



McMullin Area Groundwater Sustainability Agency

McMullin On-Farm Flood Capture Expansion Project

Draft Initial Study/Mitigated Negative Declaration



PREPARED BY:



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ATTACHMENT A: PUBLIC SCOPING SUMMARY REPORT
ATTACHMENT B: AIR QUALITY TECHNICAL REPORT
ATTACHMENT C: BIOLOGICAL RESOURCES RECONNAISSANCE REPORT
ATTACHMENT D: NON-CONFIDENTIAL CULTURAL RESOURCES RECORD REPORT
ATTACHMENT E: HAZARDOUS MATERIALS DATABASE REPORT SUMMARY MAP
ATTACHMENT F: CUSTOMIZED SOIL RESOURCES REPORT

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1 INTRODUCTION

The McMullin On-Farm Flood Capture and Recharge Projects (McMullin Projects) are located in Fresno County and the Kings Subbasin, northeast of Helm, south of Kerman, and southwest of Fresno (Figure 1.1.1). The McMullin projects are located within the McMullin Area Groundwater Sustainability Agency (MAGSA) region. They are intended to divert available flood water and stormwater flows from the Kings River that are intended to be released downstream of the James Weir. These diverted waters will be used for direct groundwater recharge, or for distribution to participating farmlands for *in lieu* recharge or for direct groundwater recharge, an approach termed On-Farm Recharge. Diversion occurs on the southern end of the James Bypass (or Fresno Slough), just upstream of the James Weir.

On-Farm Recharge (OFR) is conceptually defined as follows:

- Diversion of flood flows onto farm fields for extended periods of time to allow the farmlands to operationally behave as a flood plain, reducing flood flows downstream and percolating water into the vadose zone and groundwater;
- Diversion and management of flood flows is controlled and compatible with farm operations;
- OFR infrastructure and management costs leverage existing farm infrastructure and maximize compatibility with existing farm practices to save costs;
- Targets both direct recharge and *in lieu*;
- OFR provides both local and regional benefits.

1.1 PROJECT BACKGROUND

The McMullin projects are being developed in phases and represent a large-scale demonstration project of OFR for improved and more integrated ground- and surface waters.

The 5,000-acre Phase 1 project was a pilot project completed in 2020. Phase 1 was designed to divert, distribute, and recharge across private farmlands 150 cubic feet per second (cfs) of available flood water and stormwater flows from the Kings River upstream of the James Weir. Phase 1 required, through its agreements, that the first 150 cfs be diverted within the Phase 1 area for OFR on private farmlands. Bachand et al. (2011, 2012) estimates ten farm acres are needed for each cfs diverted, captured, and recharged when OFR was implemented within the Phase 1 area. Thus, Phase 1 requires approximately 1,500 acres to recharge 150 cfs through OFR and is currently limited by this capacity. Phase 1 envisions about 25–33% of the total Phase 1 acreage to be employed in OFR at any given time to enable sufficient recharge capacity on private farmlands to support the 150 cfs diversion rate. Phase 1 also includes development of a program to support Phase 1 operation and the implementation of OFR. The program included foundational agreements defining infrastructure governance and responsibilities amongst partnering and collaborating agencies, stakeholder outreach, development of a Flood Flow Capture Plan to develop guidelines for implementing OFR, and development of regional OFR guidelines. Phase 1 also included development of foundation infrastructure to support future expansions. A turnout constructed off the Kings River upstream of the James Weir, the pump station at Floral Avenue, and the McMullin Grade undercrossing were considered important infrastructure required for successive phases. Thus, these and other key infrastructure were designed to accommodate future expansion up to a 500 cfs diversion capacity off the Kings River. Phase 1 CEQA evaluation was completed in June 2016.

The McMullin Expansion Project represents Phase 2 in the McMullin Projects. The McMullin Expansion Project has been identified as a priority action in MAGSA's Groundwater Sustainability Plan (GSP) (MAGSA 2020). MAGSA's GSP is one of seven GSPs submitted by the cooperating Kings Subbasin Groundwater Sustainability Agencies (GSAs) to achieve groundwater sustainability for the Kings

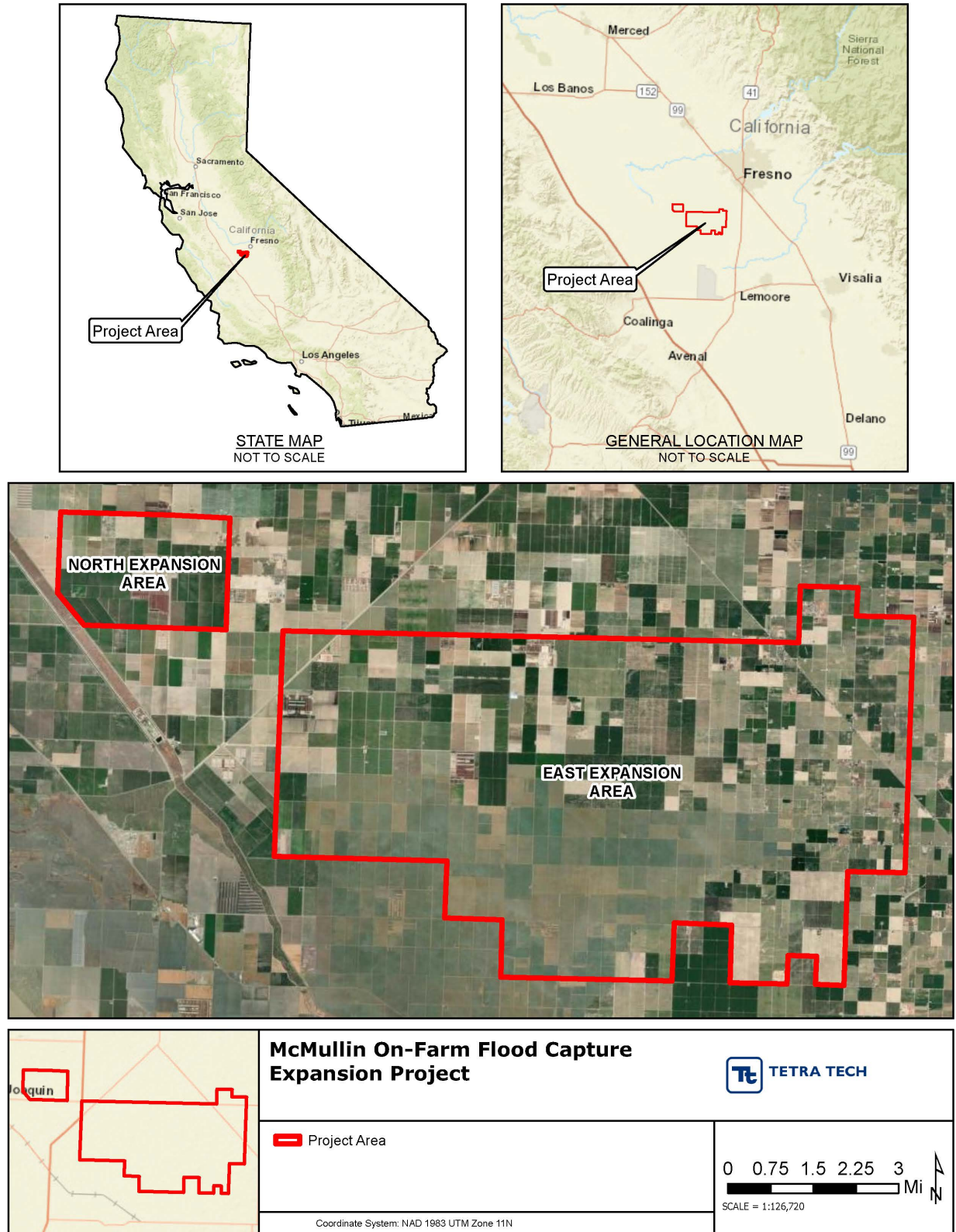


Figure 1.1.1. Project Vicinity Map

Subbasin. The McMullin Expansion Project utilizes agreements by and between various public agencies and will be conducted in partnership with Raisin City Water District (RCWD) who will be providing matching funds through their awarded NRCS RCPP 2018 grant award. Thus, the McMullin Expansion Project will promote regional collaboration in managing Kings Subbasin water resources and facilitate the setting of regional priorities and increased self-reliance.

1.2 PURPOSE AND NEED

The overall purpose of the McMullin Expansion Project is to capture stormwater flows in the Kings River for flood protection, water supply, and groundwater management. The McMullin Expansion Project provides a means to improve groundwater quality while helping to reduce the potential for downstream flooding. Conducting OFR on farm fields with lower legacy nitrogen and salt loads, with high infiltration rates and with cultural practices conservative of nutrient use, can improve groundwater quality through dilution (Tetra Tech and Bachand & Associates 2018). Elevating groundwater tables with high quality groundwater can also impede the movement of poor groundwater into regions where groundwater is used for domestic wells. These groundwater improvements are more likely to benefit disadvantaged communities (DACs) who are more likely to rely upon shallow wells for drinking water (MacLeod, 2019).

This project will address multiple needs. First, this project is needed to address issues related to flood and storm flow events from the Kings River. Flood events can be in response to snowpack and storm driven releases at Pine Flat Reservoir, found on the Kings River upstream of the Project Area. Despite upstream reservoir management for flood control and for water supply, \$1.55B (2020 dollars) in damage has occurred downstream along the San Joaquin and Kings Rivers for four historic storm events: 1983, 1986, 1995, and 1997. Flooding can also occur from more localized large valley storm events (Phase 1 Hydraulic and Hydrologic Analyses – Bachand et al. 2014).

Sierra snowpack is predicted to decrease by 48 – 65% from rising temperatures, more precipitation as rain and rising snowline (DWR 2013), exacerbating flooding and requiring adaptations in reservoir operations (DWR 2018; CVFPP 2017). Climate models predict higher temperatures, greater variations in precipitation, and more frequent extreme events (Reclamation 2011, 2014; DWR 2013; Hayhoe et al. 2004; Thorne et al. 2012). Current models predict 3-day flood volumes for the SJR at Millerton Lake and the Kings River at Pine Flat Dam will be 30 – 40% larger for 10-year frequency storms and 60 – 70% larger for 200-year frequency storms (CVFPP 2017). The Kings River is managed to divert flood flows both north and south through a series of prescribed steps to reduce flood risks to communities along both the Kings and San Joaquin Rivers (KRCD and KRW 2009). The Phase 1 Hydrologic and Hydraulic study (Bachand et al 2014) predicted a 1.8 benefit-cost ratio for the McMullin Project and its expansions, primarily through reducing damages from 10- to 100-year floods (Bachand et al. 2014).

These flood losses can provide a water supply opportunity under improved agricultural water management. Available flood flows and stormwaters diverted off the Kings Rivers alongside the Project Area can be captured and diverted onto farmlands to recharge groundwater through an OFR program. This strategy has been initiated with implementation of Phase 1, which is able to capture and recharge 150 cfs of flood flows from the Kings River and provides foundational infrastructure for expansion projects to capture and recharge 500 cfs.

Second, this project is also needed to address chronic overdraft of the Kings Subbasin aquifer and to improve groundwater sustainability. Agriculture within the Kings Subbasin can rely more heavily on groundwater than on surface water. For example, during the 2020 water year, Kings Subbasin agricultural demand reached 2,011,000 acre-feet (AF) with 1,198,000 AF met by groundwater as compared to

813,000 AF by surface water (KSGSA 2021). Historically (Spring 1997 – Spring 2012), over 120,000 AF of annual groundwater overdraft has occurred (MAGSA 2020). MAGSA (2020) targets strategies, plans and actions to overcome the GSA’s 91,600 acre-feet (AF) annual overdraft, 75% of the entire overdraft across the Kings Subbasin.

