buffer around the western portion of the project footprint and a 200-foot buffer around the eastern portion of the project footprint. The action area is intended to capture all of the project elements that could directly or indirectly affect federally listed wildlife species during construction, operations, and maintenance of the proposed action.

2.2 Description of the Proposed Action

The proposed action would consist of the granting of a loan from the USDA to assist in the financing of the proposed project. The proposed project would include the following components, which are shown in Figure 1 (Appendix B, *Figures*). These components are described in detail in the following sections.

1. A 1,200-acre-foot capacity TRR covering 130 acres with a spillway to the local irrigation ditch system and bottom drain, both of which ultimately connect to Funks Creek.
2. A TRR Pumping Plant with a 900 cubic feet per second (cfs) maximum pumping capacity, a 1-acre Electrical Switchyard adjacent to the plant, and a 3.5-mile power line.
3. A GCID Main Canal Connection to TRR including a gated inlet control structure, short inlet channel, and concrete canal lining in the GCID Main Canal immediately upstream and downstream of the TRR connection.
4. A 3.5-mile MWI pipeline sized for 900 cfs pumped capacity and 900 cfs gravity flow capacity, private access bridge over the GCID Main Canal for construction access and maintenance of the pipelines, and a 2.7-mile gravel access road that would run most of the length of the MWI pipeline alignment.

2.2.1 Construction Methods and Activities

2.2.1.1 Site Access

The project area would be accessed by taking Delevan Road west from I-5, then going south on McDermott Road, which runs along the eastern edge of the proposed TRR Complex. A gravel access road from McDermott Road would be constructed prior to excavation activities for the TRR Complex and MWI pipeline to provide access for construction personnel and equipment. This access road would become part of the permanent access road to the TRR, TRR Pumping Plant, and the MWI pipeline maintenance road. There are no public access roads between the proposed TRR

Complex and Funks Reservoir. The proposed project is not expected to cause road closures during construction, although there could be traffic hold times when large equipment is accessing the project area, and temporary lane closures during power line installation along McDermott Road, Dirks Road, and Noel Evan Road.

There is limited access to the pipeline corridor from public roads. In addition, the GCID Main Canal presents a barrier to accessing the pipeline corridor. There are no suitable existing bridges or public roads convenient to the project area that can be used during construction or for maintenance access. For this reason, a new bridge would be included to span the GCID Main Canal within the pipeline corridor in the vicinity of the northwest corner of the TRR. This bridge would be private and would connect by gravel road to the TRR access road from McDermott Road and to the pipeline corridor road west of the GCID Main Canal. The bridge would minimize construction effects on local farming operations and farm roads, and would not require fill in the GCID Main Canal. It would be used during construction to access the pipeline corridor west of the GCID Main Canal to import pipe and construct the pipeline. After construction is completed, it would provide access to the pipeline corridor for inspection and maintenance.

2.2.2 GCID Terminal Regulating Reservoir Complex

The GCID TRR Complex includes the project features that are geographically or functionally associated with the TRR. This complex would include the TRR, including the inundation area and the berm that would form the reservoir; the TRR Pumping Plant; the GCID Main Canal connection to the TRR; a private bridge across the GCID Main Canal to provide access from the TRR to the MWI pipeline corridor; and the MWI pipeline and pipeline maintenance gravel access road.

2.2.2.1 TRR, TRR Pumping Plant, and GCID Main Canal Connection

Water conveyed down the GCID Main Canal would be directed into the proposed TRR (Figure 1) via a proposed inlet. A new pump station (the proposed TRR Pumping Plant) would then convey the water from the TRR via the proposed MWI pipeline to Funks Reservoir. The TRR adds regulating capability to the GCID Main Canal that does not currently exist and would significantly improve the reliability of water operations in the canal system. The TRR would also serve as the forebay for the TRR Pumping Plant, which is a key component of the project. The TRR would be required to provide operational regulation to balance normal and emergency flow variations between the upstream GCID Main Canal Pump Station, the 40 miles of connecting canal, and the TRR Pumping Plant.

The TRR would be located along McDermott Road approximately 3 miles northeast of Funks Reservoir, adjacent to the GCID Main Canal. It would be constructed using a combination of below-grade excavation and a perimeter earthen berm constructed above existing grade. The TRR would be composed of the perimeter earthen berm, concrete emergency overflow spillway, and an irrigation release outfall standpipe leading to an existing irrigation ditch adjacent to TRR along McDermott Road. A drain pipe would also be constructed to Funks Creek to allow the reservoir to be drained for operation and maintenance and for emergency purposes. The irrigation ditch would be lined with concrete to stabilize the slopes, and the existing pipe connecting the ditch to Funks Creek would be upgraded and adapted to the operation of the TRR. A gravel access road up to 20 feet wide would be constructed on top of the TRR berm to provide access around the TRR perimeter for operation and maintenance.

A private bridge would be constructed across the GCID Main Canal to provide access from the TRR to the MWI pipeline corridor for operation and maintenance. The new bridge would be a single-span bridge made of precast beams that is approximately 140 feet in length and 24 feet wide. On the east side of the road the bridge would tie into the crown of the TRR berm road within the pipeline footprint. On the west side, the bridge would be built just above the crown road and a ramp down from the bridge would be built. Culverts would be installed at the drainage ditches on the landside toes of the GCID Main Canal berms to maintain hydrology.

The embankment materials would be earthen material from the TRR excavation compacted to California Division of Safety of Dams specifications. The reservoir would be lined with a polyethylene liner on sand bedding to limit the potential for seepage to adjacent agricultural lands. A seepage collection system tied to the sand bedding would also be installed under the liner to protect the integrity of the liner when the reservoir is dewatered for inspection and maintenance.

The TRR would be approximately 15 feet deep, with a maximum water depth of 12 feet, leaving 3 feet of freeboard. The maximum excavation depth of the TRR would be approximately 9 feet, and the maximum berm height would be approximately 6 feet above existing grade. The total capacity of the TRR would be divided into three operational components: (1) 2 feet of dead storage beneath the lower operating limit of the pump station; (2) 5 feet of normal operational storage for the canal; and (3) 5 feet of pump station operational storage below the canal operational storage zone. The maximum water surface elevation in the TRR could not exceed the water surface elevation in the GCID Main Canal because the inlet into the TRR is a gravity flow system. The plan area of the TRR would be approximately 130 acres (including the TRR and embankments), and the reservoir would have a maximum capacity of 1,200 acre-feet.

The TRR Pumping Plant would be located on the north side of the TRR where the proposed MWI pipeline would enter the new reservoir (Figure 1). The TRR Pumping Plant would be capable of pumping up to 900 cfs into the MWI pipeline to Funks Reservoir. The plant would also be capable of returning up to 900 cfs from Funks Reservoir back to TRR by gravity. Return flow would be regulated and controlled using energy dissipation valves in the structure connected to the MWI pipeline. The proposed electrical switchyard for the pumping plant would also be located on the north side of the TRR, east of where the MWI pipeline would enter the TRR, and would occupy approximately 1 acre. Included within the switchyard footprint is an approximately 40-foot by 60-foot electrical control building. The building would house electrical power and control equipment needed to operate the pumping plant, supervisory control and data acquisition equipment for remote plant operation, and office and storage areas for spare parts and tools. In addition, surge control tanks and compressors to protect the MWI pipeline, a gravel parking area, and lighting for security would be constructed.

A temporary concrete batch plant would be set up in close proximity to the pumping plant, which would also serve the concrete needs for the MWI pipeline and inlet/outlet structure at Funks Reservoir.

An existing Pacific Gas and Electric Company (PG&E) power line would be upgraded to 69 kV to provide power to the TRR Pumping Plant. The power line would tie directly into a new substation that would be located adjacent to an existing 230-kV PG&E power line just west of the GCID Main Canal where it intersects with Noel Evan Road. The power line would follow the existing power lines from the substation east on Noel Evan Road and Dirks Road to McDermott Road, and south on McDermott Road to the access road to the TRR. The power line would terminate at the TRR Pumping

Plant switchyard. The substation would include transformers and other equipment as required by PG&E to provide the 69-kV connection. Existing power poles would be replaced wherever required to allow over-under placement of power lines; existing lines be placed below new 69-kV line that would be at the top of the poles.

Major connection features between the GCID Main Canal and TRR would include a short connecting channel from the GCID Main Canal to the TRR, and a gated flow control structure at the head end of the connecting channel.

A gravel road would provide access to the TRR Pumping Plant from McDermott Road. Parking for construction personnel and staging areas for equipment would be within the defined working limits for the pumping plant and the TRR. This access road would continue west from the vicinity of the TRR Pumping Plant on the crown of the TRR dike and would connect to the bridge over the GCID Main Canal, providing construction access to the MWI pipeline corridor and post construction access to the pipeline maintenance road. The GCID Main Canal would also be lined with concrete approximately 100 feet upstream and downstream of the centerline of the inlet to the TRR to provide scour protection, as the GCID Main Canal is unlined.

Construction

The total construction disturbance area would be approximately 150 acres. The proposed TRR site is currently in agricultural production (rice crops, annual row crops, and orchards). The total construction disturbance area would include the footprint of the facilities, the materials and equipment staging area, the temporary construction area needed to accommodate construction of the facilities, and access roads. The construction disturbance area would be kept to the minimum needed for construction to minimize effects on high-value agricultural lands and other sensitive environmental resources, such as riparian vegetation and irrigation ditches.

Anticipated major construction activities for the GCID TRR complex include:

- Staking work limits and providing flagged stanchion fencing along the working limits
- Installing silt fencing wherever required
- Clearing and grading the construction workspace within defined work limits
- Stockpiling topsoil
- Placing necessary construction materials at staging areas
- Transporting materials and equipment to the project area
- Excavation for the TRR Pumping Plant and construction of the plant
- Excavation and berm construction for the reservoir and connection channel
- Reservoir lining
- Trenching/excavation along the pipeline route
- Dewatering for all excavations
- Performing bedding preparation
- Receiving pipe deliveries
- Installing pipe and valves, and air/vac valve facilities

- Installing concrete lining at the GCID Main Canal inlet to the TRR
- Addressing crossings of roads and utilities
- Backfilling and compacting trench
- Replacing topsoil
- Revegetating and restoring pipeline route, the earthen berm around the TRR, and other disturbed areas
- Constructing ancillary features associated with the TRR and Pumping Plant
- Constructing a gravel maintenance road
- Constructing a private single-span bridge
- Upgrading an existing power line to 69 kV

Operation

In coordination with GCID Main Canal operations and when needed to facilitate water exchanges, water would be diverted into the proposed TRR by gravity from the GCID Main Canal. Flow into the TRR would be controlled by the TRR inlet control gates. An integrated supervisory control and data acquisition and communication system would coordinate operation between the upstream GCID Main Pump Station, GCID Main Canal, and the proposed TRR, TRR Pumping Plant, and Funks Reservoir. Flow to Funks Reservoir and the water surface in the TRR would be regulated by the TRR Pumping Plant and the TRR inlet control gates. TRR pump operators would need continuous communication with GCID Main Canal and Pump Station operators to coordinate water allocations for GCID irrigation demands and Tehama-Colusa Canal Authority (TCCA) deliveries. TRR operation would be controlled remotely and would not require daily on-site personnel. Should flow mismatches into or out of the reservoir occur for any reason, the TRR is equipped with an emergency spillway to pass flows safely out of the reservoir to the adjacent irrigation channel to avoid overtopping. Automatic level monitoring equipment would be provided in the reservoir that would alarm if the spillway becomes active so that corrective measures can be quickly taken for public safety. The alarm system would include the capability to shut down pumping or return flow operations should the reservoir level rise above a preset level over the spillway weir. Release flows from the spillway would be controlled by a downstream energy dissipater.

Maintenance

Typical maintenance of the proposed TRR would include clearing vegetation from the slopes of the embankments, and maintaining the gravel service road atop the embankment. Clearance of vegetation will be done through mechanical means when vegetative growth obscures observation of the landside toe for seepage and will be conducted during the active season for giant gartersnake (May 1 through October 31). Draining the TRR for maintenance would be accomplished by a standpipe and drain structure at the invert of the reservoir. Drained water would be conveyed to Funks Creek. Annual maintenance is expected to require up to four personnel at the pump station for a 2 to 4 week planned outage period. Draining of the TRR would likely be required every 7 to 10 years for inspection of the liner. All of the water sources connected to the TRR are clean water sources and sediment accumulation in the reservoir is not expected. When draining of the reservoir is needed, a large portion of the stored water can be transferred to the Tehama-Colusa (TC) Canal and Funks Reservoir by the TRR Pumping Plant to minimize loss of water from the system.

2.2.2.2 Maxwell Intertie Pipeline and Pipeline Road

Once constructed, the proposed 3.5-mile-long MWI pipeline would convey water between the proposed TRR on the GCID system to the existing Funks Reservoir on the TC Canal system (Figure 1). The MWI pipeline would be bi-directional, allowing water to be pumped from the TRR to Funks Reservoir for reregulation and allowing water to flow by gravity from Funks Reservoir to the TRR for release to the GCID Main Canal and Funks Creek.

The proposed MWI pipeline would convey up to 900 cfs of water pumped from the TRR to Funks Reservoir. The capacity of the MWI pipeline to convey water by gravity flow from Funks Reservoir to the TRR would also be up to 900 cfs. The MWI pipeline would consist of a single 12-foot-diameter reinforced concrete steel cylinder pipe to convey the pumping flow. It would be buried a minimum of 10 feet (to top of pipe) below the ground surface. Facilities associated with the MWI pipeline would include blow-off and air/vac valve structures. It is likely that dewatering of the pipe excavation would be needed during construction.