This overdraft has caused groundwater levels to fall dramatically throughout the Kings Subbasin. In MAGSA, groundwater averaged 7 feet below ground surface in 1921 and averages now 155 feet below the ground surface (MAGSA 2020), at times more than 200 feet in some locations. Groundwater production wells for irrigation range in depth from 75 feet to 700-800 feet deep in the area around McMullin Grade and along the James Bypass border. Average depths vary from 300-500 feet for most of the GSA (MAGSA 2020). The need to pump wells at this depth below ground surface is expensive with groundwater pumping and distribution costs estimated at \$90/acre-feet in 2010 (James Irrigation District 2010).

1.3 PROJECT DESCRIPTION

Upon completion, the McMullin Expansion will increase the Kings River diversion capacity from 150 cfs to 450 cfs and extend the agricultural region for implementing OFR by an additional 40,400 acres (Table 1-1). The McMullin Expansion will consist of two areas: north and east of Phase 1.

No construction actions are proposed to convey water to the 3,700-acre northern expansion area. Existing surface water conveyance features will be used to convey water to this area, if needed. It is bounded roughly by:

- Manning Avenue and the Phase 1 boundary (south)
- South Lake Avenue (west)
- West Adams Avenue (north)
- Siskiyou Avenue (east)

The 36,700-acre eastern expansion area is bounded roughly by:

- Raisin City Water District (RCWD) jurisdictional boundary (south and east)
- South Madera Avenue and the Phase 1 boundary (west)
- Manning Avenue (north)
- South Brawley Avenue (east)

Available flood flows and stormwaters will be conveyed through the McMullin Expansion with a 300 cfs Main Canal, for diversion onto area agricultural lands through on-farm projects for implementing OFR. A 450 cfs diversion rate from the Kings River will enable an annualized average recharge of over 7,000 ac-ft to farmlands under OFR (Table 1-2).

Table 1-1. Comparison of McMullin Projects, Phase 1 and Phase 2

	Phase 1	Phase 2
Area available for OFR	5,000 acres	40,400 acres
Kings River diversion capacity	150 cfs	450 cfs

Table 1-2. Estimated Diversion Quantities During Operations

Descriptive Flood Metric	Units	Project		
		Phase 1	No Action Alternative	McMullin Expansion
By Flood Years				
Operational frequency	years/event	2.76	3	3
Average flow rate	CFS	126	110	254
Average duration	days	108	91	91
Average Volume Captured ^{1,2}	Ac-ft	26,957	21,090	50,513
Annualized				
Average duration	days	39	30	30
Average Volume Captured ^{1,2}	Ac-ft	9,767	7,030	16,838
Notes				
1 Assumes all flow diverted into conveyance system are captured through OFR				
2 Flood flows captured are for the identified project and are not cumulative across projects				

Lands in MAGSA and the McMullin Expansion area are largely agricultural lands. A large variety of crops are grown, including annual crops (e.g., peppers, onions, tomatoes, carrots), perennial crops (e.g., almonds, walnuts, pistachios, vineyards), and pasture and dairy. Lands to be enrolled in the OFR will be a subset of the total acreage. Based on Bachand et al. (2011, 2012), approximately 3,000 acres will be needed for the capture and recharge of the additional 300 cfs diverted under the McMullin Expansion, with total acreage dependent on many factors that affect OFR performance and efficiencies, such as soil permeability, topography, proximity to conveyance infrastructure, past and current farming practices, potential nutrient and salt load, and farmer interest. An OFR program selection process will be conducted in coordination with Natural Resources Conservation Service (NRCS) and consistent with their Environmental Quality Incentives Program (EQIP) program to select fields within the McMullin Expansion area for enrollment in the OFR program. Applicant lands can be excluded for several reasons, such as poor infiltration rates and expected high past nutrient or salt loads from past crops land uses (e.g., dairy silage). Other lands will be avoided, such as industrial sites, maintenance sites, and concentrated animal feed operations (CAFOs), as they are more likely to have broader and more concentrated soil contaminants (e.g., pesticides, fertilizers, heavy metals, hydrocarbons, manure).

Farmers will voluntarily apply to participate in this program and identify necessary on-farm improvements to meet identified resource concerns. Selected applications will provide the landowner partial funding to implement identified structural and non-structural conservation practices. Fields will also continue to remain in agriculture as the OFR program is compatible with farming practices (e.g., planting, fallowing, harvesting).

For the McMullin Expansion Project, most construction machinery would be used on site. Most building and construction materials are assumed to be imported from Fresno, which is approximately 20 miles away, with some materials coming from other sources. Building and construction materials will include concrete, steel, and wood (for concrete forms), as well as PVC and electrical items. Rip rap may be selected for canal slope protection as appropriate.

Figure 1.3.1 shows the northern and eastern expansion areas under the McMullin Expansion. From west to east, the map shows the location for upgrades to the Phase 1 Floral pump station, the 300 cfs Main Canal, 10 farm road undercrossings, and three pump station locations. The farmland within the McMullin Expansion areas will be eligible for enrollment into the OFR program. Lateral canals, not shown, are

expected to be required for some OFR farmlands. Surface water diverted into the Main Canal and lateral canals will have water elevations above grade to enable gravity flow to OFR farmlands and their associated surface water delivery systems. Three county road crossings will be needed: Jameson, Westlawn, and Grantland. Crossings will also be located with each lift pump station.

1.3.1 Easements

Three types of easements are planned for the McMullin Expansion: permanent flood easements, permanent conveyance easements, and temporary construction easements. Each is presented below. Similar easements will be required for both the Main Canal and Lateral System.

Permanent flood easements

Permanent flood easements may be obtained from the landowners for farmland identified as top tier dedicated OFR or recharge farmland. Enrollment into this program will be voluntary for landowners. Farmlands for which permanent flood easements have been obtained will then be required to accept flood and stormwater flows for capture and recharge whenever those flows are available. This condition is expected to occur primarily during the winter and early spring months.

Fields for which permanent flood easements have been obtained will have performance objectives, such as uniform flood water distribution across the field when flooded and have appropriate structural and non-structural OFR and recharge conservation practices implemented to meet those performance objectives. OFR conservation practices are expected to be eligible for award under the OFR program.

Permanent conveyance easements

Permanent conveyance easements will be obtained from individual landowners for conveying water from the Phase 1 project terminus into the Main Canal for later diversion onto farmlands through either direct diversion into landowner irrigation systems or through first diverting into open channel laterals. Conveyance easements will be up to 140 feet wide.

Temporary construction easements

Temporary construction easements, up to 40 feet wide, will also be obtained for this project along the Main Canal system. These temporary easements will extend over the construction period of the project. The temporary easements will be used for construction staging, stockpile, borrow areas, and to allow traffic and activity by construction equipment.

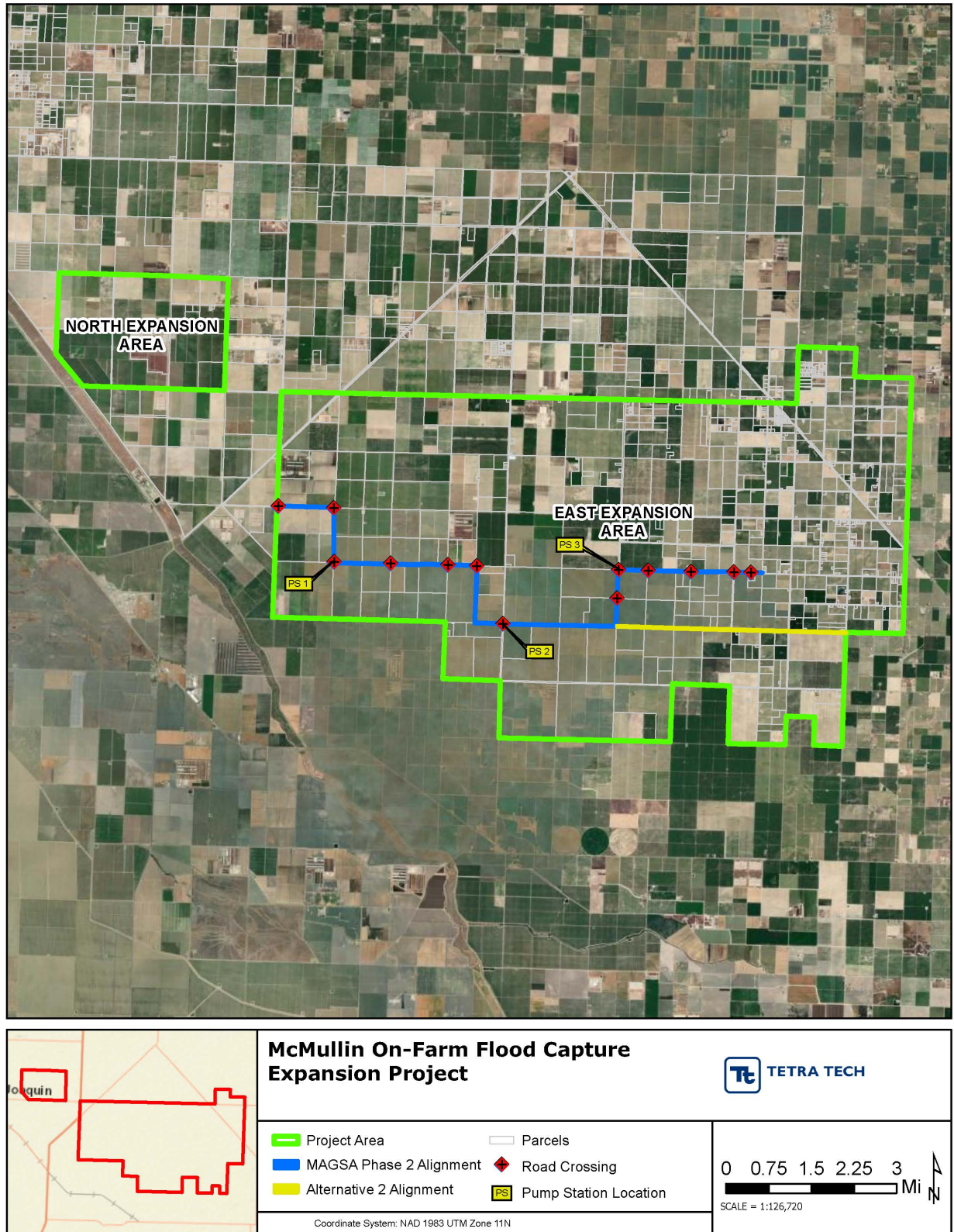


Figure 1.3.1. Project Features

1.3.2 Construction Features, Main Canal

A Main Canal will be a construction element for the McMullin Expansion. Its purpose will be to convey water through the McMullin Expansion Project Area to overcome grade where possible to ensure water can be delivered from the canal either into adjoining laterals or directly onto adjacent participating farmlands.

Main Canal

An approximate 11.5-mile earthen canal with a 300 cfs capacity will be constructed from the Phase 1 eastern terminus to Hayes Avenue as shown in Figure 1.3.1. The Main Canal's preliminary design estimates a 10-foot invert width for a 11-foot-deep canal with 2:1 side slopes. The canal top of banks will be compacted and drivable with the width estimated between 14–16-feet wide. Based on these dimensions, the total estimated cut will be 620,000 cubic yards (cy) and total estimated fill will be 540,000 cy, allowing a balanced design such that no additional soil will be needed nor hauled off. Excess soils will be moved from the excavation areas to on-site disposal areas, such as adjacent farmlands, with scrapers or 16-yard dump trucks.

Including the easements (conveyance and temporary) and the canal length, approximately 250 acres will be disturbed over the construction period. Main Canal construction is estimated to occur over 13 months with 5-day work weeks. Thus, on average, about 1.5 acres will be disturbed per workday during the construction of the Main Canal.

Large machinery that will be required for canal construction as presented in Table 1-3 includes backhoes, graders, bulldozers, dump trucks, loaders, excavators.

Table 1-3. Estimated time and equipment for construction of each project element

Project Elements	Duration				Equipment utilized and number needed							Pieces of heavy equipment in operation at one time, by element	Heavy Eqpt. Weeks	
	Wks	Per	# of Units within Element	Total duration (weeks)	Crane	Backhoe	Excavator	Grader	Concrete Truck	Dump truck	Loader			Bulldozer
Main Conveyance														
Electric Pump Upgrade at Floral	4	location	1	4	1								1	4
Canal Lift Pump Stations	6	location	3	18	1	1	1		1				3	54
County Rd Box Culvert Crossings	3	location	3	9	1		1			1	1	1	2	18
Farm Road Pipe Culverts	3	location	10	30	1		1			1	1	1	2	60
Main Conveyance Canals	3	mile	11.5	35			1	1		1	1	1	4	138
Laterals														
Lateral Conveyance Canals	4	mile	4	16			1	1		1	1	1	4	64
Farm Road Pipe Culverts	3	location	6	18	1		1			1	1	1	2	36
Total Heavy Equipment Weeks														374

Electric Pump Additions to Phase 1 Floral Pump Station

Three pumps will be added to the Phase 1 Floral Pump Station. The pumps will utilize the three pump bays in the pump station. Power will be provided through the current electrical transformer system. Each pump shall be designed for a 150 cfs capacity, adding 450 cfs capacity at this station. Only 300 cfs will be needed for the McMullin Expansion Project.

Pumps will be operational during periods when flood waters and stormwater flows are available from and being conveyed through Phase 1 for delivery to the McMullin Expansion region. For Phase 1, a 500 cfs turnout was constructed at the James Weir to divert 150 cfs within the Phase 1 region for OFR, and to divert the remaining flood flows for OFR to the remaining area of the McMullin projects. Based on historical data, the existing Phase 1 150 cfs pump will operate when flood flows are available for diversion, on an approximate, average 2.8 year frequency for an average duration of 108 days resulting in an annual average diversion of 9,800 ac-ft (Table 1-2. Estimated Diversion Quantities During Operations).

The only equipment needed for pump and motor installation is a crane.

Main Canal Pump Stations

Three Main Canal pump stations and associated pumps will be built to overcome the estimated 46 feet of elevation change along the alignment from Hayes Avenue on the project's eastern side to the Phase 1 boundary on the west. Pump stations are estimated for the following locations (from west to east) as shown in Figure 1.3.1:

- Nebraska Avenue and 1/8 mile east of Goldenrod Avenue intersection
- Mountain View Avenue and Jameson Ave
- Nebraska Avenue and Westlawn Avenue intersection

The pump stations will be located within one-quarter mile of the listed locations as dependent upon design needs, access, and landowner requirements. Pump stations will be designed for a 300 cfs capacity and 12 to 16-foot lift. Pump stations are expected to be concrete and steel framed structures and able to house six 60 cfs rated pumps, or equivalent. Each pump station will include:

- Up to six pumps and their associated natural gas or propane motor,
- discharge manifolds,
- canal gates,
- bypass functionality to allow bi-directional flow in the canal, and
- accessories,

or a configuration and design providing equivalent performance and functionality.

Pump stations can be located within the easement area and built simultaneously with the construction of the Main Canal as defined by design. Pump stations will be positioned so the discharge pipe will serve as a road crossing for adjacent farm roads. Preliminary planning identifies typical heavy equipment required for construction of pump stations and pump installations (e.g., cranes, backhoes, excavators, and concrete trucks). Two may be operational at one time at each pump station.

County and Farm Road Crossing

Box culverts are in the preliminary design for three county road crossings. Box culverts will have a minimum design capacity of 300 cfs. During construction, traffic will be managed at the county road crossings through either closing half the road for traffic or having detours. Box culverts will be designed to meet County requirements. For paved road crossings, pavement will be replaced in the impacted area.

Box culverts are currently planned in the preliminary design for farm roads and placed according to farmer and landowner needs. In total, ten farm road crossings are planned. Culverts have a preliminary design of three 72-inch-diameter pipes or two 8x10 foot box culverts to accommodate a 300 cfs flow capacity with minimal head loss across the culvert. Culverts will be designed for road crossing lengths ranging from 30–120 feet, depending on whether the crossing is perpendicular or diagonal to the road. Culverts will extend beyond the edge of the farm roads as necessary for safety and functionality. Culvert design will be finalized during design with the goal of maintaining the same functionality and performance as under current conditions.

Culvert installation and construction shall occur within the boundary of the easements defined for the Main Canal. Preliminary planning identifies typical heavy equipment required for installation of road crossings could include cranes, excavators, dump trucks, loaders, and bulldozers. Two may be operational at one time at each culvert.

Staging Areas

Four 2-acre construction staging areas for maintenance and fueling of machinery, storage of materials, and parking are preliminarily identified along the Main Canal:

- Northwest of the South Madera Avenue and Floral Avenue intersection
- Northwest of West Nebraska Avenue and farm road (1.25 miles west of South Jameson Avenue) intersection
- Northeast of West Nebraska Avenue and farm road (1 mile east of South Jameson Avenue) intersection
- Northwest of South Hayes Avenue and farm road south of West Rose Avenue and north of West Nebraska Avenue

Activities within the staging areas would include:

- Construction field office
- Construction mobilization (set up fencing and project materials storage)
- Temporary parking for haul trucks and other project-related vehicles, including construction worker parking
- Removing equipment and returning the site to pre-project conditions after project activities are completed

Staging locations will be finalized during design.

1.3.3 Construction Features, Lateral System

A lateral canal system is planned to be constructed over an expected 20-year period mandated by SGMA for MAGSA to achieve sustainable groundwater management. Lateral canals (laterals) will be designed and built as needed for the area as OFR and other related projects proceed. Under the McMullin

Expansion, up to four miles of laterals will be constructed to provide flood water and stormwater flows to private landowners participating in the OFR program in order to achieve a 300 cfs recharge capacity. Elements specific to this system are detailed below.

Lateral Canals

Up to four miles of laterals will be constructed during project implementation. These laterals will be located based on targeted farmlands for implementation in OFR and used to transport flood flows and stormwater to private landowners and farmers employing OFR and not adjacent to the Main Canal. Laterals constructed for this project will be adjacent to farm or county roads on easements as presented in Section 1.1.1. Laterals will generally follow elevation contours to preserve water head pressure and potential energy. Laterals will be designed for gravity flow, as well as gravity delivery to receiving farms, proposing to maintain a minimum water elevation 1 foot above grade. Laterals levees will have 2:1 internal channel slopes.

The preliminary design estimates the top of banks will be 14 to 16 feet wide and compacted to be drivable. Laterals are expected to have a flow capacity up to 170 cfs. Lateral bottom widths will be designed to match standard excavator bucket widths to enable rapid and efficient lateral construction and maintenance. Based upon those constraints, the cut volume has been estimated at 15,500 cy per mile for a lateral with a design capacity of 170 cfs. The total cut volume for the laterals is estimated at 62,000 cy. No soils will be exported from the Project Area. Additional needed soils or excess soils will be moved from or onto adjacent farm fields. Typical equipment for removing and transporting soils will be excavators, scrapers and dump trucks.

Laterals will have the same easement widths as the Main Canal: up to a 140-foot easement and up to a 40-foot temporary construction easement. The disturbed area for the lateral canal system will be a maximum of 87 acres. Lateral canal construction is estimated to occur over 4 months with 5-day work weeks. Thus, on average, about 1 acre will be disturbed per workday during the construction of the laterals.

Lateral construction will require the same equipment needs as identified for the Main Canal system.

Lateral Road Crossings

As needed to balance farm operations and convenience with project requirements, road crossings will be installed for the lateral system. Up to eight road crossings are estimated at approximate 0.5- to 1-mile intervals. Road crossings are expected to be culverts with up to three 60-inch pipes, depending on lateral design flow capacity. Aside from the number and size of the pipes, culverts will have similar design specifications as for the Main Canal system. Culvert design is preliminary, but design changes will maintain equivalent functionality and performance. Culvert installation and construction shall occur within the easement boundaries. No traffic control will be required for lateral crossings as they are expected to only cross private farm roads with cooperation from the landowner.

1.3.4 OFR Practices

OFR practices will be implemented on participating private farmlands to recharge 300 cfs on private farmlands, to match flood flow diversion capacity of the McMullin Expansion. OFR practices will include both structural practices, representing changes, upgrades, or installation of permanent or temporary infrastructure, or non-structural, representing implementation of management practices. Practices will be implemented to enable both *in lieu* and direct recharge on private farmlands participating in the OFR program when flows are provided through the conveyance system for capture and recharge.

Landowner Selection Process and Criteria

Landowners will be selected through a complementary process to the NRCS EQIP program. The NRCS EQIP program provides funding to farmers and landowners to implement conservation practices to conserve soil, water, air, and related plant and animal resources. Conservation practices are defined under conservation practice standards available through the NRCS Field Office Technical Guide that define where and why the practice can be applied and the associated specifications, engineering requirements, and operation and maintenance. For EQIP in brief, NRCS conducts a landowner selection process in which resource concerns and appropriate conservation practices are identified, farmer applications solicited, and farmers ranked and selected based upon the suitability of the farm solicitation to address the identified resource concerns. When an application from a farmer is awarded, the farmer implements the on-farm project following the program and process as defined by the conservation practice standard. Matching funds, as either cash contributions or in-kind services, are effectively required by farmers receiving EQIP funds, as EQIP pays for a portion of the project based upon a fee schedule associated with the different conservation practices.

For the OFR program, farmer selection and ranking will be affected by several OFR implementation and performance factors: e.g.,

- topography and slope
- soils and associated infiltration rates
- access to flood flows and stormwater
- crop suitability and compatibility with flooding
- fertilizer history and nitrogen loading potential
- current farmer cultural practices

OFR Program Timing and Practices

The OFR program will provide guidelines for the timing of OFR for different land uses and appropriate practices. Table 1-4 provides an example draft guideline for coordinating OFR across crops. Table 1-5 summarizes example OFR practices that fall under categories familiar and compatible with typical farm and agricultural practices, such as:

- Roadside crossings
- Temporary surface water berms, ponds, and irrigation reservoirs
- Temporary surface water supply and distribution infrastructure
- Field pumps and motors
- Valves
- Siphons
- Nutrient and Herbicide Management

These practices are identified as compatible with NRCS Conservation Practices. General themes behind these practices are to help improve OFR rates and capacity through improving performance and efficiencies, provide a scalable approach and associated infrastructure, leverage temporary equipment to reduce capital and O&M costs, and ensure proper nutrient and cultural practices to protect water quality. OFR practices have also targeted systems familiar to agriculture that are simple, easy, and flexible in their implementation by farmers and their staff. Implementation of structural conservation practices will require typical on-site farm equipment.