The proposed alignment of the MWI pipeline would cross beneath the existing GCID Main Canal, Funks Creek, and a primary PG&E natural gas transmission line. At these locations, a bore-and-jack construction method would be used. Bore-and-jack construction would entail excavating jacking and receiving pits on each side of the existing infrastructure (gas transmission line, canal, or Funks Creek) and then jacking a carrier pipe between the two pits horizontally under the structure. The MWI pipeline would be then installed in the carrier pipe and the annular space between the two pipes would be grouted. This construction method would require that the area be dewatered. All additional work required for bore-and-jack construction would be conducted within the construction disturbance area and would not require the disturbance of additional land. A bridge would be constructed over the GCID Main Canal north of the pipeline crossing in order to provide access to the pipeline, and the bridge would be maintained by the Authority. Bore-and-jack construction would also be required to place the pipeline below Funks Creek near the western end of the pipeline, and no riparian vegetation would be disturbed along Funks Creek.

The MWI pipeline would also cross the easements of an existing PG&E 230-kV transmission line and the Western Area Power Administration's (WAPA) Maxwell-Orinda 500 kV transmission line. It is expected the pipeline alignment would be set so that there is adequate overhead clearance to the lines so that the pipeline can be trenched across the utility easement, these activities would be coordinated with PG&E and WAPA so that boring and jacking would not be required. Other than a 20-foot-wide, 2.7-mile-long gravel maintenance road (the proposed MWI pipeline road) from the bridge to Funks Reservoir, the only other surface facilities along the pipeline would be several air/vac relief valve and access manhole vaults at the bore and jack locations and at any topographic high points along the pipeline profile from the GCID Main Canal to the existing Funks Reservoir.

Crossing of other existing minor utilities such as gas lines, water lines, sewer lines, and communications lines would be accomplished by protecting these facilities in place during construction or working with the utility owner to relocate the utility as determined most appropriate. Disruptions to these utilities would be minimized to the extent possible, and the ground surface would be restored to preconstruction conditions after installation of the MWI pipeline.

Several irrigation and drainage ditches would be crossed by the proposed MWI pipeline. During construction temporary bypass pumping would be set up to maintain service.

Construction

The construction disturbance corridor for the proposed MWI pipeline would be up to approximately 150 feet wide from the TRR to the existing Funks Reservoir (3.5 miles). Permanent utility easements would be obtained for the pipeline and the pipeline maintenance gravel access road. The pipe would be installed in an open trench approximately 25 feet deep. This allows for 10 feet of cover over the backfilled pipe. Excavated side slopes would be 1 horizontal to 1 vertical, unless flatter slopes are dictated by geotechnical conditions. Bedding for the pipe can be pea gravel or controlled low-strength material. The nominal location could vary during final design. The construction disturbance area would be reduced if a smaller-capacity pipeline is selected for the final design.

Based on available geotechnical data from other projects in the area, the material excavated from the pipe trench would be suitable as pipe backfill. Most of the estimated 680,000 cubic yards of soil from the trench excavation area would be stockpiled and replaced to backfill the trench. Excess excavated material from pipeline trenching would either be hauled to a permitted facility off-site or would be stockpiled at a 2-acre soil stockpile area at the west end of the pipeline alignment for reuse in future projects and/or maintenance (Figure 1). All disturbed construction areas not requiring gravel surfacing, or returned to agricultural production, or soil stockpiles remaining after construction would be seeded with a native seed mix and stabilized to prevent erosion and sediment transport to surface waters.

Dewatering of the trench excavation would be required. Well point systems or dewatering wells may be required in sandier, more permeable areas. Water from dewatering operations would be treated in baker tanks or elevated tanks to control sediment and water would be used for dust control, watering and blending into fills for compaction, vehicle washdown, or other construction uses. Water may also be made available for agricultural irrigation needs, or released to irrigation drainage channels that are present along the pipeline alignment.

Other facilities associated with the pipeline would include access manholes, air/vac valve assemblies at high points in the profile, and at least one blow-off valve facility to drain the pipeline. Depending on studies completed during geotechnical investigations for design, a cathodic protection system could be required. Parking for construction personnel would be within the 150-foot-wide disturbance area and would move along the pipeline as installation progresses.

Anticipated major construction activities for the MWI pipeline and pipeline road include the following:

- Staking work limits and providing flagged stanchion fencing along the working limits
- Installing silt fencing wherever required
- Clearing and grading the construction workspace
- Stockpiling topsoil within the corridor or at the 2-acre soil stockpile area
- Placing necessary construction materials at staging areas
- Transporting materials to the project site
- Trenching/excavation of pipeline route
- Dewatering
- Performing bedding preparation

- Hauling prefabricated reinforced concrete pipe to the construction site from an off-site supplier
- Installing pipe and valves, and air/vac facilities
- Addressing crossings of roads and utilities
- Backfilling and compacting trench
- Replacing topsoil
- Revegetating and restoring pipeline route and construction disturbed areas
- Constructing a gravel maintenance road and bridge over the GCID Main Canal

Following the completion of construction activities for the pipeline, agricultural land affected by pipeline construction would be returned to agricultural use. However, a permanent 30-foot-wide maintenance corridor (40 feet wide and 50 feet long where manholes are located) would be maintained for the length of the pipeline, which would include a 20-foot-wide gravel maintenance road, and space for manholes and pressure relief structures. Design of the turnaround for the maintenance road at the Funks Creek crossing would be designed to avoid environmentally sensitive resources. The exception to the maintenance road is on the east side of the GCID Main Canal. There would be a 30-foot easement above the pipeline east of the GCID Main Canal, but no road. Agricultural production would be allowed over the MWI pipeline east of the GCID Main Canal, with the exception of orchards.

Operation

Operation of the proposed MWI pipeline would not require daily workers at the site. Access to the pipeline corridor would only be required for infrequent long-term maintenance. During active operations, workers would operate pumping and valve controls at TRR and/or at Funks Reservoir.

Maintenance

Periodic inspection and maintenance of the proposed MWI pipeline facilities would likely occur once per year. Two personnel would be required for maintaining pipeline appurtenances during annual maintenance. Annual inspections would not necessarily include dewatering of the pipelines. Dewatering for inspection may occur on a 5-year cycle, or when an unexpected problem with the pipeline occurs. Permanent rights-of-way for the land overlying the pipeline would be maintained to provide future access. The proposed gravel maintenance road would be graded, as needed.

2.2.3 Funks Reservoir

2.2.3.1 MWI Pipeline Connection to Funks Reservoir

A concrete inlet/outlet structure would be installed at the terminus of the MWI pipeline within Funks Dam on the south side of the existing Funks Reservoir spillway structure. Stop logs or slide gate would be provided to facilitate dewatering of the pipeline when needed. Since the structure would be located on the existing dam, the final design would require coordination with and approval by the U.S. Bureau of Reclamation (USBR) prior to construction.

2.2.4 Construction Schedule

Construction of the proposed project would be expected to begin in April 2022, and take approximately 2 years to construct. Construction activities would occur 6 days per week (Monday through Saturday) throughout construction, with a 10-hour work day between April 1 and October 31, and an 8-hour work day between November 1 and March 31, weather permitting. All construction activities would be conducted during daylight hours. All disturbed and stockpiled soils would be stabilized prior to any forecasted rain event in accordance with the stormwater pollution prevention plan developed for the proposed project.

2.2.5 Operation and Maintenance Activities

Maintenance of the MWI pipeline and associated facilities may occur at any time of year but is anticipated to be minimal, with two persons doing checks and annual maintenance of the pipeline. Annual inspections would not be expected to require dewatering. Maintenance of the proposed TRR would not affect California red-legged frog habitat and clearance of vegetation would be conducted during the active season for giant garter snake (May 1 through October 31).

2.3 Conservation Measures

The Authority will implement conservation measures to avoid and minimize effects on valley elderberry longhorn beetle, California red-legged frog, and giant gartersnake during construction, operations, and maintenance of the proposed project. To ensure their implementation, the measures listed in this section will be included in the specifications for the proposed project.

2.3.1 Conservation Measure 1: Biological Resources Awareness Training

Prior to the start of ground-disturbing work (including vegetation clearing, grading, and equipment staging), a USFWS-approved biologist will conduct a mandatory biological resources awareness training for all construction personnel. This training will cover sensitive biological resources. The training will cover the natural history, appearance (using representative photographs), and legal status of species, regulatory protections, penalties for noncompliance, benefits of compliance, as well as the avoidance and minimization measures to be implemented. Participants will be required to sign a form that states they have received and understand the training. The Sites Authority will maintain the record of training and make it available to agencies, upon request. If new construction personnel are added to the proposed action, the contractor will ensure that the new personnel receive the mandatory training before starting work.

2.3.2 Conservation Measure 2: Treatment of Vehicles, Equipment, and Hazardous Materials

Construction vehicles will observe the posted speed limit on hard-surfaced roads and a 10 mile-per-hour speed limit on unpaved roads during travel in the construction area. Construction vehicles and equipment will restrict off-road travel to the designated construction areas. Construction vehicles and equipment left on-site overnight will be thoroughly inspected each day for snakes (both

underneath the vehicle and in open cabs) before they are moved. All construction equipment will be maintained to prevent leaks of fuels, lubricants, or other fluids. To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service or refuel vehicles, construction equipment, or motorized tools within 300 feet of potentially suitable California red-legged frog or giant garter snake aquatic habitat.

The USDA will follow Service-approved decontamination protocols prior to any staff, equipment, tools, or vehicles entering Project action area waters or moist soils associated with waters.

2.3.3 Conservation Measure 3: Miscellaneous Measures

All food-related trash will be disposed of in closed containers and removed from the construction area daily during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the construction site.

No pets or firearms will be allowed in the construction area.

2.3.4 Conservation Measure 4: Field Surveys

A USFWS-approved biologist will conduct a preconstruction survey for elderberry shrubs, host plant for the beetle, within 50 meters of the construction limits. All elderberry shrubs will be mapped and identified for avoidance with flagging or fencing.

A site assessment and field surveys for the frog will be conducted prior to the start of Project activities using the methods described in USFWS (2015a). Site assessments and field surveys will be conducted by a USFWS-approved biologist.

A Service-approved biologist will conduct surveys for the snake prior to the start of Project activities, following protocols approved by the USFWS.

All canals and aquatic areas to be dewatered will be surveyed for the snake by the Service-approved biological monitor immediately prior to dewatering. The biological monitor will oversee the dewatering activity until the channel is fully dewatered.

If pumps are required for dewatering, intake screens will be placed on the pump intake to prevent entrainment of snakes.

2.3.5 Conservation Measure 5: Biological Monitor

An USFWS-approved biologist will be present during all ground-disturbing activities and during any activities involving heavy equipment within 200 feet of potentially suitable Giant garter snake habitat and 300 feet of potentially suitable California red-legged frog habitat. The biological monitor shall permit the frog and snake to move out of the Project area on its own. Should a frog or snake need to be moved, a biologist with a 10(a)(1)(A) permit will trap and relocate the individual to the area designated in the relocation plan for the frog.

Should a frog or snake move into the Project area, all personnel including the biological monitor will have the authority to stop construction activities until appropriate corrective measures have been completed or the biological monitor determines that the frog, beetle, or snake will not be harmed. Snakes, beetles, and frogs encountered during construction activities will be allowed to move away on their own.

2.3.6 Conservation Measure 6: Wildlife Escapement

To avoid entrapment of wildlife, all steep-walled holes or trenches more than one foot deep will be excavated such that one side will have a 3:1 slope (3 feet horizontal:1 foot vertical). Having one side with a 3:1 slope is anticipated to allow most wildlife that enter or fall in to leave on their own. The biological monitor will inspect any holes or trenches prior to filling.

2.3.7 Conservation Measure 7: Sensitive Habitat Buffers – Valley Elderberry Longhorn Beetle

All construction and staging areas for the proposed action will be located at least 50 meters away from elderberry shrubs. Signs will be posted along the fencing for the duration of construction indicating the presence of beetle habitat. The biological monitor will be responsible for ensuring the buffer area fences around elderberry shrubs are maintained throughout construction. The biological monitor also will monitor the condition of shrubs (including the presence of dust). Any elderberry shrubs inside the 50-meter buffer area that become stressed or die will be reported to USFWS. Biological inspection reports will be available to the USFWS. Gravel roadways, staging areas, and other applicable areas will be sprayed with water as needed to minimize dust moving onto elderberry shrubs.

2.3.8 Conservation Measure 8: Sensitive Habitat Buffers – Giant Gartersnake

Construction activities will take place no closer than 200 feet from the banks of snake aquatic habitat (Funks Creek and canals that hold water May 1 through October 1). Heavy equipment will be confined to existing roadways when within 200 feet of snake habitat to minimize habitat disturbance. Potential snake habitat within the Project area will be flagged and designated as Environmentally Sensitive Areas. These areas will be avoided by all construction personnel.

Construction activity within habitat will be conducted between May 1 and October 1.

The Project area will be surveyed for snakes no more than 24 hours prior to the start of construction activities.

No exclusionary fencing will be utilized for the snake. A Service-approved biologist will remain on-site during ground-disturbing activities to ensure they do not encroach closer than 200 feet from potentially suitable snake habitat.

2.3.9 Conservation Measure 9: Sensitive Habitat Buffers – California Red-Legged Frog

A Service-approved biologist will be present when construction activities occur within 300 feet from the banks of Funk Reservoir and 200 feet from the banks of Funks Creek.

2.3.10 Conservation Measure 10: Compensation for Direct Impacts

The Authority will compensate for any permanent impacts (or temporary impacts that extend beyond one season) to snake habitat using the guidelines established in USFWS 1997. Direct impacts to the frog habitat will be compensated by applying a 3:1 ratio (3 acres created: 1 acre lost) for permanent habitat loss.

Chapter 3

Land Cover Types, Species Accounts, and Status of Species in the Action Area

3.1 Methodology

3.1.1 Prefield Research

Pertinent life history and distribution information for valley elderberry longhorn beetle, California red-legged frog, and giant gartersnake was reviewed and compiled in the preparation of this chapter. In addition to general species information, a review of the CNDDB (CDFW 2018) and other relevant publications on these species' potential presence in the region was conducted.