Table 1-4. Weeks During Which OFR can be Implemented Across Common Crops

Month	Nuts				Vineyards	Alfalfa	Annuals		Fallow
	Almonds	Walnuts	Pistachios	Pecans	Winegrapes		Summer	Double	
Jan	2	3	4	0	2	4	4	2	4
Feb	3	3	4	2	4	3	4	1	4
Mar	3	3	2	5	3	2	0	1	5
Apr	3	0	4	2	3	2	2	2	4
May	2	4	2	4	2	1	1	1	4
Jun	1	1	2	3	3	2	2	2	5
Jul	1	2	1	2	2	3	1	1	4
Aug	0	3	1	2	2	2	2	2	5
Sept	2	0	1	0	1	2	1	1	4
Oct	2	1	4	0	2	1	2	1	4
Nov	2	5	2	0	4	4	5	2	5
Dec	4	4	2	0	3	4	4	1	4

Associated NRCS Conservation Practices

Table 1-5 lists NRCS conservation practices applicable to OFR implementation, discussing relevance and considerations. These conservation practices provide high level guidance, requiring professional support (e.g., engineers, crop advisors, professional surveyors). Conservation practices typically reference technical sources, commonly referencing the NRCS National Engineering Handbook and Engineering Manual, as well as the American Society for Testing and Metals standard specifications. Implementation of NRCS conservation practices fall under the NRCS EQIP programmatic environmental assessment.

1.4 OPERATIONS

Pumps will be operational during periods when water is available from and being conveyed through Phase 1 for delivery to the McMullin Expansion region. For Phase 1, a 500 cfs turnout was constructed at the James Weir to divert 150 cfs within the Phase 1 region for OFR on farmlands, and to divert the remaining flood flows for OFR to the remaining area of the McMullin projects. The maximum design diversion rate is 500 cfs. The McMullin Expansion will increase the diversion from the Kings River by 300 cfs, to 450 cfs. The estimated frequency of years in which diversions will occur, their duration, and calculated diversion volumes are summarized in Table 1-2. Calculated annualized average diversion volumes are 9,800 ac-ft for Phase 1 with diversions occurring every 2.76 years over 108 days. The McMullin Expansion calculated annualized average diversion is 16,800 ac-ft, occurring on a 3-year frequency over a 91-day period.

1.5 PROJECT SCHEDULE

The preliminary construction schedule estimates construction to begin November 2022 and be completed by December 2023. Construction activities will occur on a weekday basis, with project hours between 7:00 am and 5:00 pm, Monday through Friday. Weekend and evening work will be at the contractor's request.

Table 1-5. Example OFR Practices and Their Association with NRCS Conservation Practice Standards

OFR Practices associated with NRCS Conservation Practices		NRCS Conservation Practices																										
		Field Prep and Planting						Reservoir and Storage		Conveyance, Irrigation and Drainage													Monitoring and Management				Roads and Crossings	
		Deep Tillage	Irrigation Land	Land Smoothing	Row Arrangement	Terrace	Dike	Pond	Irrigation Reservoir	Irrigation Canal or Lateral	Diversion	Irrigation Field Ditch	Grassed Waterway	Irrigation Pipeline	Irrigation System, Surface and Subsurface	Pumping Plant	Water Control Structure (WCS)	Surface Drain, Field	Ditch Surface Drain, Main or Lateral	Monitoring Well	Nutrient Management	Pest Management	Conservation Systems	Access Road	Stream Crossings			
Sample OFR Practices	Roadside Crossings																											
	Culvert Arrays															X												
	Low Water Crossings															X							X	X				
	Temporary Bridges or Bridgemats																							X				
	Bypasses, Fords, and Low-Water Crossings															X							X	X				
	Temporary surface water dams																											
	Dikes and Levees						X																					
	Permanent Flood Easement																											
	Terracing and Flashboard Risers					X										X												
	Field Poly-Pipe, Dam									X																		
	Temporary OFR Surface Water Supply and Distribution Infrastructure																											
	Field Poly-Pipe, Supply												X	X														
	Overland Flow and Culverts															X												
	Field Pumps and Motors														X	X												
Gate Valves																												
Siphons																												
Nutrient and Herbicide Management																				X		X						

Several project elements will be completed during the construction for the Main Canal and Lateral systems:

- Main Canal
 - Electric Pump Upgrade at Floral Avenue
 - Canal Lift Pump Stations
 - County Road Box Culvert Crossings
 - Farm Road Pipe Culverts
 - Main Canal
- Laterals
 - Lateral Conveyance Canals
 - Farm Road Pipe Culverts

Table 1-3 provides a preliminary estimate of heavy equipment needs for each element of the McMullin Expansion, such as:

- the heavy equipment utilized during construction
- the number expected to be operational at any given time
- the weeks of construction for each element

This preliminary schedule is based on construction conducted during Phase 1 and engineering experience. Overall, an estimated 374 equipment weeks are required during the estimated 13-month construction period, corresponding to 7 pieces of heavy equipment operational each week of construction (Table 1-3).

2 ADJACENT AND NEARBY LAND USES

Adjacent land uses include open space within the James Bypass Channel, the small town of Raisin City, and agricultural fields in all other areas. The nearest town outside of the proposed project area is Helm, located approximately 2 miles south. The area is sparsely populated but the proposed canal will pass within one-quarter mile of residential structures and farm outbuildings. The nearest schools and parks are also located in these communities. Fresno, the nearest major town, is located about 20 miles northeast of the area.

The McMullin Area Groundwater Sustainability Agency's area of jurisdiction is bordered on all sides by other GSAs. Adjacent GSAs include North Kings, Central Kings, North Fork Kings, James, County of Fresno (Delta-Mendota Management Areas A and B), Farmers Water District, and Aliso Water District.

3 PUBLIC INVOLVEMENT

A Public Scoping meeting was held on June 30, 2021. The meeting was well attended with 30 participants. A presentation by the project's environmental consultants provided the participants with background on the project and the areas of study to complete the CEQA document.

A diverse suite of communications tools were used to engage the public in the McMullin On-Farm Flood Capture Expansion Project public scoping session. A combination of direct mail, community flyers, online communications including website, email, and social media, newspaper and press releases, effectively promoted the 30-day public scoping period and informed the public on how to comment on the project during the comment session. Correspondence effectively ensured two-way communication with the public, as comments and questions were fielded via a specific email address and during the public scoping session webinar on June 30th.

Two public comments were received prior to the beginning of the public scoping session comment period. An additional 15 questions were received during the public scoping session webinar on June 30, 2021. Questions are recorded in the Public Scoping Summary Report (Attachment A). Although comments could also be submitted via mail or in person at the MAGSA office, none were received by these methods.

4 MITIGATION MEASURES

The following mitigation measures will be incorporated into the program to reduce any potential impacts to a less than significant level.

4.1 AIR QUALITY (AIR)

AIR-1: IMPLEMENT VEHICLE EMISSIONS CONTROLS.

1. During project construction, on-site mobile equipment shall be equipped with NOx reduction equipment and/or newer NOx limited engines will be required.
2. On-site mobile equipment will be equipped with PM₁₀ pollution control devices and/or newer, less polluting equipment will be required (either lower emissions diesel or alternative fuels engines).
3. On-site equipment will utilize aqueous diesel fuel.
4. The construction contractor will comply with all current and future Regulation VIII rules.
5. Diesel engines will be shut off when not in use to reduce emissions from idling.

AIR-2: PREPARE AND IMPLEMENT A FUGITIVE DUST CONTROL PLAN.

The construction contractor will prepare and implement a Fugitive Dust Control Plan, and as needed, will adopt the following recommended control measures for construction emissions of PM₁₀:

1. All material excavated or graded will be sufficiently watered to prevent excessive dust. Watering will occur as needed with complete coverage of disturbed areas. Watering will occur a minimum of twice daily on unpaved/untreated roads and on disturbed areas with active operations.
2. All clearing, grading, earth moving, and excavation activities will cease during periods when either wind speeds exceed 25 mph or dust plumes of 20% or greater opacity affect public roads or occupied structures.
3. All material transported off site will be either sufficiently watered or securely covered to prevent excessive dust.
4. If more than 5,000 cubic yards of fill material will be imported or exported from the site, then all haul trucks will be required to exit the site via an access point where a gravel pad or grizzly has been installed.
5. Areas disturbed by clearing, earth moving, or excavation activities will be minimized at all times.
6. Stockpiles of dirt or other fine loose material will be stabilized by watering or other appropriate method to prevent wind-blown fugitive dust and covered with tarps as needed.
7. When material are transported off site, all material shall be covered, effectively wetted to limit visible dust emission, or at least six inches of freeboard space from the top of the container shall be maintained.
8. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring.

4.2 BIOLOGICAL RESOURCES (BIO)

BIO-1: PROTECT AND PRESERVE SAN JOAQUIN KIT FOX

To protect and preserve the San Joaquin kit fox, to avoid any impacts to it or its habitat, and to meet CDFW and USFWS requirements, the following preventive measures shall be incorporated into the project during construction activities.

- KF #1. The USFWS's *Standardized Recommendations for the Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011) will be incorporated into the project and shall be implemented to avoid potential impacts to kit fox.
- KF #2. A check for and monitoring of potential kit fox dens (squirrel burrows) along the Main Canal alignment shall be conducted for three consecutive nights to evaluate kit fox use as per the USFWS 2011 guidelines (USFWS 2011). A report on the findings will be prepared. Vacant squirrel holes will be filled by hand after the survey by a qualified biologist to prevent future use by and future impacts to the kit fox.
- KF #3. A preconstruction (one-day) survey shall be conducted by a qualified biologist to examine potential dens (squirrel burrows) on and immediately adjacent to the project area for the existence of kit fox. The survey shall be conducted within 30 days prior to any construction activities. Results of the preconstruction survey shall be prepared in a letter and given to MAGSA prior to any construction activities.
- KF #4. If a kit fox den is found, the CDFW and USFWS shall be immediately consulted and appropriate avoidance measures shall be developed in cooperation with the project biologist and MAGSA.

BIO-2: PROTECT AND PRESERVE SWAINSON'S HAWK

To protect and preserve the Swainson's hawk, to avoid any impacts to it and its habitats, and to meet CDFW and USFWS requirements, the following measures shall be incorporated into the project.

- SH #1. A. Swainson's hawk nest trees should not be removed.
B. To the extent feasible, construction activities shall be started during the non-nesting season of September 1 through January 31 when Swainson's hawks are gone from California and have migrated to their wintering grounds in Mexico and South America. Thus, Swainson's hawk will not be in the project vicinity and thus will not be disturbed by the project.
- SH #2. If construction must occur during the nesting season, a preconstruction survey shall be conducted by a qualified biologist for hawks and their nests within a one-half mile radius of the construction area prior to construction. Surveys should be performed within 30 days prior to the onset of construction.
- SH #3. If an active Swainson's hawk nest is found within a one-half mile radius of the project area, the biologist will establish a half-mile buffer around the nest, or as needed to adequately protect the nest in the context of the actions planned at that location. The buffer will be identified by placing flags and stakes around the perimeter and will remain in place until the biologist has determined that all young have fledged.

BIO-3: PROTECT AND PRESERVE THE BURROWING OWL

California ground squirrel burrows may offer some suitable nesting/denning habitat for burrowing owls. Earthwork performed with heavy equipment during project construction has the potential to destroy this habitat type and/or harm retreating owls.

To protect and preserve the burrowing owl, to avoid any impacts to it or its habitat, and to meet CDFW and USFWS requirements, the following preventive measures shall be incorporated into the project.

- BO #1. A protocol burrowing owl survey shall be conducted to ensure that no owls nest on or adjacent to the Main Canal alignment. The surveys shall be conducted four times in the winter and five times during the February through July period as per the guidelines (CBOC 1997).
- BO #2. If an owl is found, the CDFW shall be consulted and MAGSA shall select one or more of the following possible measures for implementation by a qualified biologist.
- a) Redesign the project temporarily or permanently to avoid occupied burrows or nest sites until after the nesting/fledgling season (February 1 through August 31).
 - b) Delay the project until after the nesting/fledgling season (March 1 through August 31).
 - c) Install artificial burrows in open-space areas of or near the project area and wait for passive relocation of the burrowing owl.
 - d) Active relocation of burrowing owl with conditions. MAGSA shall fund the relocation of burrowing owls to unoccupied, suitable habitat which is permanently preserved (up to 6.5 acres per nesting pair). Details and requirements are specified in CDFW (2012).
 - e) Though not endorsed by the CDFW, if other measures are possible and can be successful, ensure that potential burrows are vacant, and destroy vacant burrows prior to February 1 and/or after August 31.

BIO-4: PROTECT AND PRESERVE NESTING BIRDS

Potential nesting trees associated with the settlement areas occur scattered throughout the project area. No trees will be removed by the proposed project.

To protect and preserve nesting birds and their nests, to avoid any impacts to them and their nests, and to meet CDFW and USFWS requirements, the following preventive measures shall be incorporated into the project.

- NB #1. Prior to any construction activities on the project area in February through August, a preconstruction (one-day) survey shall be conducted by a qualified biologist for nesting birds on the project area. Results of the preconstruction survey shall be prepared in a letter and given to MAGSA prior to any construction activities.
- NB #2. If any active nests are observed, the nests shall be designated as an Environmentally Sensitive Area and protected (while occupied) during the construction activities. CDFW shall be contacted, consulted, and avoidance measures, specific to each incident, shall be developed in cooperation with the project biologist.

BIO-5: PROTECT AND PRESERVE FRESNO KANGAROO RAT

To protect and preserve the Fresno kangaroo rat, to avoid any impacts to it or its habitat, and to meet CDFW and USFWS requirements, the following preventive measures shall be incorporated into the project.

- FKR #1. A protocol 5-day, live-trapping survey shall be conducted for the Fresno kangaroo rat on the project site prior to construction activities. The survey protocol will follow the USFWS

(2013) guidelines. The survey involves live-trapping and releasing of small mammals over a five-day trapping period and the preparation of a findings report.

- FKR #2. If the endangered Fresno Kangaroo Rat is found, the USFWS and CDFW shall be immediately consulted and protective and mitigative measures shall be developed and enacted to avoid and/or mitigate for impacts. Such measures shall completely avoid the take of the species and its habitat. If complete avoidance is not possible and mitigation is required, the mitigation by the project proponent will fully compensate for all losses and meet the requirements of the state and federal resource and regulatory agencies.

BIO-6: PROTECT AND PRESERVE WATERS OF THE STATE AND WATERS OF THE U.S.

Although no jurisdictional wetlands or other waters of the U.S. will be affected by the proposed project, the possibility exists that wetlands may develop over time within the agricultural or fallowed fields under potentially changing conditions. Since the implementation of the project's lateral conveyance system will occur over time, it's necessary to ensure the lateral conveyance system does not negatively impact those resources if they were to occur. To protect and preserve waters of the U.S. habitats, to avoid and lessen any potential impacts to it, and to meet CDFW, USACE, and RWQCB requirements, the following preventive measure shall be incorporated into the project.

As the lateral conveyance system alignments are developed over time throughout the project area, such alignments should undergo a preliminary wetlands and other waters evaluation via desktop review and pedestrian survey, if necessary, to document that no potential jurisdictional wetlands or other waters will be impacted by construction and operation of the lateral conveyances. If necessary, an Aquatic Resources Delineation (ARD) shall be conducted to evaluate and quantify wetlands and/or other waters of the State of California and/or U.S. which may be impacted by the proposed project lateral conveyance systems. A resulting ARD report will quantify the acreage of wetlands or other waters which will be impacted and thus, the acreage to be permitted by the resource and regulatory agencies. The evaluation will also aid the consultants and USACE in determining the type of permit and the permitting process to follow if needed.

4.3 CULTURAL RESOURCES (CUL) AND TRIBAL CULTURAL RESOURCES (TCR)

The following mitigation measures are recommended to reduce significant impacts to cultural and tribal resources (see Section 6.18 for discussion of tribal cultural resources). Both Cultural and Tribal Cultural Resources are combined here for clarity within the Plan's Mitigation Program.

CUL-1: SURVEY, RECONNAISSANCE, AND AVOIDANCE

To avoid substantial adverse changes to potential historical resources and archaeological resources, all areas of proposed ground disturbance (i.e., Main Canal components and potential lateral systems) will be subjected to a cultural resources pedestrian survey. The survey(s) will be completed under the direction of a Secretary of the Interior (SOI) qualified archaeologist. As part of the survey, a reconnaissance of all previously recorded cultural resources within the flood areas and immediately adjacent to the project area (P-10-000528, P-10-000530, P-10-000533, P-10-000554, P-10-000555, P-10-000556, P-10-000562, P-10-004303, P-10-006134, P-10-006628, P-10-006629, P-10-006630, and P-10-006636) will be conducted to document their current conditions and, if still present, update the site boundary and location information of each. A Department of Parks and Recreation 523 form update will be prepared for each resource visited, as appropriate. The SOI qualified archaeologist will prepare a technical report with the survey results for submittal to the County. Under CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to significant tribal cultural resources (as defined by PRC 21074), and archaeological resources qualifying as historical resources. Methods of avoidance

may include, but shall not be limited to, project reroute or re-design, project cancellation, or identification of protection measures such as capping or fencing. PRC 20184.3(b)(2) provides examples of mitigation measures that lead agencies may consider to avoid or minimize impacts to tribal cultural resources. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

CUL-2: CULTURAL RESOURCE MONITORING

In order to avoid impacts on unidentified archaeological resources and potential historic resources, an archaeological and local Native American tribal monitor (if requested by a local tribe) shall be present during ground disturbing activities below one foot in depth, as described in the monitoring plan (see CUL-5) and as appropriate. The monitors will observe ground disturbing activities for signs of cultural resources and will have the authority to stop and redirect ground disturbing activities in the event of an inadvertent discovery. The monitors shall follow the protocols set forth in the Monitoring and Inadvertent Discovery Plan.

CUL-3: EDUCATION/TRAINING

Prior to the initiation of construction of the project, a Secretary of Interior qualified archaeologist will be retained and will provide a cultural resource briefing to all construction workers. The briefing will include discussion of all applicable laws and penalties pertaining to disturbing cultural resources, a brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area, types of cultural resources found in the area, and instruction that project workers will halt construction if a cultural resource is inadvertently discovered during construction. The archaeologist will discuss procedures to follow in the event an inadvertent discovery is encountered, including appropriate treatment and respectful behavior of a discovery (e.g., no posting to social media or photographs). The consulting tribes will provide a representative to participate in the environmental training to discuss or provide input from a tribal cultural perspective regarding the potential cultural resources within the region (as applicable). After the training, all personnel will be given a worker education/training brochure regarding identification of cultural resources and protocols for reporting finds. Any employee beginning work following the initial worker education/training session must also receive commensurate cultural, tribal, and archaeological resources sensitivity training (via a power point presentation or handout) and will be provided the brochure.

CUL-4: UNANTICIPATED AND INADVERTENT DISCOVERIES

A Secretary of Interior qualified archaeologist shall be retained on-call and shall prepare a Monitoring and Inadvertent Discovery Plan for the project which includes appropriate Monitoring and Inadvertent Discovery Procedures. The Plan shall be prepared and approved prior to the initiation of construction. The Plan shall include (but not limited to): subsurface ground disturbing activities that require monitoring (i.e., construction of the Main Canal, lateral systems), monitoring procedures, procedures to stop and redirect work in the event of a find (see below), and procedures for daily monitoring reporting and final reporting, etc. The draft plan shall be reviewed by the County and interested tribes (as applicable).

During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find (and 100-foot buffer) shall stop. The qualified archaeologist shall be contacted to assess the significance of the find according to CEQA Guidelines Section 15064.5 and/or NRHP criteria (as applicable). In addition, the lead representative for the consulting tribes will be notified (as

applicable). If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agencies and consulting Native American group(s) expressing interest, appropriate avoidance measures or other appropriate mitigation. Under CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to significant tribal cultural resources (as defined by PRC 21074), and archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project reroute or re-design, project cancellation, or identification of protection measures such as capping or fencing, PRC 20184.3(b)(2) provides examples of mitigation measures that lead agencies may consider to avoid or minimize impacts to tribal cultural resources. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

4.4 GEOLOGY AND SOILS (GEO)

GEO-1: CERTIFIED PALEONTOLOGIST

The project shall have a certified paleontologist, who meets the standards of SVP, on call to evaluate excavated material for paleontological significance. If the paleontologist makes a paleontologically significant discovery, all construction will stop within 50 feet of the find. The paleontologist will evaluate the significance and recommend any appropriate treatment of the site. At each location where a fossil was found, the paleontologist will maintain all appropriate data forms; record pertinent geologic and stratigraphic data; take notes and photographs and map the location; collect and submit for analysis any necessary sediment samples; and ensure all records and data of the find are curated at an accredited institution. The paleontologist will also prepare a report for any significant finds and submit to the appropriate entities, including Fresno County records.

4.5 HAZARDOUS MATERIALS (HAZ)

HAZ-1. PREPARE AND IMPLEMENT A SPILL PREVENTION AND RESPONSE PLAN (SPRP).

To help avoid and minimize potential accidental spills during construction, a project specific SPRP would be prepared by the construction contractor prior to construction that conforms to applicable local, state, and federal requirements. The SPRP would be on site during construction and distributed to all workers and managers prior to construction. The SPRP shall include measures that ensure the safe transport, storage, use, and disposal of hazardous materials used or encountered during construction. The construction contractors shall be required to comply with the SPRP and applicable federal, state, and local laws. The project sponsor would provide compliance oversight. The plan shall outline measures for specific handling and reporting procedures for hazardous materials and disposal of hazardous materials removed from the site at an appropriate offsite disposal facility.

The federal reportable spill quantity for petroleum products, as defined in EPA's CFR (40 CFR 110), is any oil spill that 1) violates applicable water quality standards, 2) causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or 3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. If a spill is reportable, the construction contractor shall notify the project proponent who shall inform the applicable county agency and arrange for the appropriate safety and cleanup crews to ensure the spill prevention plan is followed. A written description

of reportable releases must be submitted to the RWQCB and the applicable county agencies. This submittal must include 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 would be documented on a spill report form. If a spill has occurred, the applicant shall coordinate with responsible regulatory agencies to implement measures to control and abate contamination.

4.6 HYDROLOGY AND WATER (WAT)

WAT-1. PREPARE AND IMPLEMENT A STORMWATER POLLUTION PREVENTION PLAN.

Because soil surface disturbance for the proposed project would be greater than one acre, specific erosion control measures would be identified as part of the CGP and SWPPP required for construction. The construction contractor would prepare an SWPPP that details measures to control erosion, contain sediments, and prevent turbidity and leakage of vehicle and equipment fluids during construction. The SWPPP would be approved by the project sponsors and would ensure compliance with the plan throughout the construction process. Measures from the SWPPP would be incorporated into the contractor's work plan and would be implemented prior to groundbreaking activities. The project sponsors would comply with requirements, including preparation and implementation of the SWPPP and the NPDES General Permit for Stormwater Discharges from Construction and Land Disturbing Activities issued by the SWRCB.

WAT-2. PREPARE A FLOOD FLOW CAPTURE PLAN.