3.1.2 Field Surveys

An ICF biologist conducted a reconnaissance-level site visit on July 5, 2018 to document existing conditions within and adjacent to the action area, including the land cover types and wildlife habitats. The biologist also searched for elderberry shrubs and evaluated aquatic and upland habitat for giant gartersnake and took representative photographs. The field visit was conducted in the accessible parts of the action area (i.e., not private property).

3.2 Land Cover Types

The pipeline and other project features are dispersed throughout the action area and although the dominant land cover type is agricultural fields, land cover type differs within and adjacent to individual work sites. The majority of the MWI pipeline and the TRR footprints are in orchard and row crops. Annual grassland surrounds Funks Reservoir and the western end of the proposed MWI pipeline. The 69-kV power line alignment is adjacent to drainage ditches and rice fields. The land cover types identified in the action area are agricultural field, annual grassland, reservoir/open water, riverine, canal/drainage ditch, and unvegetated/developed.

3.3 Species Accounts

3.3.1 Valley Elderberry Longhorn Beetle

3.3.1.1 Status and Distribution

The valley elderberry longhorn beetle was listed as a threatened species by USFWS on August 8, 1980 (45 FR 52803). On October 2, 2012, USFWS issued a proposed rule to revoke the species' threatened status (77 FR 60238). However, USFWS withdrew the proposed rule on September 17, 2014 based on their determination that the proposed rule did not fully analyze the best available information (79 FR 55873).

The current range for valley elderberry longhorn beetle extends throughout the Central Valley from approximately Shasta County in the north to Fresno County in the south. It includes the valley floor and lower foothills generally occurring below 500 feet in elevation (USFWS 2017a).

3.3.1.2 Habitat and Ecology

Valley elderberry longhorn beetle is found only in association with its host plant, elderberry, which is commonly found in riparian forests and adjacent uplands in the Central Valley and foothills (USFWS 2017a). Adult valley elderberry longhorn beetle feed on elderberry foliage and are present from March through early June, during which time the adults mate. Females lay their eggs in bark crevices or at the junction of stem and trunk or leaf petiole and stem. After hatching, the larva burrows into the stem to feed and develop into pupa and adult. After transforming into an adult, it chews an exit hole and emerges (Barr 1991).

3.3.1.3 Reasons for Decline

The greatest historical threat to valley elderberry longhorn beetle has been the elimination, loss, or modification of its habitat by urban, agricultural, or industrial development, and other activities that reduce or eliminate its host plants (Talley et al. 2006). Argentine ant (*Linepithema humile*) and the nonnative invasive European earwig (*Forficula* auricularia) have also been identified as potential threats to valley elderberry longhorn beetle (Talley et al. 2006; 77 FR 60237). The ant is an aggressive competitor and predator on native arthropods throughout riparian habitats in California, and has been observed preying on valley elderberry longhorn beetle larvae (Talley et al. 2006). Nonnative invasive plant species such as black locust (*Robinia pseudoacacia*), giant reed (*Arundo donax*), red sesbania (*Sesbania punicea*), Himalayan blackberry (*Rubus armeniacus*), tree of heaven (*Ailanthus altissima*), Spanish broom (*Spartium junceum*), Russian olive (*Elaeagnus angustifolia*), edible fig (*Ficus carica*), and Chinese tallowtree (*Sapium sebiferum*) may have significant indirect effects on the valley elderberry longhorn beetle by affecting elderberry shrub vigor and recruitment (Talley et al. 2006). Ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), Italian ryegrass (*Festuca perennis,* formerly *Lolium multiflorum*), and yellow star-thistle (*Centaurea solstitialis*) may impair elderberry germination or establishment, or elevate fire risk (Talley et al. 2006).

3.3.1.4 Occurrence in the Action Area

Within the action area, suitable habitat for valley elderberry longhorn beetle consists of elderberry shrubs located within agricultural, ruderal, or riparian areas. Elderberry shrubs within the action area will be assumed to be occupied by the valley elderberry longhorn beetle and would provide all life history needs for the species. Valley elderberry longhorn beetles could occur in between shrubs during the flight season, which is March through July (USFWS 2017a). Focused surveys for elderberry shrubs have not been conducted in the action area, but will be conducted prior to construction (see Section 2.3, *Conservation Measures*). The dispersal ability of the species is thought to be fairly limited. Dispersal distance of an adult valley elderberry longhorn beetle from its emergent site is reported to be approximately to be 164 feet or less. The nearest CNDDB occurrence of valley elderberry longhorn beetle is approximately 11 miles southeast of the action area (CDFW 2018). However, the lack of CNDDB occurrences cannot be used to infer absence of a species therefore there is potential for elderberry shrubs, if present in the action area, to be occupied by valley elderberry longhorn beetle.

3.3.2 California Red-Legged Frog

3.3.2.1 Status and Distribution

The California red-legged frog (*Rana draytonii*) was listed as a threatened species by USFWS on May 23, 1996 (61 FR 25813). The historical range of the California red-legged frog generally extends south along the coast from the vicinity of Point Reyes National Seashore, Marin County, California, and inland from the vicinity of Redding, Shasta County, California, southward along the interior Coast Ranges and Sierra Nevada foothills to northwestern Baja California, Mexico (USFWS 2017b). The current range is generally characterized based on the current known distribution. USFWS notes that while the California red-legged frog is still locally abundant in portions of the San Francisco Bay area and the central coast, only isolated populations have been documented elsewhere within the species' historical range, including the Sierra Nevada, northern Coast Ranges, and northern Transverse Ranges (USFWS 2017b).

3.3.2.2 Habitat and Ecology

The California red-legged frog breeds in slow-moving streams or pools within streams, and seasonal or permanent water bodies such as ponds (Thomson et al. 2016). Aquatic habitat must persist long enough to support the complete breeding cycle (mating, eggs, larvae, and metamorphosis so that juveniles can become capable of surviving in upland) which is 11 to 20 weeks (USFWS 2010). Submergent or emergent vegetation such as cattails or bulrush is an important component of aquatic breeding habitat both for oviposition and refuge (Thomson et al. 2016). Nonbreeding aquatic habitat are used by some frogs during the summer and fall months, after breeding is complete (66 FR 49:1462-14756; Bulger et al. 2003). Nonbreeding aquatic habitats remain moist throughout the year but typically do not provide the necessary characteristics for breeding (e.g., emergent vegetation, depth) (66 FR 49:1462-14756; Bulger et al. 2003). In the dry months, California red-legged frogs use a variety of microsites that remain moist and cool through the summer including moist leaf litter, dense under story, or in small mammal burrows for refuge and foraging (Thomson et al. 2016). Refugia and foraging habitat occur in most natural land cover types (e.g., grassland, riparian, oak woodland) near breeding or non-breeding aquatic habitat, including pasture lands (Bulger et al. 2003; Fellars and Kleeman 2007). Adult and juvenile California red-legged frogs are known to travel through a wide variety of upland habitat types (e.g., grassland, riparian, woodlands) to move between breeding and nonbreeding sites, between aquatic and upland refugia/foraging habitats, or to disperse to new breeding locations (Fellars and Kleeman 2007; USFWS 2002). Frogs typically travel much shorter distances between aquatic and upland refugia/foraging habitats than when dispersing as juveniles or moving between breeding and non-breeding aquatic habitats. When moving between aquatic and upland refugia/foraging habitats; 90% of frogs have been found within 0.04 mile [60 m] of breeding or non-breeding aquatic habitat, with some frogs remaining 0.06 mile [100 m] from water until late January (after rain had begun but before movement to aquatic breeding habitat) (Bulger et al. 2003). The longest reported movement distances are associated with frogs traveling between breeding and nonbreeding aquatic habitat and with dispersing juveniles (Fellars and Kleeman 2007; Bulger et al. 2003; USFWS 2002). Movement distances between breeding and nonbreeding aquatic habitats are primarily less than 0.6 mile [1 km] (Fellars and Kleeman 2007), however, individual juvenile and adult movement distances over 1.9 miles [3km] have been recorded (Fellars and Kleeman 2007; Bulger et al. 2003; USFWS 2002).

3.3.2.3 Reasons for Decline

USFWS (2002) estimates that the species has lost approximately 70% of its former range, with severe declines occurring primarily in the Central Valley and southern California. Conversion of lands to agricultural and urban uses, overgrazing, mining, recreation, and timber harvesting have all contributed to habitat losses and disturbances. Urbanization often fragments habitat and creates barriers to dispersal (USFWS 2002). Pesticides, herbicides, and other agrochemicals are known to be toxic to various life stages of ranid frogs (Hayes and Jennings 1986). Exotic predatory fish and bullfrogs also pose significant threats to California red-legged frogs. Bullfrogs depredate and out-compete California red-legged frogs due to their larger size, more varied diet, and longer breeding season (Hayes and Jennings 1986). The creation of reservoirs through dam construction in the Central Valley and southern California has directly eliminated, fragmented, or isolated populations of California red-legged frogs (USFWS 2002). Smaller impoundments and water diversions can also preclude or inhibit dispersal (USFWS 2002) and reduce high flows typically needed to maintain deep holes in streams which provide important breeding and rearing habitat for red-legged frogs (Fellers and Kleeman 2007)

3.3.2.4 Occurrence in the Action Area

The California red-legged frog is considered to be extirpated from the valley floor (USFWS 2002) which constitutes the majority of the action area with the exception of the western portion surrounding Funks Reservoir. There are no CNDDB records of California red-legged frog occurrences within 50 miles of the action area (CDFW 2018). However, USFWS has indicated that California red-legged frogs may be potentially present within the reservoir and Funks Creek. Potentially suitable associated upland habitat includes grassland and riparian land cover within 300 feet of aquatic habitat. Potentially suitable dispersal habitat consists of all land cover types within 1 mile of aquatic habitat. Presence/absence surveys have not yet been conducted in the action area. Therefore, there is a low potential that California red-legged frog could be present within the action area.

3.3.3 Giant Gartersnake

3.3.3.1 Status and Distribution

Giant gartersnake was listed as a threatened species by USFWS on October 20, 1993 (58 FR 54033). The species is also state-listed as threatened. Giant gartersnake is endemic to the Sacramento and San Joaquin Valleys, where it is found in lowland areas (USFWS 2015b:I-8). Historically, this species was found throughout the Central Valley from Butte County in the north to Kern County in the south. Currently, giant gartersnake is only known to occur in nine discrete populations in the Sacramento and San Joaquin Valleys in Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Kings, Madera, Merced, Placer, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, Tulare, Yolo, and Yuba Counties (USFWS 2015b:9, 11–12).

3.3.3.2 Habitat and Ecology

Giant gartersnakes inhabit agricultural wetlands and other waterways, including irrigation and drainage canals, ricelands, marshes, sloughs, ponds, small lakes, and low-gradient streams, as well as adjacent upland areas in the Central Valley. Because of the direct loss of natural habitat, giant

gartersnake relies heavily on rice fields in the Sacramento Valley, but it also uses managed marsh areas in national wildlife refuges and state wildlife areas.

Habitat requirements for giant gartersnake consist of the following.

- Adequate water during the snake's active season (early spring through mid-fall) to provide food and cover.
- Emergent herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season.
- Grassy banks and openings in waterside vegetation for basking.
- Higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter.

Giant gartersnake can persist in waterbodies that contain predatory fish if sufficient cover is present. It is typically absent from larger rivers because of lack of suitable habitat and emergent vegetative cover; it is also frequently absent from wetlands with sand, gravel, or rock substrates. Riparian woodlands typically do not provide suitable habitat because of excessive shade, lack of basking sites, and absence of prey populations.

Giant gartersnake inhabits small mammal burrows and other soil crevices that are above prevailing flood elevations throughout its winter dormancy period (October 2 through April 30). It typically selects burrows with sunny exposure along south- and west-facing slopes. The breeding season extends from March through May and resumes briefly in September. Females give birth to live young from late July through early September. Giant gartersnake feeds primarily on small fishes, tadpoles, and frogs (USFWS 2015b:I-5).

3.3.3.3 Reasons for Decline

Giant gartersnake has been extirpated from the southern one-third of its range as a result of agricultural and flood-control activities, which have eliminated the snake's freshwater marsh habitat in the historical Buena Vista, Tulare, and Kern lakebeds. Much of the habitat on the floor of the Central Valley has been lost or degraded by upstream watershed modifications, water storage and diversion projects, and urban and agricultural development. Other negative factors that may be contributing to the decline of giant gartersnake include interrupted water supply, poor water quality, and presence of aquatic contaminants (USFWS 2015b:I-10–I-12).

3.3.3.4 Occurrence in the Action Area and Vicinity

There are seven CNDDB records of giant gartersnake occurrences within 5 miles of the action area including two occurrences within the action area along McDermott Road (CDFW 2018).

Within the action area, suitable aquatic habitat consists of irrigation and drainage canals, rice fields, and Funks Creek. Some of the irrigation and drainage canals where construction would occur may not hold sufficient water during the snake's active season (May 1 through October 1) to provide suitable aquatic habitat for the snake during a dry water year. There are occurrences of giant gartersnakes in connected waterways and it is likely that snakes may be using the canals in the action area for dispersal although some canals may also provide foraging opportunities for the species. The highest value giant gartersnake habitat in the action area is in the canals and rice fields

along the power line corridor along McDermott and Dirks Roads. The GCID Main Canal and Funks Reservoir are not suitable aquatic habitat for giant gartersnake.

Upland habitat for the snake consists of suitable land cover types (annual grassland, ruderal vegetation, riparian vegetation bordering Funks Creek) that occur within a 200-foot radius of aquatic habitat. Snakes may use upland areas in the action area for basking or hibernation. Canal banks contains interstitial spaces that provide cover from predators and that also may aid in thermoregulation (USFWS 2015b).

Representative photographs of habitat in the action area are provided in Appendix C.

Chapter 4
Effects of the Proposed Action

4.1 Definitions of Effects

Direct effects are defined as the direct or immediate effects of a proposed action on a species or its habitat. Direct effects may result from the action and may include the effects of interrelated and interdependent actions. An *interrelated action* is an activity that is part of the proposed action and depends on the proposed action for its justification. An *interdependent action* is an activity that has no independent utility apart from the action under consultation (USFWS and NMFS 1998).

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects may occur outside the area directly affected by the action (USFWS and NMFS 1998).

Cumulative effects comprise the effects of future state, local, and private actions not involving a federal action that are reasonably certain to occur within the action area under consideration (USFWS and NMFS 1998).

4.2 Direct Effects

4.2.1 Potential Mortality or Disturbance of Valley Elderberry Longhorn Beetle and Its Habitat

Elderberry shrubs may be present within the riparian corridor along Funks Creek or within agricultural lands or grasslands within the action area. As the host plant for valley elderberry longhorn beetle, and with the assumption that all shrubs may be inhabitated, any mortality or damage to elderberry shrubs could adversely affect the beetle. Soil disturbance adjacent to shrubs could affect the roots and health of elderberry shrubs (USFWS 2017a). This could subsequently affect the health of adult beetles and larvae. Additionally, dust could affect the foraging success of adult valley elderberry longhorn beetles or the survival of exposed larvae as well as the health of their host plant. Damage or loss of elderberry shrubs could result in death or reduced fitness of adult valley elderberry longhorn beetle or the larvae. No riparian vegetation or elderberry shrubs would be trimmed or removed during construction. Potential adverse effects on valley elderberry longhorn beetle and its habitat from construction and maintenance activities would be avoided by implementing the project conservation measures. Conducting biological resources awareness training (Conservation Measure 1) would avoid the potential for adverse effects by educating project staff of the identification and importance of avoiding the beetle and its host plant. Retaining a biological monitor and conducting a survey for elderberry shrubs (Conservation Measure 5) would reduce the potential for adverse effects by avoiding damage to the beetle and its host plant and ensuring conservation measures are implemented. Locating construction areas at least 50 meters away from elderberry shrubs, flagging shrubs, and controlling dust (Conservation Measure 7) would avoid the potential for reduced fitness or damage to the host plants for the valley elderberry longhorn beetle and the potential for take.

4.2.2 Potential Disturbance or Mortality of California Red-Legged Frog and its Habitat

Although Funks Reservoir is heavily managed and the nearest recorded occurrence of California red-legged frog is greater than 50 miles away from the action area, USFWS has indicated that California red-legged frogs may be potentially present in the reservoir and associated suitable uplands. Potentially suitable habitat for California red-legged frog is shown in Figure 3. No California red-legged frog aquatic habitat would be permanently or temporarily removed as a result of the proposed action. However, construction of the proposed action would result in the permanent loss of up to 0.77 acres of potentially suitable upland habitat from the construction of the access road and the temporary loss of up to 3.78 acres of potentially suitable California red-legged frog upland habitat from associated work areas. The duration of construction disturbance for the project features would range from 4 to 12 months. The conversion of 5.76 acres of cultivated lands providing potentially suitable dispersal habitat to a permanent access road and 30.82 acres of temporary impacts from work areas and the soil stockpile area would not be expected to impair dispersal to and from other suitable habitat areas.

Temporarily affected upland and dispersal habitat would be restored to pre-action conditions, and would not be expected to limit the availability of habitat for California red-legged frog in the vicinity of the action area. The conversion of 0.77 acres of grasslands providing potentially suitable upland habitat to an access road is not expected to substantially limit the availability of habitat for California red-legged frogs. Permanently affected habitat for California red-legged frog would be compensated for through purchasing credits at a USFWS-approved mitigation bank (Conservation Measure 10).

In the absence of avoidance measures, construction vehicles and heavy equipment could injure or kill California red-legged frog in the unlikely event that individuals are present within the construction footprint. The potential for injury or mortality will be avoided, however, through the implementation of avoidance measures. California red-legged frog mortality from vehicles and heavy equipment are more likely 24 hours proceeding a rain event and during nighttime construction. Construction activities will be restricted to daylight hours. Ground disturbance activities will be initiated during the dry season to minimize chances of encountering California red-legged frogs, Preconstruction surveys will be conducted prior to ground disturbance to ensure no California red-legged frogs are present in the disturbance areas and construction areas will be monitored to minimize the potential for California red-legged frog to enter work areas. Other potential effects related to construction may include entanglement in erosion control materials, contamination because of toxic substances such as fuels, degradation of aquatic habitat from runoff and siltation, and behavioral changes as a result of lighting or vibration. These effects will be minimized by retaining a biological monitor for any work conducted in California red-legged frog habitat (Conservation Measure 5), implementing a Spill Prevention, Control, and Countermeasure Plan, and prohibiting construction activities during rain events or within 24-hours following a rain event. Other effects related to construction may include individuals trapped in pipes or other equipment, and falling in trenches or pits 1 foot or deeper. The use of an open-top trailer to elevate materials for onsite storage above ground such as pipes, conduits and other materials that could provide shelter for California red-legged frogs, eliminating the use of plastic monofilament netting (erosion control matting), loosely woven netting, or similar material, implementing dust control measures, covering trenches and/or pits with wooden planks or creating a 3:1 slope or an escape

ramp at one end of the trench (Conservation Measure 6) would minimize potential injury or mortality of California red-legged frog.

Injury or mortality of California red-legged frog is considered an adverse effect because the proposed action could reduce the local population size of a federally listed species if the species is present in this area. A site assessment and field surveys (presence/absence surveys) will be conducted prior to construction as described in Conservation Measure 4. If California red-legged frog is detected during these surveys, Conservation Measures relevant to the California red-legged frog will be implemented such that the effect on California red-legged frog is not adverse.

4.2.3 Permanent and Temporary Disturbance of Suitable Aquatic and Upland Habitat for Giant Gartersnake

As discussed in Chapter 3, *Land Cover Types, Species Accounts, and Status of the Species in the Action Area*, suitable aquatic habitat for giant gartersnake in the action area consists of irrigation and drainage canals, rice fields, and Funks Creek. Suitable upland habitat consists primarily of ruderal areas along the banks of the canals and farm fields, annual grassland, and vegetation along Funks Creek. For the discussion in this section, the effects on upland habitat were calculated if they occurred within 200 feet of suitable aquatic habitat (Table 4-1, Figure 3).

Table 4-1. Effects on Giant Gartersnake Habitat in the Action Area

Effects	Aquatic Habitat (acres)	Upland Habitat (acres)
Permanent		
Access road	0.01	0.47
TRR	0.61	1.70
MWI pipeline	0.14	-
Bore and jack crossing work area	-	0.02
Total Permanent	***0.76***	***2.19***
Temporary [1]		
MWI Pipeline	0.01	0.02
Power line work areas	0.17	0.26
Construction work areas	1.91	13.98
Total Temporary	***2.09***	***14.26***

[1] Temporarily affected aquatic and upland habitat will be restored to pre-action conditions within one season (a season is defined as the calendar year between May 1 and October 1 [USFWS 1997]).

Construction of the proposed project would result in the permanent loss of up to 0.76 acre of giant gartersnake aquatic habitat. Permanent effects on aquatic habitat would result from the construction of the access road, the MWI pipeline, and the TRR. Construction of the proposed action would also result in the permanent loss of up to 2.19 acres of suitable upland habitat for giant gartersnake. Permanent loss of suitable upland habitat would occur from the construction of the MWI pipeline, the TRR, and the bore-and-jack crossing work area adjacent to the GCID Main Canal. The duration of construction disturbance for the project features would range from 4 to 12 months. Temporary effects on aquatic and upland habitat would result from the construction of the MWI pipeline, the power line work areas, and other construction work areas.

Temporarily affected habitat (2.09 acres of aquatic habitat and 14.26 acres of upland habitat) would be restored to pre-action conditions within one season (a season is defined as the calendar year between May 1 and October 1 [USFWS 1997]), and would not be expected to substantially limit the availability of aquatic and upland habitat for giant gartersnake in the action area, which totals approximately 99.18 acres and 88.92 acres respectively. Permanently affected habitat for giant gartersnake would be compensated for through purchasing credits at a USFWS-approved mitigation bank (Conservation Measure 10). Permanent and temporary losses of suitable aquatic (dispersal and foraging) and upland (basking and hibernation) habitat for giant gartersnake within the action area are summarized in Table 4-1. Loss of aquatic and associated upland habitat would not be expected to reduce the fitness of the resident population of giant gartersnakes because there is higher-quality habitat (e.g. densley vegetated canals providing superior foraging opportunities and cover from predators) in waterways that are connected to these canals.

Disturbance or degradation of suitable aquatic habitat for giant gartersnake in the action area could occur from fuel or oil leaks or spills during construction activities adjacent to aquatic habitat. These potential effects would be avoided by implementing an SPCCP. In addition, the daily removal of trash would reduce the likelihood of construction activity attracting predators of giant gartersnake such as racoons, skunks, and opossums to the area (Conservation Measure 3).

4.2.4 Potential Injury or Mortality of Giant Gartersnake

Construction activities in and adjacent to suitable habitat could result in the injury, mortality, or disturbance of giant gartersnakes. Giant gartersnakes could be injured or crushed by construction equipment working in or near suitable aquatic and upland habitat. Snakes could also be killed by construction vehicles traveling though the action area. Fuel or oil spills from construction equipment into aquatic habitat could also cause illness or mortality of giant gartersnakes. Noise and vibrations from construction equipment and presence of human activity during construction activities may also disturb giant gartersnakes within the action area which could reduce foraging effecieny, potentially resulting in decreased fitness, or increased dispersal time away from cover making individuals more vulnerable to predators.

Snakes are more vulnerable during their inactive period (October 1 through May 1) because they are unlikely to leave their retreat sites and may be crushed, trapped, or buried during excavation or movement of heavy equipment. Heavy equipment or construction vehicles used during the inactive season could compact or fill California ground squirrel burrows along canal banks and agricultural roads if present, resulting in potential injury or mortality of giant gartersnakes.

Dewatering channels using pumps could result in mortality of individual snakes by being entrained in the pump. The use of intake screens would reduce this likelihood and the pre-pumping inspection and monitoring by an approved biologist would further reduce the chance for injury or death by preventing pumping to occur with snakes present.

Maintenance of the MWI pipeline facilities may occur at any time of year but is anticipated to be minimal, with two persons doing checks and annual maintenance of the pipeline. Annual inspections would not be expected to require dewatering.

Potential effects on giant gartersnake from construction and maintenance activities would be minimized or avoided by conducting biological resources awareness training (Conservation Measure 1), retaining a biological monitor (Conservation Measure 5), minimizing effects within 200 feet of aquatic habitat (Conservation Measure 8), implementing an SPCCP, conducting

preconstruction surveys and monitoring (Conservation Measures 4 and 5), and minimizing effects from dewatering through monitoring, use of intake screens, and making there there is no standing water in the work area.

4.3 Indirect Effects

Construction of the proposed project is not expected to have any indirect effects on valley elderberry longhorn beetle, California red-legged frog, or giant gartersnake because of the primarily temporary disturbance, the minimal permanent change in habitat characteristics, and because of the implementation of conservation measures.

4.4 Cumulative Effects

Cumulative effects are future state, local, and private actions not involving a federal action that are reasonably certain to occur within the action area under consideration. No other actions within the action area are reasonably certain to occur at this time. Therefore no cumulative effects on valley elderberry longhorn beetle, California red-leged frog, or giant gartersnake or their habitat would result from the proposed action.

Future federal actions that are unrelated to the proposed action are not considered in this section because they would be subject to compliance with the FESA.

4.5 Determination

4.5.1 Valley Elderberry Longhorn Beetle

While it has not yet been determined how many elderberry shrubs are within the action area, the dense agricultural production in the action area likely precludes many elderberry shrubs from being established in the action area. Due to these factors as well as the implementation of Conservation Measures that would minimize effects on elderberry shrubs, it has been determined that potential effects of the proposed action would be insignificant and therefore, ***may affect but is not likely to adversely affect*** valley elderberry longhorn beetle.

4.5.2 California Red-Legged Frog

The nearest recorded occurrence of California red-legged frog (*Rana draytonii*) is greater than 50 miles away from the action area. However, presence/absence surveys have not yet been conducted and there is a low probability that California red-legged frogs may be potentially present in the reservoir and associated suitable uplands. Due to these factors as well as the implementation of Conservation Measures that would minimize effects on California red-legged frog habitat if the species is detected during presence/absence surveys, it has been determined that potential effects of the proposed action would be insignificant and therefore, ***may affect but is not likely to adversely affect*** California red-legged frog.

4.5.3 Giant Gartersnake

Based on the presence of suitable aquatic and upland habitat for giant gartersnake and occurrences of giant gartersnake within and adjacent to the action area, there is potential for giant gartersnake to be present or move through the action area. Conservation Measures would minimize effects on giant gartersnake. However, construction activities within suitable habitat have the potential to result in injury or mortality of giant gartersnakes. Therefore, the proposed action is ***likely to adversely affect*** giant gartersnake.

Chapter 5
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U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). 1998. *Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act*. Final. March 1998.