MAGSA will develop a Flood Flow Capture Plan (FFCP). The FFCP will identify parcel and field requirements and management under flood flow capture. The FFCP will provide guidance on selecting and ranking fields as suitable for OFR, provide management practices for implementing OFR, provide guidelines (e.g., crop calendars) for integrating OFR and farming practices, and define monitoring programs. The FFCP will consider factors affecting the transport of salts and nutrients to groundwater including fertilizer practices, potential for higher rate OFR rates and resulting dilution, and past land uses. As part of the FFCP, MAGSA will require documentation that participating OFR fields are in compliance with the nitrogen management performance standards approved by the CVRWQB and other regulatory programs, and in compliance with both CEQA and NEPA mitigation measures. The FFCP will also identify data gaps and recommend data collection programs and modeling efforts to address those data gaps. A FFCP has been developed for Phase 1 (Bachand and Cameron 2021).

WAT-3. MANAGE USE OF HERBICIDES AND PESTICIDES.

The project proponent will comply with all regulations of CDPR regarding the use of herbicides and pesticides in areas designated for groundwater recharge.

WAT-4. COMPLIANCE WITH IRRIGATED LANDS REGULATORY PROGRAM.

To address concerns associated with effects to groundwater quality from flushing nitrates and salts, landowners participating in the OFR program will be required to be in compliance with water quality requirements under the Irrigated Lands Regulatory Program (ILRP).

WAT-5. INSPECT WATER CONTROL STRUCTURES.

During initial flooding of fields under the OFR program, MAGSA will visually inspect all levees that protect infrastructure or surrounding buildings to ensure that there are no structural deficiencies that may lead to levee failure under normal operating conditions. The levees will be re-inspected before floods, or

after events which may damage the levees, such as earthquakes. The levee inspectors will record the dates and locations of all levees inspected, any deficiencies identified, and remedial measures used to correct deficiencies.

4.7 TRANSPORTATION AND CIRCULATION (TRA)

TR-1: PREPARE AND IMPLEMENT A TRAFFIC SAFETY PLAN.

The project proponent will require the construction contractor to prepare and implement a traffic safety plan before the onset of the construction phase of the proposed project. The traffic safety plan shall be reviewed and approved by the Fresno County Department of Public Works and Planning. The plan shall address:

- Appropriate vehicle size and speed,
- Travel routes,
- Detour or lane-closure plans,
- Flag-person requirements,
- Locations of turnouts to be constructed,
- Coordination with law enforcement and fire control agencies,
- Coordination with California Department of Transportation personnel (for work affecting state road rights-of-way),
- Emergency access to ensure public safety, and
- Traffic and speed limit signs.

It shall also be specific in this plan that before beginning construction activities, the project proponent or the construction contractor shall contact local emergency-response agencies (Fresno County Sheriff and Fire Departments) to provide information on the timing and location of any traffic control measures required to complete the proposed project. Emergency-response agencies would be notified of any change to traffic control measures as the construction phases proceed so that emergency-response providers can modify their response routes to ensure that response time would not be affected.

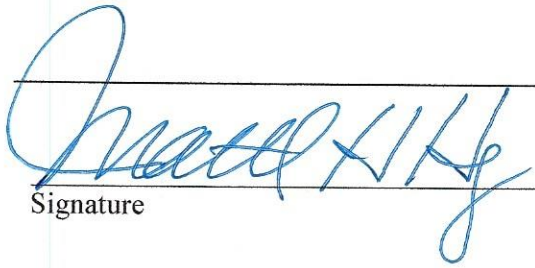
5 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below may be affected by this project, as indicated by the checklist on the following pages

<input checked="" type="checkbox"/>	Aesthetics	<input type="checkbox"/>	Agriculture and Forest Resources	<input checked="" type="checkbox"/>	Air Quality
<input checked="" type="checkbox"/>	Biological Resources	<input checked="" type="checkbox"/>	Cultural/Paleo Resources	<input checked="" type="checkbox"/>	Geology /Soils
<input checked="" type="checkbox"/>	Greenhouse Gas Emissions	<input checked="" type="checkbox"/>	Hazards & Hazardous Materials	<input checked="" type="checkbox"/>	Hydrology / Water Quality
<input type="checkbox"/>	Land Use / Land use Planning	<input type="checkbox"/>	Mineral Resources	<input checked="" type="checkbox"/>	Noise
<input type="checkbox"/>	Population / Housing	<input checked="" type="checkbox"/>	Public Services	<input type="checkbox"/>	Recreation
<input checked="" type="checkbox"/>	Transportation/Circulation	<input checked="" type="checkbox"/>	Tribal Cultural Resources	<input checked="" type="checkbox"/>	Utilities / Service Systems
<input type="checkbox"/>	Wildfire	<input checked="" type="checkbox"/>	Energy	<input checked="" type="checkbox"/>	Mandatory Findings of Significance

DETERMINATION: On the basis of this initial evaluation:

<input type="checkbox"/>	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
<input checked="" type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
<input type="checkbox"/>	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
<input type="checkbox"/>	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
<input type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

11-5-2021

Date

Signature

Date

Signature

Date

6 EVALUATION OF ENVIRONMENTAL IMPACTS

This chapter describes resources that are found in the study area and describes the effects that implementation of the proposed project may have on those resources. Impacts to resources may typically result from the construction of the proposed project, or the operation and maintenance of the project. For each resource area, the potential impacts resulting from implementation of the proposed project are evaluated for their level of significance.

The categories used to designate impact significance are described below:

- No Impact A project is considered to have no impact if there is no potential for impacts, or if the environmental resource does not exist within the project area or the area of potential effect. For example, there would be no impacts related to wastewater disposal if the project would not involve the production of wastewater.
- Less than Significant This determination applies if there is some impact, but not one that qualifies under the significance criteria as a significant impact.
- Less than Significant with Mitigation This determination applies to impacts that exceed significance criteria, but for which feasible mitigation is available to reduce the impacts to a less than significant level.
- Potentially Significant This determination applies to impacts that are significant but for which: (1) no feasible mitigation has been identified to reduce the impact to a less than significant level, or (2) feasible mitigation has been identified but the residual impact remains significant after mitigation is applied. Therefore, the impact is considered significant and unavoidable.

Determination of impact is driven by the application of significance criteria. These are the thresholds which trigger a determination of impact significance. In turn, significance criteria are determined through evaluation of the regulatory setting of the area from a Federal, State, and local standpoint. When no regulatory guidelines are available, generalized criteria can be substituted.

In cases where impacts are expected, but which can be reduced with adequate mitigation, those mitigation measures are described. A revised level of significance may result from mitigation. In some cases, less than significant determinations are made, but application of mitigation may still be warranted to further reduce potential impacts (CEQA Section 15021).

Impact assessment takes into consideration construction and operational impacts. Construction impacts are those that may occur during implementation of construction actions and are compared to baseline conditions under which no project would occur. Operational impacts are those that may occur after the project has been completed.

The analysis of potential impacts and mitigation measures is based on pre-determined significance criteria. The significance criteria used in this IS are taken from the Appendix: Environmental Checklist Form included in the CEQA Guidelines (CEQA Guidelines, Appendix G).

- (1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (for example, the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (for example, the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

- (2) All answers must take account of the whole action involved, including off site as well as on site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- (3) Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
- (4) "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level [mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced].
- (5) Earlier analyses may be used where, pursuant to tiering, programmatic environmental impact report (EIR), or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
 - a. Earlier Analysis Used. Identify and state where they are available for review.
 - b. Impacts Adequately Addressed. Identify which effects from the checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
 - c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- (6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts. Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- (7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
- (8) This form is only suggested, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
- (9) The explanation of each issue should identify:
 - a. The significance criteria or threshold, if any, used to evaluate each question; and
 - b. The mitigation measure identified, if any, to reduce the impact to less than significance.

6.1 AESTHETICS (AES)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6.1.1 Environmental Setting

Aesthetic resources include the visual characteristics of the existing landscape and developed features. Analysis of aesthetic impacts requires the subjective assessment of the changes to visual characteristics resulting from the construction of the proposed project. Aesthetics impacts analysis considers project design in relation to the surrounding visual character, including natural landscape features, scenic designations, and existing structure types, as well as the potential for the project to obstruct scenic views or vistas and create new sources of light or glare. The proposed project's specific design would be considered to have a significant adverse environmental effect on visual quality only if it were to cause a substantial, demonstrable, negative change.

Local visual conditions within the project area are dominated by agricultural production, paved and unpaved roadways, irrigation facilities, and overhead utilities. Agricultural production includes annual crops, such as peppers, onions, and tomatoes, and perennial crops, including almonds and pistachios. Fallow, or uncultivated lands, are also present on a rotational basis throughout the project area. Human development in the area includes roads, bridges, buildings, and irrigation facilities. Major road arterials are two-lane paved roads with an extensive network of two-lane dirt roads radiating through farm fields. Along roadways are irrigation ditches, turnouts, reservoirs, culverts, bridges, and wood or steel pole utility lines. Farming operations include expansive cover and warehouses for dairy farms, as well as

storage and maintenance buildings. The area has few private homes and no commercial retail space. As farmland, it has been highly altered from its native condition.

Long-range views from the project area may include the Sierra Nevada Mountain Range to the east and the Diablo Range to the west on clear days. The Central Valley is a patchwork of dynamic agricultural land uses that changes seasonally and annually. Long-range views into the project area from these ranges are too distant to provide detailed visual characteristics.

Those experiencing views in the project area include primarily farm owners, operators, and workers, as well as the few homeowners in the area, and those passing through on their way to the cities in the region.

6.1.2 Regulatory Setting

Federal

There are no federal regulations for aesthetics and visual resources.

State

California Scenic Highway Program

The California Scenic Highway Program, governed by the Streets and Highways Code, §260 et seq., is intended to preserve and protect highway corridors in areas of outstanding natural beauty from changes that would diminish the aesthetic value of the adjacent lands. There are no Caltrans-designated scenic highways in the project area or vicinity (Caltrans 2019). Construction and operation of the project would not be subject to the requirements of the Scenic Highway Program.

Local

Fresno County General Plan

The Fresno County General Plan provides the following policies and goals that apply to scenic and visual character within agricultural areas or along transportation corridors (Fresno County, 2000). Although several policies apply to visual resources, they are not specific to the conditions within the project area.

Policy LU-B.11 The County shall require that new development requiring a County discretionary permit be planned and designed to maintain the scenic open space character of rangelands including view corridors of highways. New development shall utilize natural landforms and vegetation in the least visually disruptive way possible, and use design, construction and maintenance techniques that minimize the visibility of structures on hillsides, ridgelines, steep slopes, and canyons.

Policy PF-J.2 The County shall work with local gas and electric utility companies to design and locate appropriate expansion of gas and electric systems, while minimizing impacts to agriculture and minimizing noise, electromagnetic, visual, and other impacts on existing and future residents.

Policy OS-A.18 The County shall require that natural watercourses are integrated into new development in such a way that they are accessible to the public and provide a positive visual element and a buffer area between waterways and urban development in an effort to protect water quality and riparian areas.

Goal OS-L and its associated policies are intended to conserve, protect, and maintain the scenic quality of land and landscape adjacent to scenic roads in Fresno County. There are no designated scenic highways, roads, or vistas in the project area under the General Plan.

6.1.3 Potential Impacts

AES a): Would the proposed project have a substantial adverse effect on a scenic vista? (No Impact)

The proposed project would result in a temporary adverse effect on the immediate viewshed during the construction period. Visual impacts would result from the presence of construction equipment and may include equipment that rises near or above surrounding vegetation and the horizon line. Construction equipment would be visible to residents in the immediate area of construction and those passing on nearby roadways. These impacts would be temporary, occurring during the construction period only, and would cease once construction ends. The Fresno County General Plan does not specify any scenic vistas or roadways in the project area or vicinity (Fresno County 2000). There would be no impacts to scenic vistas.