Appendix A

U.S. Fish and Wildlife Service Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Consultation Code: 08ESMF00-2018-SLI-2701
Event Code: 08ESMF00-2018-E-07873
Project Name: Maxwell Pipeline

July 12, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-2701

Event Code: 08ESMF00-2018-E-07873

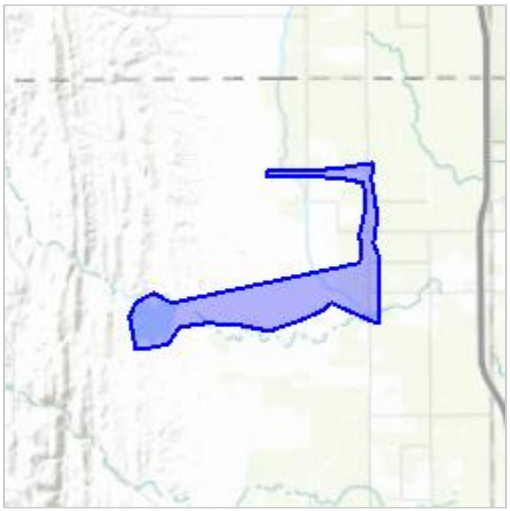
Project Name: Maxwell Pipeline

Project Type: WATER SUPPLY / DELIVERY

Project Description: 2022, Colusa County

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/39.34301415429494N122.22881085124496W



Counties: Colusa, CA

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/7850
Habitat assessment guidelines:
https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio*	Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/8246

Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp *Lepidurus packardi*	Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/2246

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix B
Figures

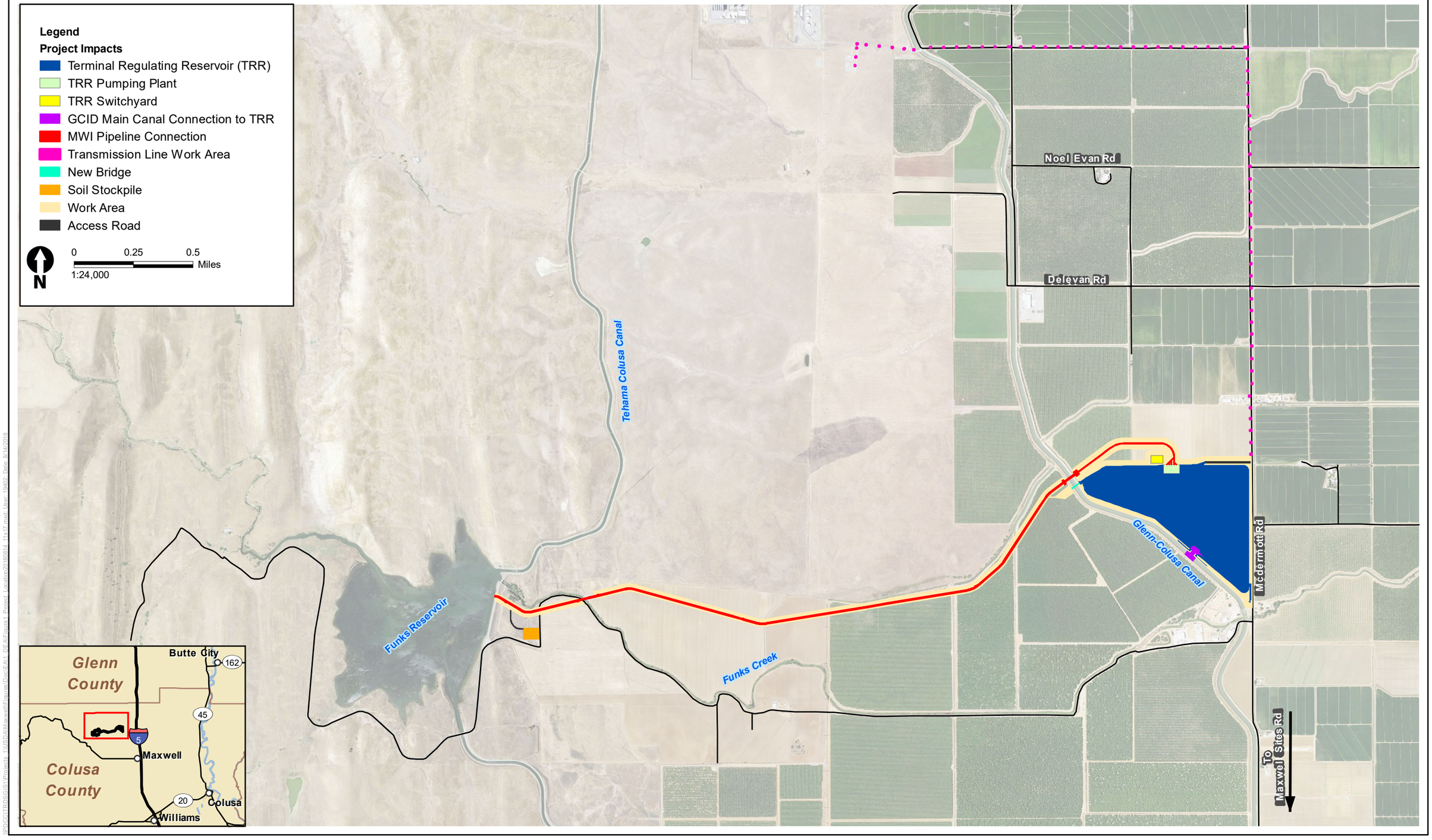


Figure 1
Maxwell Water Intertie Project Overview

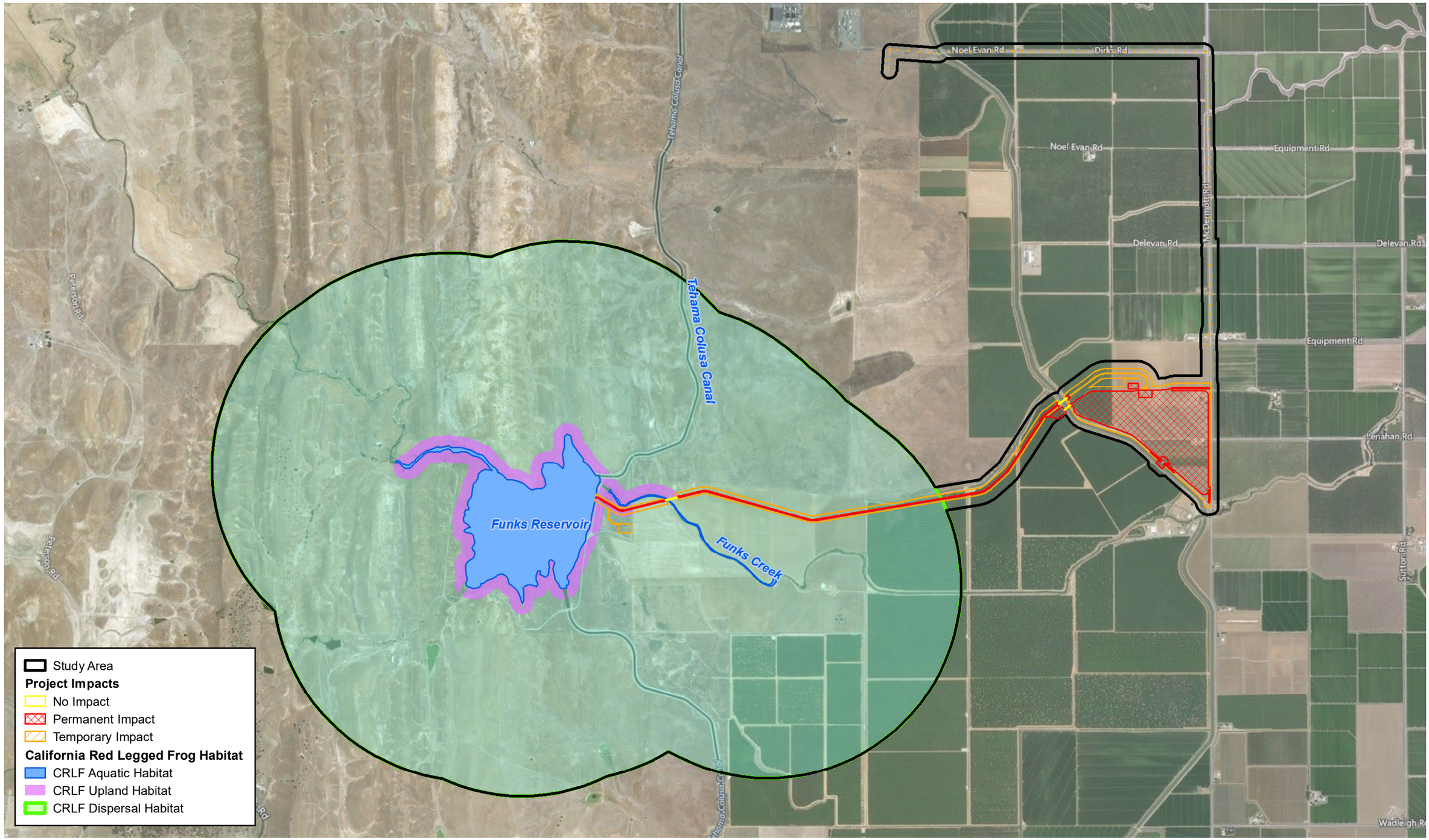
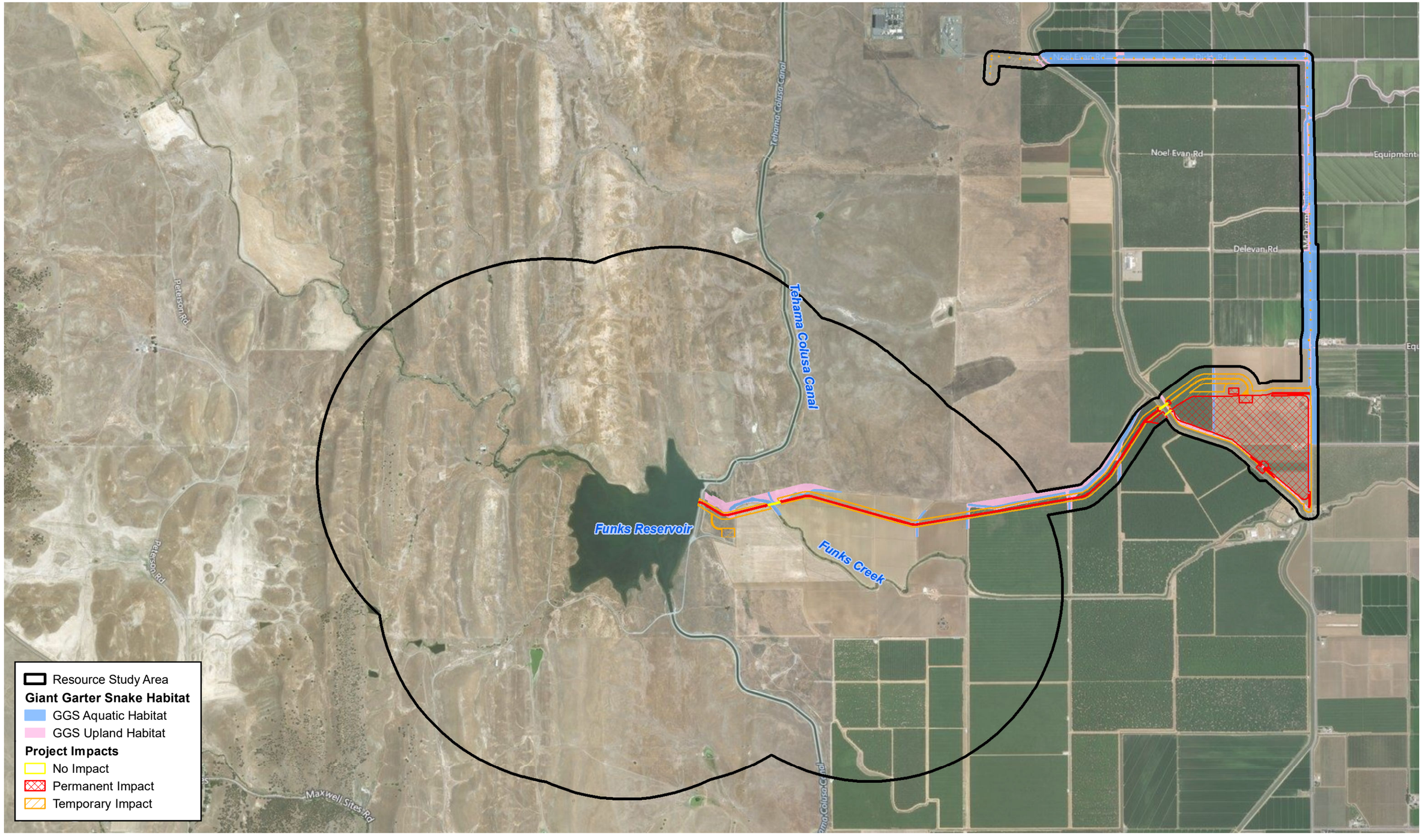


Figure 2
Potential California Red-Legged Frog Potential Habitat and Project Footprint Maxwell Water Intertie Project



0 0.25 0.5 Miles
1:30,000

N

Figure 3
Giant Garter Snake Habitat Impacts
Maxwell Water Intertie Project

Appendix C

Representative Photographs

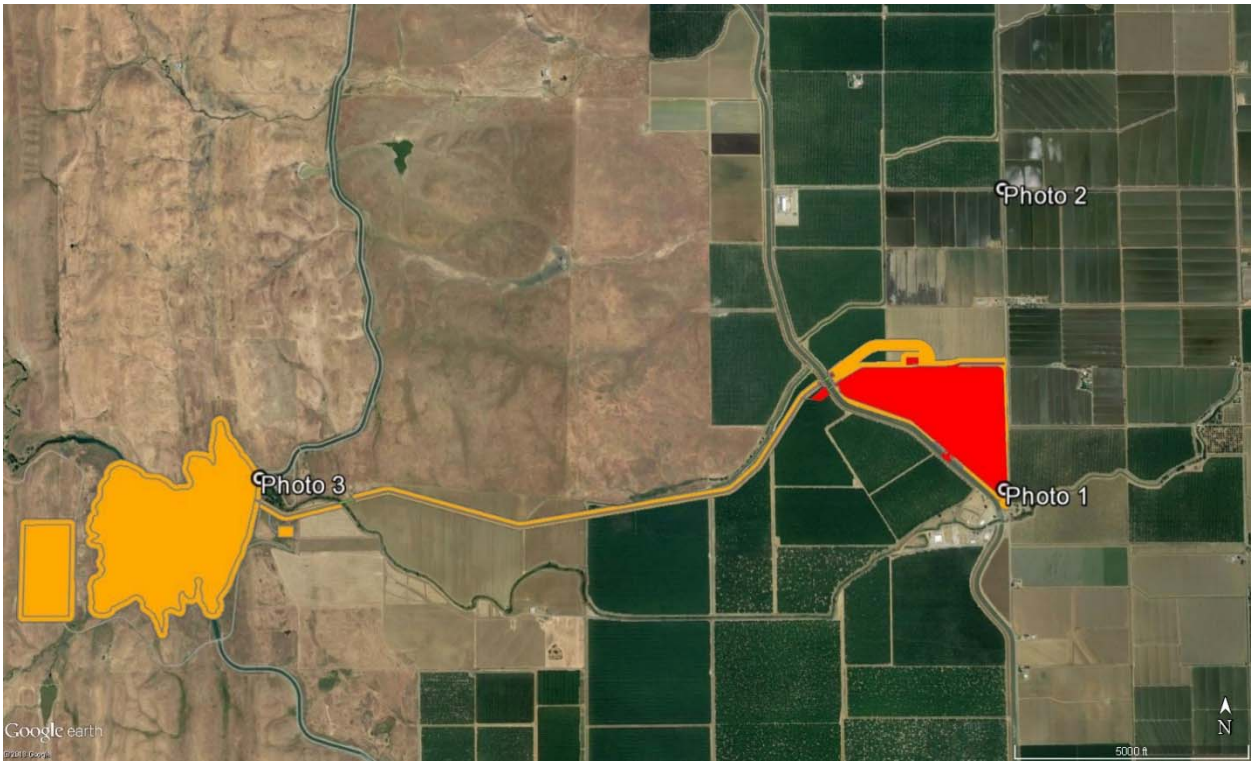


Figure B-1. Locations of representative photographs taken where access allowed within the action area.