AES b): Would the proposed project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? (No Impact)

Proposed construction activities and operational conditions would not affect rocky outcrops, as these types of resources do not occur in the impact area. The project area is not within a state scenic highway and there are no state scenic highways in the project area or vicinity (Caltrans 2019). Similarly, the Fresno County General Plan does not list scenic resources as being present in the project area. Therefore, there would be no impact to scenic resources.

AES c): Would the proposed project, in non-urbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? (Less Than Significant Impact)

Temporary impacts could result to visual resources during the construction of the project. The presence of construction equipment, land clearing and earth moving, and increased generation of dust from exposed soils could all contribute to diminished aesthetic appeal of the project area. However, ongoing visual conditions of the project area are already similar to the visual components of construction. Because visual impacts due to construction would be temporary and would only be incrementally more observable than ongoing practices at the site, impacts to visual character or quality due to construction is less than significant.

Operations of the newly constructed canals would require minimal increases in truck and car traffic within the project area, and new infrastructure, such as weirs, canals, and water pumps, would blend in with the existing farming landscape. As visual impacts due to operations would blend with existing farm conditions and would not generate any substantial change in visual character or quality, operations impact to visual resources are less than significant.

AES d): Would the proposed project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? (Less Than Significant Impact)

On-farm flooding of fallow fields would introduce glare into the environment, but this glare would be the natural reflective effect of water, and this impact would be less than significant. During construction, temporary security lighting will likely be installed and used at staging areas. Such lights would be hooded and have shields installed to contain glare and reduce potential for light-related impacts to nearby dwellings and would be removed at the end of the construction period. There would be no new permanent sources of light associated with the proposed project area.

6.2 AGRICULTURAL AND FOREST RESOURCES (AFR)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.2.1 Environmental Setting

The proposed project is located in Fresno County within the San Joaquin Valley, one of the most productive agricultural areas in the United States. Fresno County is the leading agricultural county in California, producing over \$7.7 billion in 2019 (CDFA 2020) and supporting 9% of jobs in Fresno County (U.S. Census Bureau 2019). Twenty-four percent of the jobs in Raisin City, within the proposed project area, are related to agriculture (U.S. Census Bureau 2019). Fresno County's top commodities include almonds, pistachios, livestock, and table grapes (CDFA 2020). Within the proposed project area, annual crops (including peppers, onions, tomatoes, and carrots), perennial crops (including almonds, walnuts, pistachios, and grapes), and pasture and dairy operations are the most important commodities. NRCS Soil Service Geographic Database has classified soils in the study footprint area as sandy and loamy soil types (NRCS 2013).

6.2.2 Regulatory Setting

Federal

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that to the extent possible federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every two years. The FPPA does not authorize the federal government to regulate the use of private or nonfederal land or, in any way, affect the property rights of owners. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

State

California Land Conservation Act

The California Land Conservation Act, more popularly known as the Williamson Act, was the result of a study by the Assembly Agriculture Committee in cooperation with the CDFA and others. The study eventually led to the passage of legislation in 1965. Under the Williamson Act, an owner of agricultural land may enter into a contract with the County if the landowner agrees to restrict use of the land to the production of commercial crops for a term of not less than 10 years. The term of the contract is automatically extended each year unless notice of cancellation or nonrenewal is given. Certain compatible uses are also allowed on the property. In return, the landowner is taxed on the capitalization of the income from the land and not on the Proposition 13 value. As of 2017, there are more than 12 million acres enrolled in the Williamson Act in 52 counties in the state (CDC 2021). Within the proposed project area, 34,758 acres are enrolled (Figure 6.2.1).

California Department of Conservation (CDC), Farmland Mapping and Monitoring Program (FMMP)

The FMMP produces maps and statistical data used for analyzing impacts to California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every two years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance.

County and Regional

The proposed project area is addressed in the Fresno County General Plan (Fresno County 2000), and more detailed information, including goals and policies, can be found in the Land Use and Planning Section. Most of the proposed project area is zoned AE-20, Exclusive Agriculture with a 20-acre minimum lot size. Raisin City is zoned A-1, Agricultural District.

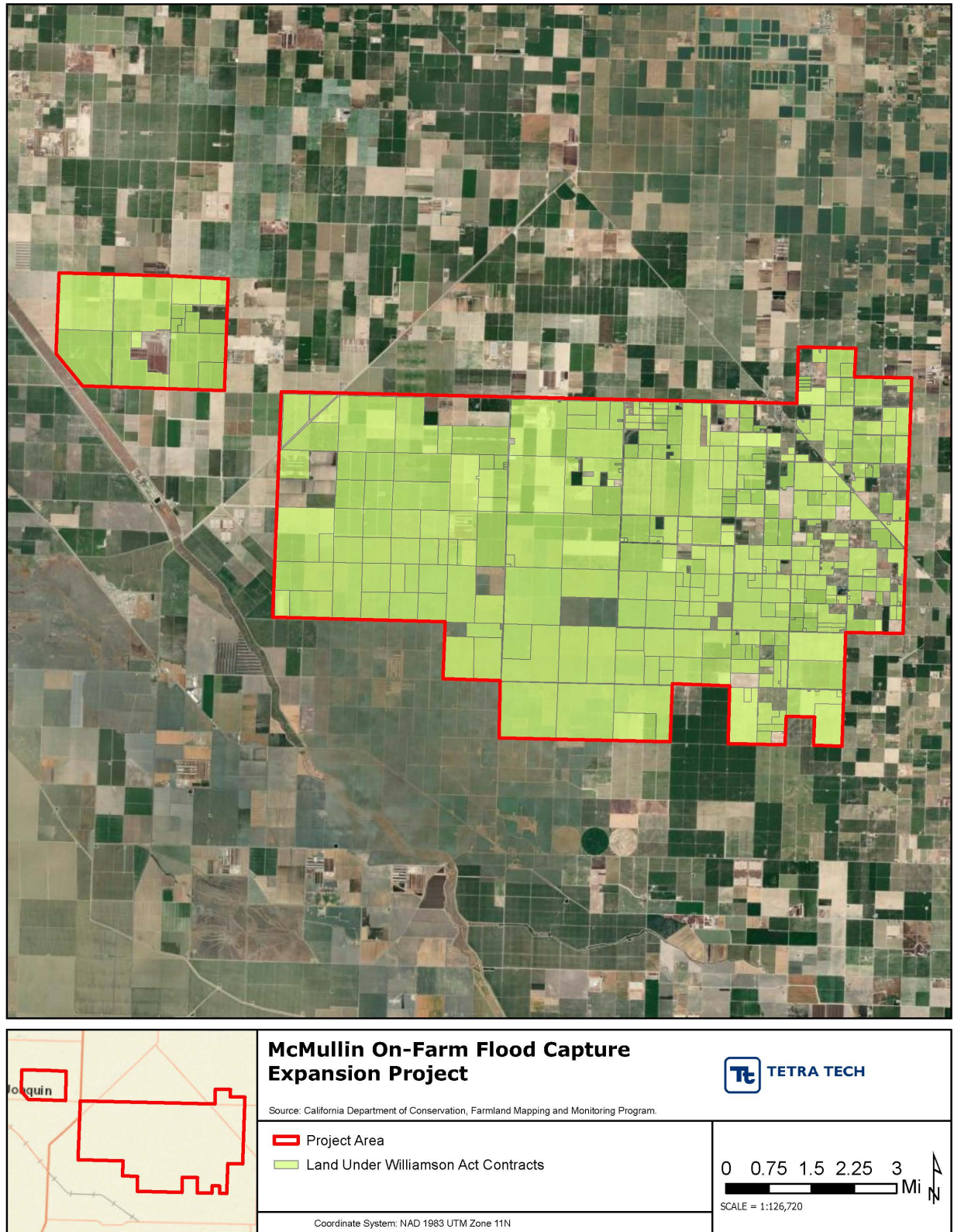


Figure 6.2.1. McMullin On-Farm Flood Capture Expansion Project, land under Williamson Act Contracts

6.2.3 Potential Impacts

AFR a): Would the proposed project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use? (Less Than Significant Impact)

The project area is comprised of lands classified by the California Resources Agency (CRA) as being prime or unique farmlands or farmlands of statewide importance (Figure 6.2.2). These lands are defined as follows:

Prime Farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and as available for these uses. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied.

Unique Farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of crops when properly managed.

Farmland of Statewide Importance is farmland similar to prime farmland but with minor shortcomings, such as greater slopes or less ability to store moisture. Farmland of local importance are those that are important to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

The majority of the project area (17,376 acres) is considered farmland of statewide importance followed by prime farmland (13,212 acres). A lesser area is categorized as unique farmland (8,083 acres), and lesser still is the area categorized as farmland of local importance (203 acres). The remainder of the land in the project area is not categorized in this manner.

Proposed use of existing prime and unique farmlands or farmlands of statewide or local importance for aquifer recharge is not considered a conversion from agricultural use to nonagricultural use. According to the California Code, Public Resources Code, §65570, "amount of land converted from agricultural use" means those lands which were permanently converted or committed to urban or other nonagricultural uses and were shown as agricultural land on Important Farmland Series maps maintained by the CDC and in the most recent biennial report. The proposed project would not constitute a permanent change because the lands will still be used for agriculture or to support agricultural uses. Furthermore, it is noted that an essential element of this program is integrating flood flow capture with "normal" farming practices, as outlined in the project description section of this document. Aquifer recharge will occur on permanently flooded land, while non-permanent flooding will occur in concert with best farming practices for target crops. Therefore, the project will have a less than significant impact on the acreage of agricultural lands. Approximately 206 acres of agricultural lands will be taken out of agricultural production for the permanent easement and Main Canal. Of those acres, 81 are classified as prime farmland, 30 are unique farmland, and 105 are farmland of statewide importance. No farmland of local importance would be affected by the proposed project. This is not considered an impact because it comprises less than half a percent of the proposed project area, these lands could be converted back to productive agriculture at any time in the future, and the action is reversible. Additionally, much of the land that would be used