Figure B-2. Photo 1 taken facing north towards potential giant garter snake aquatic habitat along the west side of McDermott Road and adjacent to the TRR footprint.

Figure B-3. Photo 2 taken facing east towards potential giant garter snake aquatic (rice field and canal) and upland (ruderal grassland) habitat at the corner of Delevan Road and McDermott Road along the proposed power line alignment.

Figure B-4. Photo 3 taken facing southwest of Funks Reservoir which is not considered giant garter snake aquatic habitat. However, canals and drainage ditches in the vicinity of the reservoir may provide aquatic habitat for the snake and the grasslands surrounding those features may provide giant garter snake upland habitat.

Appendix D

California Red-Legged Frog Equipment Decontamination Procedure

Recommended Equipment Decontamination Procedures

In an effort to minimize the spread of pathogens that may be transferred as result of activities, surveyors should follow the guidance outlined below for disinfecting equipment and clothing after entering a pond and before entering a new pond, unless the wetlands are hydrologically connected to one another:

i. All organic matter should be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water or potentially contaminated sediments. Cleaned items should be rinsed with clean water before leaving each study site.

ii. Boots, nets, traps, hands, *etc.* should be scrubbed with either a 75% ethanol solution, a bleach solution (0.5 to 1.0 cup per 1.0 gallon of water), Quat-128™ (1:60), or a 6% sodium hypochlorite 3 solution. Equipment should be rinsed clean with water between study sites. Cleaning equipment in the immediate vicinity of a pond or wetland should be avoided (*e.g.,* clean in an area at least 100 feet from aquatic features). Care should be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.

iii. Used cleaning materials (liquids, *etc.*) should be disposed of safely, and if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay-Delta Fish and Wildlife Office
650 Capitol Mall, Suite 8-300
Sacramento, California 95814

In reply refer to:
08FBDT00-2018-F-0363

Richard Brassfield
U.S. Department of Agriculture
Rural Development
3530 W. Orchard Ct
Visalia, CA 93277

SEP 21 2018

Subject: Formal Consultation for the U.S. Department of Agriculture and the Sites Authority's Maxwell Water Intertie Project, Colusa County, California

Dear Mr. Brassfield:

This letter is in response to your August 24, 2018, letter requesting initiation of formal consultation with the U.S. Fish and Wildlife Service (USFWS) for the effects to the federally-threatened giant garter snake (*Thamnophis gigas*)(snake) and informal consultation for the effects to the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)(beetle) and the California red-legged frog (*Rana draytonii*)(frog) from the U.S. Department of Agriculture (USDA) and Sites Authority's Maxwell Water Intertie Project (MWI or Project), Colusa County. Your request was received by the Bay-Delta Fish and Wildlife Office on August 27, 2018. In subsequent discussions between the USDA and USFWS, the need for formal consultation for all three species was discussed and the USFWS agreed to provide this expedited Biological Opinion.

The snake was listed as threatened under the ESA on October 20, 1993 (58 **FR** 54053). No critical habitat has been designated for the snake. The frog was listed as threatened under the ESA on May 23, 1996 (61 **FR** 25813). Critical habitat for the frog was established on March 17, 2010 (75 **FR** 12816). The beetle was listed as threatened under the ESA and critical habitat established on August 8, 1980 (45 **FR** 52803). This response is provided under the authority of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. § 1531, et seq.).

In reviewing this Project, the Service has relied upon: (1) the USDA's August 24, 2018, letter requesting consultation; (2) the Biological Assessment (BA) for the Project, dated August 2018; (3) USDA's or their consultant's responses to the USFWS requests for additional and clarifying information; (5) electronic mail and other communication between USDA or their consultant and the USFWS; (6) recovery plans and policy guidance for the snake, frog, and beetle; and (7) other information available to the USFWS.

Consultation History

August 7, 2018 — The USFWS, the USDA, and the USDA consultants held a conference call to discuss potential affects to listed species.

August 27, 2018	The USFWS received the USDA's August 24, 2018 letter and BA, requesting initiation of ESA consultation.
September 4, 2018	The USFWS sent the USDA additional clarifying questions.
September 7, 2018	The USFWS, the USDA, and the USDA consultants held a conference call to discuss USFWS clarifying questions.

BIOLOGICAL OPINION

Project Description

The proposed action would consist of funding, through the granting of a loan from the USDA to the Sites Authority, to assist in the financing of the Project. The Project, when funded, includes the following components:

1. A 1,200-acre-foot capacity Terminal Regulating Reservoir (TRR) covering 130 acres with a spillway to the local irrigation ditch system and bottom drain, both of which ultimately connect to Funks Creek;
2. A TRR Pumping Plant with a 900 cubic feet per second (cfs) maximum pumping capacity, a 1-acre Electrical Switchyard adjacent to the plant, and a 3.5-mile power line;
3. A Glen-Colusa Irrigation District (GCID) Main Canal Connection to the TRR including a gated inlet control structure, short inlet channel, and concrete canal lining in the GCID Main Canal immediately upstream and downstream of the TRR connection;
4. A 3.5-mile MWI pipeline sized for 900 cfs pumped capacity and 900 cfs gravity flow capacity;
5. A bridge over the GCID Main Canal for construction access and maintenance of the pipelines; and
6. A 2.7-mile gravel access road that would run most of the length of the MWI pipeline alignment.

Construction of the Project would be expected to begin in April 2022, and take approximately 2 years to construct. Construction activities would occur 6 days per week (Monday through Saturday) throughout construction, with a 10-hour work day between April 1 and October 31, and an 8-hour work day between November 1 and March 31, weather permitting. All construction activities would be conducted during daylight hours.

All disturbed and stockpiled soils would be stabilized prior to any forecasted rain event in accordance with the stormwater pollution prevention plan developed for the Project.

Operation and Maintenance

Operation of the proposed MWI pipeline would not require daily workers at the site. Access to the pipeline corridor would only be required for infrequent long-term maintenance. During active operations, workers would operate pumping and valve controls at TRR and/or at Funks Reservoir. Periodic inspection and maintenance of the proposed MWI pipeline facilities would likely occur once per year. Annual inspections would not necessarily include dewatering of the pipelines.

Dewatering for inspection may occur on a 5-year cycle, or when an unexpected problem with the pipeline occurs. Permanent rights-of-way for the land overlying the pipeline would be maintained to provide future access. The proposed gravel maintenance road would be graded, as needed.

Following the completion of construction activities for the pipeline, agricultural land affected by pipeline construction would be returned to agricultural use. However, a permanent 30-foot-wide maintenance corridor (40 feet wide and 50 feet long where manholes are located) would be maintained for the length of the pipeline, which would include a 20-foot-wide gravel maintenance road and space for manholes and pressure relief structures. The turnaround for the maintenance road at the Funks Creek crossing would be designed to avoid environmentally sensitive resources. The exception to the maintenance road is on the east side of the GCID Main Canal. There would be a 30-foot easement above the pipeline east of the GCID Main Canal, but no road. Agricultural production would be allowed over the MWI pipeline east of the GCID Main Canal, with the exception of orchards.

Conservation Measures

The following measures were submitted by the USDA in their August 2018 BA or developed during the September 7, 2018, conference call, as part of the Project Description.

General Measures

Biological Resources Awareness Training

Prior to the start of ground-disturbing work (including vegetation clearing, grading, and equipment staging), a USFWS-approved biologist will conduct a mandatory biological resources awareness training for all construction personnel. This training will cover sensitive biological resources. The training will cover the natural history, appearance (using representative photographs), and legal status of species, regulatory protections, penalties for noncompliance, benefits of compliance, as well as the avoidance and minimization measures to be implemented. Participants will be required to sign a form that states they have received and understand the training. The Sites Authority will maintain the record of training and make it available to agencies, upon request. If new construction personnel are hired for the Project, the contractor will ensure that the new personnel receive the mandatory training before starting work.

Treatment of Vehicles, Equipment, and Hazardous Materials

Construction vehicles will observe the posted speed limit on hard-surfaced roads and a 10 mile-per-hour speed limit on unpaved roads during travel in the construction area. Construction vehicles and equipment will restrict off-road travel to the designated construction areas. Construction vehicles and equipment left on-site overnight will be thoroughly inspected each day for snakes (both underneath the vehicle and in open cabs) before they are moved. All construction equipment will be maintained to prevent leaks of fuels, lubricants, or other fluids. To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service or refuel vehicles, construction equipment, or motorized tools within 300 feet of potentially suitable frog or snake aquatic habitat.

The USDA will follow Service-approved decontamination protocols prior to any staff, equipment,

tools, or vehicles entering Project area waters or moist soils associated with waters.

Miscellaneous Measures

All food-related trash will be disposed of in closed containers and removed from the construction area daily during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the construction site.

No pets or firearms will be allowed in the construction area.

Field Surveys

A USFWS-approved biologist will conduct a preconstruction survey for elderberry shrubs, host plant for the beetle, within 50 meters of the construction limits. All elderberry shrubs will be mapped and identified for avoidance with flagging or fencing.

A site assessment and field surveys for the frog will be conducted prior to the start of Project activities using the methods described in USFWS (2015a). Site assessments and field surveys will be conducted by a USFWS-approved biologist.

A Service-approved biologist will conduct surveys for the snake prior to the start of Project activities, following protocols approved by the USFWS.

All canals and aquatic areas to be dewatered will be surveyed for the snake by the Service-approved biological monitor immediately prior to dewatering. The biological monitor will oversee the dewatering activity until the channel is fully dewatered.

If pumps are required for dewatering, intake screens will be placed on the pump intake to prevent entrainment of snakes.

Biological Monitor

An USFWS-approved biological monitor will be present during all ground-disturbing activities and during any activities involving heavy equipment within 200 feet of potentially suitable snake habitat and 300 feet of potentially suitable frog habitat. The biological monitor shall permit the frog and snake to move out of the Project area on its own. Should a frog or snake need to be moved, a biologist with a 10(a)(1)(A) permit will trap and relocate the individual to the area designated in the relocation plan for the frog.

Should a frog or snake move into the Project area, all personnel including the biological monitor will have the authority to stop construction activities until appropriate corrective measures have been completed or the biological monitor determines that the frog or snake will not be harmed. Snakes, beetles, and frogs encountered during construction activities will be allowed to move away on their own.

Wildlife Escapement

To avoid entrapment of wildlife, all steep-walled holes or trenches more than one foot deep will be

excavated such that one end will have a 3:1 slope (3 feet horizontal:1 foot vertical). Having one end with a 3:1 slope is anticipated to allow most wildlife that enter or fall in to leave on their own. The biological monitor will inspect any holes or trenches prior to filling.

Sensitive Habitat Buffers—Valley Elderberry Longhorn Beetle

All construction and staging areas for the Project will be located at least 50 meters away from elderberry shrubs. Signs will be posted along the fencing for the duration of construction indicating the presence of beetle habitat. The biological monitor will be responsible for ensuring the buffer area fences around elderberry shrubs are maintained throughout construction. The biological monitor also will monitor the condition of shrubs (including the presence of dust). Any elderberry shrubs inside the 50 meter buffer area that become stressed or die will be reported to USFWS. Biological inspection reports will be available to the USFWS. Gravel roadways, staging areas, and other applicable areas will be sprayed with water as needed to minimize dust moving onto elderberry shrubs.

Sensitive Habitat Buffers—Giant Garter Snake

Construction activities will take place no closer than 200 feet from the banks of snake aquatic habitat (Funks Creek and canals that hold water May 1 through October 1). Heavy equipment will be confined to existing roadways when within 200 feet of snake habitat to minimize habitat disturbance. Potential snake habitat within the Project area will be flagged and designated as Environmentally Sensitive Areas. These areas will be avoided by all construction personnel.

Construction activity within habitat will be conducted between May 1 and October 1.

The Project area will be surveyed for snakes no more than 24 hours prior to the start of construction activities.

No exclusionary fencing will be utilized for the snake. A Service-approved biologist will be present when ground-disturbing activities occurs within potentially suitable snake habitat.

Sensitive Habitat Buffers—California Red-Legged Frog

A Service-approved biologist will be present when construction activities occur within 300 feet from the banks of Funks Reservoir and 200 feet from the bank of Funks Creek.

Compensation for Direct Impacts

The USDA will compensate for any permanent impacts (or temporary impacts that extend beyond one season) to snake habitat using the guidelines established in USFWS 1997. The USDA will compensate for 0.76 acre aquatic and 2.19 acres of adjacent upland snake habitat permanently impacted by the Project. Direct impacts to the frog habitat will be compensated by applying a 3:1 ratio (3 acres created:1 acre lost) for permanent habitat loss. The USDA will provide 1.54 acres of compensation for the permanent loss of 0.77 acre of potentially suitable upland California red-legged frog habitat.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the Project, the USFWS considers the Action Area to include the pipeline, TRR, Funks Reservoir, the power line footprint, and irrigation canal and construction areas. The action area also includes staging and storage areas, and local roads used to access the Project area. The action area encompasses a 1-mile buffer around the western portion of the project footprint and a 300-foot buffer around the eastern portion of the project footprint. The action area is intended to capture all of the project elements that could directly or indirectly affect federally listed wildlife species during construction, operations, and maintenance of the Project.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the ESA requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the Project, and any cumulative effects, on the rangewide survival and recovery of the snake, beetle, and frog. It relies on four components: (1) the *Status of the Species*, which describes the rangewide condition of each species, the factors responsible for that condition, and the survival and recovery needs of each species; (2) the *Environmental Baseline*, which analyzes the condition of each species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of each species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the Project and the effects of any interrelated or interdependent activities on each species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on each species.

Status of the Species

Giant Garter Snake

The snake is endemic to the wetlands of the Sacramento and San Joaquin Valleys of California, inhabiting the tule marshes and seasonal wetlands created by overbank flooding of the rivers and streams of the Central Valley (Fitch 1940; Central Valley Joint Venture 2006). Currently, less than 5 percent of the historical 4.5 million acres of wetlands, or approximately 222,394 acres remain (Central Valley Joint Venture 2006). The snake now inhabits the remaining high-quality fragmented wetlands that include marshes, ponds, small lakes, low-gradient streams with silt substrates, and managed waterways. The loss of wetland ecosystems and suitable habitat also has resulted in the snake using highly modified and degraded habitats. Located among cultivated farm lands, these areas include irrigation ditches, drainage canals, rice fields, and their adjacent uplands. Since snake surveys were first conducted in the 1970s, results have demonstrated that active rice fields and the supporting water conveyance infrastructure consisting of a matrix of canals, levees, and ditches have served as alternative habitat that is commonly used by the snakes in the absence of suitable natural marsh habitat (G. Hansen 1988; G. Hansen and Brode 1980, 1993; Brode and

Hansen 1992; Wylie 1998a; Wylie *et al.* 1997; Wylie and Cassaza 2000; Halstead *et al.* 2010). The snake is primarily an aquatic species, but it also occupies upland terrestrial habitat, particularly during the winter inactive season. Although usually found in or adjacent to aquatic habitats, the snake has been observed in associated uplands up to hundreds of meters (hundreds of yards) distant from any water body (Wylie *et al.* 1997).

There are three habitat components that appear to be most important to the snake (G. Hansen 1982, 1986, 1988, 1996; Wylie *et al.* 1995, 1997; Halstead *et al.* 2010): (1) A fresh-water aquatic component with protective emergent vegetative cover that will allow foraging; (2) An upland component near the aquatic habitat that can be used for thermoregulation and for summer shelter in burrows; and (3) An upland refugia component that will serve as winter hibernacula.

Depending on annual weather conditions, snakes move underground into mammal burrows, crevices, or other voids in the earth around October 1 to avoid potentially lethal cool autumn and winter temperatures (G. Hansen 1988). Snakes begin emerging from winter retreats around April 1 and are most active from early spring through mid-fall. Seasonal activity may begin earlier than April 1 (as early as March 1) in some years and in some locations (R. Hansen 1980; G. Hansen and Brode 1993; Wylie *et al.* 1997). Snakes are typically active by April 15, having emerged from hibernacula, and are actively foraging (G. Hansen and Brode 1993).

Adult snakes feed primarily on a wide variety of native and non-native aquatic prey such as fish and amphibians, capturing all their food in the water (R. Hansen 1980). Home range estimates from USGS telemetry studies averaged from 42 to 109 acres for a sample of 105 individual snakes (Wylie and Casazza 2000; Wylie *et al.* 2002a, 2008).

Habitat loss and fragmentation due to urbanization and changes in the levels and methods of rice production are the largest threat to the snake (Paquin *et al.* 2006; American Farmland Trust 2007; USDA 2010; California Rice Commission 2010; Farmland Information Center 2011; Service 2012). Additional threats include: changes in water availability; levee and canal maintenance, water management and water deliveries which do not account for the snake; water transfers (resulting from cropland idling/shifting, reservoir releases, conservation measures, or groundwater substitution); small populations; and invasive aquatic species.

The Project area lies within the Delevan Management Unit as part of the Colusa Basin Recovery Unit for the snake (USFWS 2017).

Valley Elderberry Longhorn Beetle

This wood boring beetle is a subspecies of the California elderberry longhorn beetle, and it persists in small, isolated populations in the California Central Valley in riparian areas that have a component of elderberry savannah. The listed subspecies is typified by sexual dimorphism, in which the male shows a predominantly red elytra. Elderberry shrubs (*Sambucus* spp.) are the obligate larval host plants for the beetle (Collinge *et al.* 2001, Holyoak 2010). The beetle larvae live one to two years exclusively within the elderberry plant. Death of the host plant will result in death of the beetle larvae. Adult emergence occurs in the spring and summer, typically coinciding with the elderberry flowering period (Burke 1921, Halstead and Oldham 1990). Adults may live a few days to a few weeks (Arnold 1984, Barr 1991, Halstead and Oldham 1990). The only exterior evidence of elderberry use by the beetle is the exit hole created by the larvae, although occasionally entrance

holes can be ascertained.

The primary threat to the species is habitat loss, particularly along major river systems that are known to have supported the species, often as a result of urban or agricultural development and flood control actions (including construction and operation and maintenance). Additional major threats are that of extinction due to small population size, predation from non-native species such as the Argentine ant, pesticides, non-native plants of various types that compete with native riparian vegetation including elderberries, and other factors. The beetle itself is rarely seen, and the vast majority of its detection reported in the California Natural Diversity Database (CNDDB) has been inferred from the presence of exit holes in plant stems.

The period since listing to the present has witnessed considerable population and urban growth in California, at the expense of remaining riparian habitat and adjacent upland habitat near river systems that supported elderberry plants. Elderberry plants can colonize and persist on and adjacent to levees, and some beetle and exit-hole records have been reported in this type of habitat. This form of habitat is often the result of deferred maintenance. However, Federal flood control improvements, as well as State-wide initiatives to improve the standard of flood control in urban systems generally, have resulted in levee work and more rigorous maintenance that have eliminated this habitat. Mitigation for loss of the host plant is typically done off-site in mitigation banks, and habitat enhancement has been almost entirely limited to Federal and State refuge lands in the north Central Valley. In sum, since listing, there has been a progressive further decline in beetle habitat amount and distribution with increasing discontinuity between remaining habitat fragments, reduced frequency of sightings, and likely curtailment of the range of this species.

California Red-Legged Frog

The frog is adapted to a Mediterranean climate, which is characterized by temporal and spatial changes in habitat quality. In addition to climatic fluctuations, the habitats used by this species typically change in extent and suitability in response to the dynamic nature of floodplain and fluvial processes (*i.e.*, natural water flow and sedimentation regimes that, in flux, create, modify, and eliminate deep pools, backwater areas, ponds, marshes, and other aquatic habitats)(Scott and Rathbun 1998). Therefore, the frog uses a variety of areas, including various aquatic, riparian, and upland habitats (USFWS 2002).

Breeding sites of the frog are in a variety of aquatic habitats; larvae, tadpoles, and metamorphs have been collected from streams, deep pools, backwaters within streams and creeks, ponds, marshes, sag ponds, dune ponds, and lagoons. Breeding adults are often associated with deep (greater than 2 feet) still or slow moving water and dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988), but frogs have been observed in shallow sections of streams that are not cloaked in riparian vegetation.

The frog frequently breeds in artificial impoundments such as stock ponds. To support frogs, these ponds must have proper management of hydroperiod, pond structure, vegetative cover, and control of non-native predators, although some stock ponds support frogs despite a lack of emergent vegetation cover and the presence of non-native predators (Scott and Rathbun 1998, USFWS 2017 *in litt*).

The frog avoids predation by inhabiting burrows at pond and stream edges or by dropping down

into water and mud when disturbed. Because of their shy nature and predator avoidance tactics, the frogs are very difficult to detect during daylight hours.

During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. Evidence from marked and radio-tagged frogs on the San Luis Obispo County coast suggests that frog movements, via upland habitats, of about 1 mile are possible over the course of a wet season. The juvenile dispersal period for the frog can be from May through November, and dispersal timing is a result of breeding habitat conditions and weather. When breeding habitat dries up during the dry season, juvenile red-legged frogs disperse to areas where there is sufficient moisture to survive through the summer and autumn. If breeding habitat remains wet, there can be two dispersal periods: The first following metamorphosis in the spring or early summer and the second at the onset of autumn rains.

During dry periods, the frog is rarely encountered far from water (Jennings *et al.* 1992). However, larger frogs will utilize the upland for foraging on nights that have dew fall. They will sometimes disperse in response to receding water which often occurs during the driest time of the year. The frog uses small mammal burrows and moist leaf litter (Jennings and Hayes 1994); incised stream channels with portions narrower and deeper than 18 inches also may provide habitat (USFWS 1996).

The frog breeds from November through April (Storer 1925). Eggs are attached to emergent vegetation such as bulrushes (*Scirpus* spp.) and cattails (*Typha* spp.) or roots and twigs. The egg masses float on the surface of the water (Hayes and Miyamoto 1984) and each contains approximately 2,000 to 5,000 eggs. Typically, most adult frogs lay their eggs in March. Eggs require approximately 20-22 days to develop into tadpoles, and tadpoles require 11 to 20 weeks to develop into terrestrial frogs (Bobzien *et. al.* 2000, Storer 1925, Wright and Wright 1949). Sexual maturity can be attained at two years of age by males and three years of age by females (Jennings and Hayes 1985). Adults may live eight to ten years (Jennings *et al.* 1992), although the average life span is probably much lower.

The diet of adult frogs is highly variable, but thought to be mostly invertebrates (Hayes and Tennant 1985).

Historically, the frog was known from 46 counties in California but the taxon is now extirpated from 24 of these (USFWS 1996). Factors associated with declining populations of the frog include degradation and loss of its habitat through agriculture, urbanization, mining, overgrazing, recreation, timber harvesting, non-native plants, impoundments, water diversions, degraded water quality, use of pesticides, and introduced predators. The Project is located within the North Coast Range Foothills and Western Sacramento River Valley Core Area of the Recovery Plan (USFWS 2002). Within this recovery unit, major threats to the frog include agriculture, livestock, non-native species, timber harvest, and urbanization. This recovery unit contains a few remaining populations with a high degree of threat.

There is no critical habitat located within the Project area.

Environmental Baseline

Giant Garter Snake

As of 2017, the Service recognizes nine separate populations of the snake (USFWS 2017). Of the original 13 populations at the time of listing, two are presumed extirpated, while two others subsequently were recognized as part of the larger Delta Basin. The nine populations include: (1) Butte Basin, (2) Colusa Basin, (3) Sutter Basin, (4) American Basin, (5) Yolo Basin, (6) Cosumnes-Mokelumne Basin, (7) Delta Basin, (8) San Joaquin Basin, and (9) Tulare Basin. These populations span the Central Valley from Fresno to Chico.

The Project is located within Colusa County and includes part of the Colusa Basin population. The snake is known to occur within the Project area and in areas adjacent to the Project (CNDDB query by USDA). No Project surveys for the snake have taken place as yet.

Valley Elderberry Longhorn Beetle

There are an unknown number of elderberry shrubs in the Project area. Surveys to document elderberry shrubs within 50 meters of Project activities will take place prior to the start of construction.

The current presumed range of the beetle extends throughout much of the Central Valley. The range extends from approximately Shasta County in the north to Fresno County in the south including the valley floor and lower foothills. During the last 150 years California's Central Valley riparian forests have experienced extensive vegetation loss due to expansive agricultural and urban development (Katibah 1984), and in many places, have dwindled to discontinuous, narrow corridors. In recent decades, riparian areas in the Central Valley have continued to decline as a result of ongoing agricultural conversion, urban development, stream channelization and channel hardening. Elderberry shrubs are common in the Central Valley where they grow naturally in a variety of riparian and non-riparian vegetative communities (Vaghti and Greco 2007). The historic distribution of the beetle closely matched the distribution of the elderberry host plant, which was patchily found throughout the Central Valley riparian forests and occasionally adjacent uplands (non-riparian). The USFWS recognizes habitat for beetle as including both riparian and nonriparian areas where elderberry shrubs are present. The nearest occurrence of the beetle is approximately 11 miles southeast of the action area (USDA CNNDB search, 2018).

California Red-Legged Frog

The frog is known only from isolated localities in the Sierra Nevada, northern Coast, and northern Transverse Ranges. It is believed to be nearly extirpated from the southern Transverse and Peninsular ranges. This species is still common in the San Francisco Bay area (including Marin County) and along the central coast. The Project area is located within the North Coast Range Foothills and Western Sacramento River Valley Recovery Unit. Historically, the frog was found in several counties in this recovery unit, including many drainages within Colusa County.

No protocol-level surveys have occurred as yet for the frog within the Project area.

Effects of the Project

Giant Garter Snake

Within the action area, suitable aquatic habitat consists of irrigation and drainage canals, rice fields, and Funks Creek. Snakes may be using some or all of the waterways in the Project area for dispersal and/or foraging. Upland habitat for the snake consists of annual grassland, ruderal vegetation, and riparian vegetation that occur within a 200-foot radius of aquatic habitat. Snakes may be using upland areas in the Project area for basking or hibernation. Snakes may be using the interstitial spaces and small mammal burrows within canal banks for cover from predators and thermoregulation (USFWS 2015b). Project impacts to the snake's habitat include 0.76 acre of aquatic and 2.19 acres of upland that will be permanently removed and 2.09 acres of aquatic and 14.26 acres of upland that will be temporarily impacted.

Construction activities may remove vegetative cover and basking sites necessary for thermoregulation, fill or crush burrows or crevices, and dewater habitat and remove the prey base. Temporary fill of canals and waterways will remove snake habitat and may obstruct movement of snakes. Because snakes utilize small mammal burrows and soil crevices as retreat sites, individuals may be crushed, buried, or otherwise injured from construction activities. Snakes may be run over by construction equipment or other vehicles accessing the construction sites. The disturbance from construction activities also may cause snakes to move into areas of unsuitable habitat where they will experience greater risk of predation or other sources of mortality. Silting, fill, or spill of oil or other chemicals could cause loss of prey items on or downstream of the project sites.

Valley Elderberry Longhorn Beetle

Within the Project area, suitable beetle habitat occurs within elderberry shrubs (*Sambucus spp.*) that are at least one inch in diameter at ground level. Locations of individual elderberry shrubs is not known, as surveys have not occurred as yet. Elderberry shrubs may be present within the riparian corridor along Funks Creek or within agricultural lands or grasslands within the Project area. Any mortality or damage to elderberry shrubs could impact the beetle. Soil disturbance adjacent to shrubs could impact the roots and health of elderberry shrubs, which could impact any beetles within the shrub. The Project has the potential to increase airborne dust during Project activities, which can negatively impact local plants, including elderberries (Farmer 1993); however, airborne dust will be minimized by applying water as needed to gravel and dirt surfaces on-site as needed.

Elderberry shrubs within 50 meters of Project activities will be surveyed. Flagging or fencing will be installed for each shrub within 50 meters of activities. This buffer, combined with the dust-suppression efforts, worker education, and biological monitoring, should result in avoidance of impacts to the beetle.

California Red-Legged Frog

Within the Project area, suitable frog habitat may occur within the existing Funks Reservoir and Funks Creek and their associated uplands. No loss of potentially suitable aquatic habitat is anticipated. Project activities will result in the permanent loss of up to 0.77 acre of potentially suitable upland habitat from the construction of the access road and the temporary loss of up to 3.78 acres of potentially suitable frog upland habitat from associated work areas.

Project activities may result in direct effects on frogs that may enter the Project area during construction activities. Potential direct effects include disruption of behavior and movement due to noise, visual disturbance, vibration from equipment, or general presence of humans. Direct effects may also include injury or mortality of frogs when heavy machinery crushes small mammal burrows and other crevices in the topsoil, injury from falling into open construction trenches or deep holes, from vegetation removal, and from encounters with construction vehicles or equipment. The actions described in the Conservation Measures of this biological opinion, like field surveys and presence of biological monitors, will reduce, but not eliminate, the potential for these effects.

The construction of the new TRR within the Project area could attract bullfrogs, if the reservoir is managed in a manner that supports bullfrog life history. Bullfrogs are a known predator of the frog and have contributed to the decline of the species (Adams 1999)(CDFW 2017)(Kiesecker *et al.* 1998). Any potential increase in bullfrog populations within the Project area would be anticipated to impact frogs that may be present.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the Project are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Future non-federal actions that are reasonably certain to occur in the action area of the Project are farming, pesticide use, road maintenance, and mechanical removal of vegetation. In addition, cumulative effects to the snake include: (1) unpredictable fluctuations in aquatic habitat due to water management; (2) dredging and clearing vegetation from irrigation canals; (3) discing, mowing, ornamental cultivation, and routine grounds maintenance of upland habitat; (4) increased vehicular traffic on access roads adjacent to aquatic habitat; (5) contaminated runoff from agriculture and urbanization; and (6) predation by feral animals and pets.

The global average temperature has risen by approximately 0.85^{O}C during the period 1880 to 2012 (Intergovernmental Panel on Climate Change 2014). International scientific consensus is that most of the warming observed has been caused by human activities (Intergovernmental Panel on Climate Change 2014) and that it is very likely largely due to manmade emissions of carbon dioxide and other greenhouse gases (Intergovernmental Panel on Climate Change 2007). Ongoing climate change likely imperils these listed species and the resources necessary for their survival (Inkley *et al.* 2004)(Kerr 2007)(Intergovernmental Panel on Climate Change 2007)(Kanter 2007). Since climate change threatens to disrupt annual weather patterns, it may result in a loss of their habitat and/or prey, and/or increase numbers of their predators, parasites, and diseases. Where populations are isolated, a changing climate may result in local extinction, with range shifts precluded by lack of habitat.

Conclusion

After reviewing the current status of the snake, frog, and beetle, the environmental baseline for the Project area, the effects of the Project, and the cumulative effects, it is the USFWS's biological opinion that the Project is not likely to jeopardize the continued existence of the snake, the beetle, or the frog. There is no critical habitat for the frog or beetle within the Project area, so none will be

affected. No critical habitat has been designated for the snake; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degredation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of the Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the USDA and Sites Authority so that they become binding conditions of any grant or permit issued to the applicants, as appropriate, for the exemption in section 7(o)(2) to apply. The USDA and Sites Authority have a continuing duty to regulate the activity covered by this incidental take statement. If the USDA or Sites Authority fails to assume and implement the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the USDA or Sites Authority must report the progress of the action and its impact on the species to the USFWS as specified in the incidental take statement (50 CFR §402.14(i)(3)].

Amount or Extent of Take

Giant Garter Snake

The USFWS anticipates that incidental take of the snake will be difficult to detect or quantify for the following reasons: Snakes are cryptically colored, secretive, and known to be sensitive to human activities. Snakes may avoid detection by retreating to burrows, soil crevices, vegetation, or other cover. Individual snakes are difficult to detect unless they are observed, undisturbed, at a distance. Most close-range observations represent chance encounters that are difficult to predict. It is not possible to make an accurate estimate of the number of snakes that will be harassed, harmed, or killed during construction activities. The USFWS anticipates that all snakes inhabiting 0.76 acre aquatic and 2.19 acres upland habitat may be harassed, harmed, or killed through the permanent modification of these areas. The USFWS anticipates that all snakes inhabiting 2.09 acres aquatic and 14.26 acres of adjacent upland habitat may be harassed, harmed, or killed by temporary modification and degradation of habitat during the first year of the Project. All snakes inhabiting the 130 acres of the TRR pond and embankment may be harassed or harmed by inspection and maintenance dewatering and may be killed by vegetation maintenance. Due to the secretive nature of the snake, detection of a dead or injured snake may indicate that more than one snake has been taken and can indicate that avoidance measures need to be reassessed.

Valley Elderberry Longhorn Beetle

Utilizing the 50 meter buffer, dust suppression, and presence of a biological monitor, impacts to the beetle should be minimized. The USFWS does not expect impacts to any elderberry shrub due to these conservation measures. However, the area has not been surveyed and if a shrub does become impacted by Project activities, any beetles contained within would be impacted.

California Red-Legged Frog

The USFWS anticipates that incidental take of the frog will be difficult to detect for the following reasons: their relatively small body size makes the finding of a dead specimen unlikely; the cryptic and secretive nature of the species; losses may be masked by seasonal fluctuations in numbers or other causes; and the species occurs in aquatic, riparian, and upland habitats that make it difficult to detect. Due to the difficulty in quantifying the number of frogs that will be taken as a result of Project activities, the USFWS is quantifying take incidental to the Project as the following: The harassment, harm, capture, injury, and mortality of all subadult and adult life history stages of the frog within the 0.77 acre of upland habitat permanently lost and 3.78 acres of upland habitat temporarily disturbed during construction of the Project.

Effect of the Take

The USFWS has determined that this level of anticipated take is not likely to result in jeopardy to the snake, beetle, or frog. Critical habitat for the beetle and frog do not occur in the Project area and therefore, will not be adversely modified. No critical habitat has been designated or proposed for the snake; therefore, none will be affected.

Upon implementation of the following reasonable and prudent measures, incidental take associated with the Project of the listed beetle, snake, and frog, in the form of harm, harassment, or mortality from habitat loss or direct mortality will become exempt from the prohibitions described under section 9 of the Act for direct and indirect impacts.

Reasonable and Prudent Measures

The USFWS believes the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed impact of take on the snake, beetle, and frog.

1. Minimize direct effects to the snake, beetle, and frog through monitoring, avoiding, and planning.

2. Utilize biologically-relevant conservation banks and best management practices when compensating for the impacts of permanent loss and degradation of habitat for the beetle, frog, and snake.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the USDA and Sites Authority must ensure compliance with the following terms and conditions, which implement the reasonable

and prudent measures described above. These terms and conditions are non-discretionary.

1. The following terms and conditions implement reasonable and prudent measure number one:
    a. Any dewatered snake habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
    b. Surveys of the Project area for the snake will be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed (as determined by the Service-approved biological monitor). Any sightings or incidental take will be reported to the Service within 24 hours by telephone at (916)930-5603.
    c. Temporarily impacted snake habitat shall be restored to pre-Project condition prior to October 1.
    d. Dewatered habitat shall be checked for stranded wildlife in the channel and muddy substrate for stranded wildlife and frogs.
    e. The USFWS shall be notified at least 30 days prior to both the site assessment of frog habitat and subsequent surveys and shall be permitted to attend site assessments and surveys. The USFWS shall be invited at least 30 days prior to annual or periodic inspections and shall be permitted to attend inspections.
    f. Any elderberry shrubs at least one inch in diameter at ground level that become stressed or die as a result of Project activities will be reported to USFWS within three working days. These impacts will be compensated following the USFWS 2017 Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle consistent with Term and Condition 2a below. A summary of all impacts to the beetle will be reported to the USFWS within sixty days of the completion of construction activities.
    g. A biological monitor will be on hand for any construction activities that take place within 300 feet of the banks of Funks Creek and will have the authority to stop construction activities if a frog is found in the area. The USFWS should be contacted within 3 working days of a halt to construction and be permitted access to the site. Construction may commence when it has been determined that the frog has left the area.
    h. Should construction activities encroach closer than 300 feet to Funks Reservoir, a biological monitor will remain on-site until activities are completed to monitor for the frog.
    i. The USDA must work with the USFWS to develop a plan in the event that a biological monitor will need to move a frog or snake. This plan will be finalized prior to the start of construction activities. This plan will include instructions for trapping, handling, and transporting the individual animals, including locations of where to release non-injured frogs or snakes and reporting protocols. The plan also will include instructions on where to take injured frogs or snakes for veterinary care. The USDA will notify the USFWS within 24 hours in the event that a frog, snake, or beetle becomes injured or dies within the Project area.
    j. Moving and/or handling of a frog or snake consistent with the plan will be done pursuant to valid ESA 10(a)(1)(A) permit.
    k. The USDA must develop and implement a Hazardous Materials or Spill Prevention Plan to minimize the potential for and effects from spills of hazardous, toxic, or

petroleum substances during construction and operation activities. This plan will be completed prior to the start of any construction activities and will remain in place for the lifetime of the TRR.

2. The following terms and conditions implement reasonable and prudent measure number two:
    a. The purchase of credits described in the Project Description shall be as follows: For direct impacts to snake habitat, 8.85 credits will be purchased. For direct impacts to frog habitat, 1.54 credits will be purchased. For direct impacts to the beetle habitat, any elderberry shrub to be impacted will be transplanted (if at all possible) plus 2:1 compensation or USDA will compensate for an impacted shrub with 3:1 ratio. The USDA will purchase credits for each of these permanent impacts at a Service-approved conservation bank that services the Project area.
    b. To the greatest extent practicable, restore habitat to its pre-Project condition.
    c. When restoring temporarily-impacted habitat, the USDA must utilize native plant species appropriate to the area and will control the spread of invasive plant species.

Reporting Requirements

USDA shall submit a post-construction compliance report prepared by the on-site biological monitor to the Bay-Delta Fish and Wildlife Office within sixty calendar days of the date of completion of construction activity. This report shall detail: (1) dates that construction occurred, (2) pertinent information concerning the success of the Project in meeting the avoidance and minimization measures, (3) an explanation of failure to meet such measures, if any, (4) known Project effects to the frog, beetle, and snake, if any, (5) occurrences of incidental take of these listed species, if any, (6) documentation of employee environmental education, and (7) other pertinent information.

Disposition of Individuals Taken

Injured frogs or snakes shall be treated by a licensed veterinarian or other qualified person. Notification to the USFWS must include the date, time, and precise location of the specimen/incident, and any other pertinent information. Dead animals should be sealed in a zip lock bag containing a piece of paper indicating the location, date, and time when it was found, and the name of the person who found it. The bag should be frozen in a freezer in a secure location. The USFWS contacts are the Assistant Field Supervisor, Endangered Species Program at the Bay-Delta Fish and Wildlife Office at (916)930-5603 and Resident Agent-in-Charge of the USFWS's Law Enforcement Division at (916)414-6660.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and databases.

The USDA should incorporate in their projects the suppression or eradication of non-native,

invasive wildlife and plants, such as bullfrogs and purple star thistle.

The USDA should encourage or require the use of appropriate California native species in revegetation and habitat enhancement efforts.

The USDA should include elderberry plants in their riparian planting mixes.

The USDA should manage grassland and riparian habitats for the benefit of the frog and snake.

The USDA should support appropriate actions in the Recovery Plan for the frog (USFWS 2002), the snake (USFWS 2017), and the beetle (1984).

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Maxwell Water Intertie Project. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes effects to the listed species or critical habitat that was not considered in this biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must immediately cease, pending reinitation.

Please address any questions or concerns regarding this response by contacting Alison Willy at 916-930-5669.

Sincerely,

Kaylee Allen
Field Supervisor

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