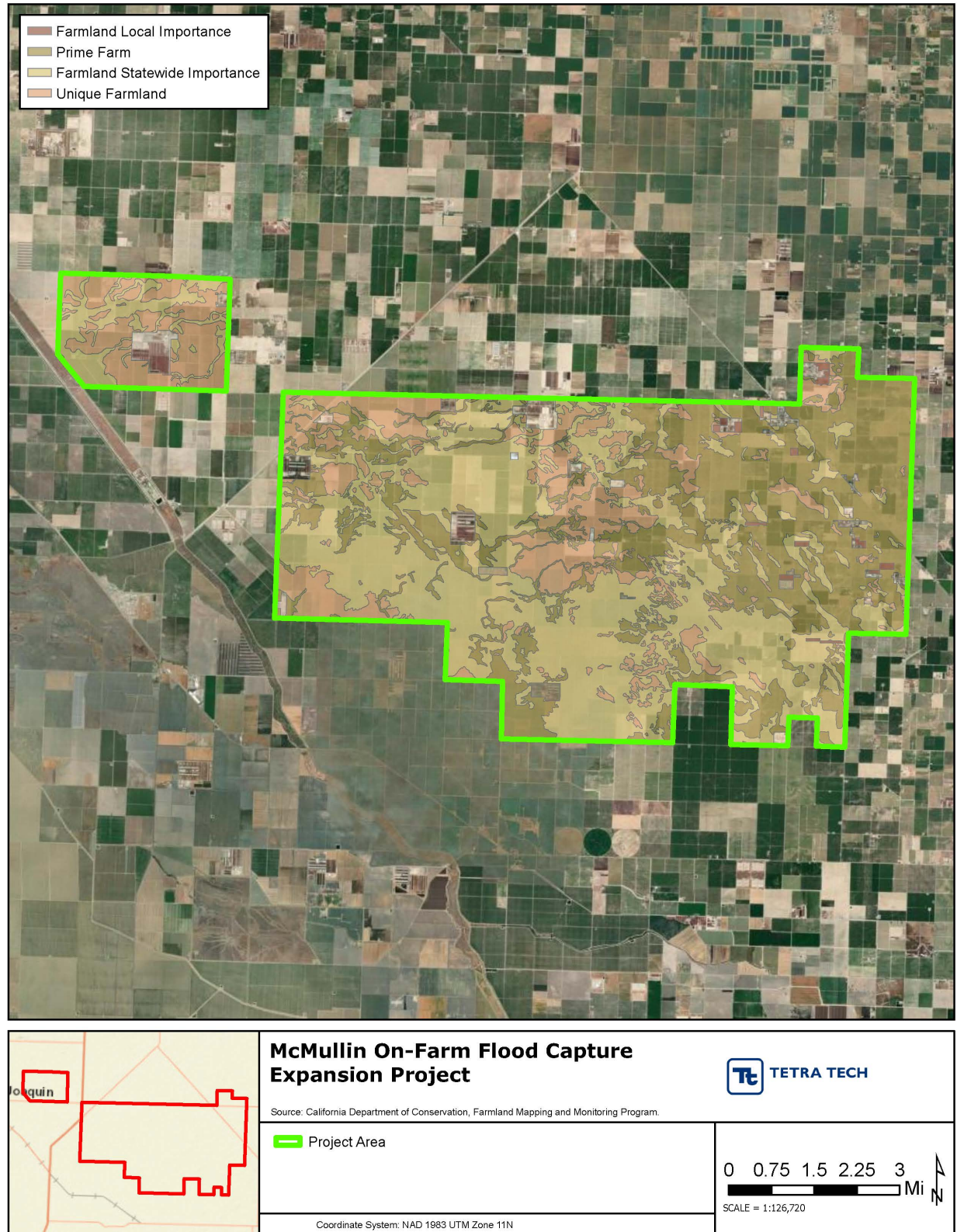


Figure 6.2.2. McMullin On-Farm Flood Capture Expansion Project, Farmland Designations for installation of the canal is in the roadside easement area and is not typically under active agricultural use.

Importantly, the McMullin Expansion Project, the MAGSA area, and the entire Kings Subbasin have been designated as critically over-drafted under California's Sustainable Groundwater Management Act (SGMA). MAGSA's GSP identifies actions to comply with SGMA, of which this project is included (MAGSA 2020). Barring success in bringing additional water supplies into the region through this and other identified projects, SGMA will result in retiring agricultural lands throughout the Kings Subbasin, including within MAGSA and the Project Area. Hanak et al (2019) predict under the best circumstances in which new water supplies are brought into the San Joaquin Valley and improvements are made in water trading and transfers, between 535,000 and 750,000 acres of farmland would need to be retired to balance the San Joaquin Valley's water supply. Considering the San Joaquin Valley's 5 million acres of irrigated farmland, this decrease represents a 10 – 15% retirement throughout the San Joaquin Valley (Hanak et al, 2019). Thus, this project is critical for the Project Area, MAGSA and the Kings Subbasin in helping maintain agricultural lands in production and in use, and out of fallowing or retirement.

AFR b): Would the proposed project conflict with existing zoning for agricultural use, or a Williamson Act contract? (No Impact)

With the exception of Raisin City, the proposed project area is zoned AE-20, or Exclusive Agriculture with a 20-acre minimum lot size. Raisin City is zoned A-1, Agricultural District. No zoning changes would result from construction of the canal or on-farm flood capture. 34,758 acres of the project area are currently under Williamson Act contracts, but the proposed on-farm flood capture would be consistent with uses allowed under the Williamson Act.

The proposed project would allow for continuation of current agricultural practices. The current practice at the flood capture site is to farm only a portion of the property each year and fallow the rest, a pattern which will be maintained. Recharge will also generally occur outside of the growing season over much of the land, and thus would not preclude the grower from planting a crop shortly after seasonal recharge operations are ended.

AFR c): Would the proposed project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? (No Impact)

The following definitions refer to forest lands intended for timber harvest (California Land Conservation Assistance Network 2013). Timber includes trees of any species maintained for eventual harvest for forest products purposes, whether planted or of natural growth, standing or down, on privately or publicly owned land, including Christmas trees, but does not mean nursery stock. Timberland includes privately owned land, or land acquired for state forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre. Timberland production zone (TPZ) includes areas which been zoned pursuant to Government Code Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses. No portion of the project area can be categorized as timber, timberland, or TPZ and there would be no impacts to forest resources.

AFR d): Would the proposed project result in the loss of forest land or conversion of forest land to non-forest use? (No Impact)

The proposed project area is entirely utilized for agricultural crops and does not contain forest land. There would be no impacts to forest land.

AFR e): Would the proposed project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to non-forest use? (No Impact)

Approximately 38,874 acres of farmland in the project area (96%) are considered prime or unique farmland or farmland of local or statewide importance, which has been addressed in AFR a). There are no other agricultural lands and no existing forest lands that could be converted to other uses and therefore there are no impacts.

Land use in the project area could change minimally over the next 20 years, the time frame during which SGMA requires critically over-drafted basins to achieve sustainable groundwater management in compliance with SGMA. Barring the implementation of projects that bring additional water resources to a region, agricultural lands will need to be rotationally fallowed or permanently retired. Hanak et al (2019) estimate that new water supplies can address about 25% of the water supply imbalance within the San Joaquin Valley. The current overdraft within the San Joaquin Valley is approximately 1.8 MAF. Hanak et al (2019) estimate 780,000 acres are needed to offset overdraft if no new water supplies or improvements in water trades and transfers are made. Agricultural land uses will not change as a result of the proposed project, rather agricultural land uses will be more stable than under current conditions due to greater predictability of irrigation water supplies.

6.3 AIR QUALITY (AIR)

AIR QUALITY (AIR)	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.3.1 Environmental Setting

The topology and meteorology of the San Joaquin Valley (SJV) are conducive to trapping air pollutants for extended periods and the formation of photochemical smog. The SJV is bordered by the Sierra Nevada Mountains in the east (8,000 to 14,491 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 7,981 feet in elevation) and open to the Sacramento Valley and the San Francisco Bay Area to the north. The bowl-shaped topography inhibits movement of pollutants out of the valley. Low precipitation levels, cloudless days, high temperatures, and light winds during the summer in the SJV are conducive to ozone formation. Inversion layers in the atmosphere during the winter can trap emissions of directly emitted PM_{2.5} and PM_{2.5} precursors within the SJV for several days, accumulating to unhealthy levels.

6.3.2 Regulatory Setting

Clean Air Act (CAA). The CAA (42 USC 7401, et seq.) delegates primary enforcement to the states, with direct oversight by the EPA. The CAA requires EPA to set national ambient air quality standards (NAAQS) (40 CFR part 50) for pollutants considered harmful to public health and the environment. The CAA established two types of standards. Primary standards were established to promote human health with an adequate margin of safety to protect those most vulnerable, such as asthmatics, infants, and elderly persons. Secondary standards were established to promote human welfare to prevent impaired visibility, building, and crop damage, etc.

The federal CAA requires areas with air quality violating the NAAQS to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The SIP contains the strategies and control measures that states will use to attain the NAAQS. The federal CAA amendments of 1990 require states containing areas that violate the NAAQS to revise their SIP to incorporate additional control measures to reduce air pollution.

California Clean Air Act. The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required CARB to establish California ambient air quality standards (CAAQS) (California Air Resources Board, 2010). The standards for criteria pollutants established by CARB are generally more restrictive than the NAAQS. CARB has also established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the criteria air pollutants described below.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and area wide emission sources and provides districts with the authority to regulate indirect sources (i.e., sources that are not stationary or regulated as a stationary source, such as construction sources).

Federal and state regulations designate areas with levels above the standards as nonattainment areas, and areas with levels below as attainment areas. Attainment status of Fresno County for both the NAAQS and CAAQS is outlined in Table 6-1.

San Joaquin Valley Air Pollution Control District. The San Joaquin Valley Air Pollution Control District (SJVAPCD, District) is a public health agency whose mission is to improve the health and quality of life for all San Joaquin Valley residents through efficient, effective, and entrepreneurial air quality-management strategies. Eight counties, including Fresno County, are within the District.

SJVAPCD is responsible for the implementation of programs and regulations required by the federal CAA and the CCAA. To meet that responsibility, SJVAPCD has adopted several air quality attainment plans over the years that identify measures needed in the Valley to attain federal and state air quality standards. SJVAPCD has implemented these plans and adopted nearly 650 rules that have resulted in significant emissions reductions. SJVAPCD's plans include emissions inventories that identify sources of air pollutants, evaluations for feasibility of implementing potential opportunities to reduce emissions, sophisticated computer modeling to estimate future levels of pollution, and a strategy for how air pollution will be further reduced. As a result, PM_{2.5} and ozone levels are now at historically low levels.

As seen on Table 6-1, the Valley is designated nonattainment for the federal 8-hour ozone standard as well as both the annual and 24-hour PM_{2.5} standard. In response, SJVAPCD has adopted the 2020 RACT Demonstration for the 2015 8-Hour Ozone Standard of 70 parts per billion and the 2016 Plan for the 2008

8-Hour Ozone Standard of 75 parts per billion 8-hour ozone standard. These plans demonstrate attainment of the national ozone standard. attainment adopted the 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards on November 15, 2018. This plan addresses the EPA federal 1997 annual PM_{2.5} standard

Table 6-1. Attainment Status for San Joaquin Valley

Pollutant	Averaging	CAAQS		NAAQS	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 Hour	0.070 ppm	Nonattainment	0.070 ppm	Nonattainment/Extreme
	1 Hour	0.090 ppm	Nonattainment/Severe	Revoked	n/a
Carbon Monoxide	8 Hour	9.0 ppm	Attainment/Unclassified	9.0 ppm	Attainment/Unclassified
	1 Hour	20 ppm		35 ppm	
Nitrogen Dioxide	1 Hour	0.18 ppm	Attainment	100 ppb	Attainment/Unclassified
	AAM	0.030 ppm		53 ppb	
Sulfur Dioxide	24 Hour	0.04 ppm	Attainment	n/a	Attainment/Unclassified
	3 Hour	n/a		0.5 ppb	
	1 hour	0.25 ppm		75 ppm	
Particulate Matter (PM ₁₀)	AAM	20 µg/m ³	Nonattainment	n/a	Attainment*
	24 Hour	50 µg/m ³		150 µg/m ³	
Fine Particulate Matter (PM _{2.5})	AAM	12 µg/m ³	Nonattainment	12 µg/m ³	Nonattainment
	24 Hour	n/a		35 µg/m ³	
Lead (Particulate)	Rolling three-month period,	n/a	n/a	0.15 µg/m ³	No Designation/Classification
Lead (Particulate)	30 Day Average	1.5 µg/m ³	Attainment	n/a	n/a
Hydrogen Sulfide	1 Hour	0.03 ppm	Unclassified	n/a	n/a
Sulfates	24 Hour	25 µg/m ³	Attainment	n/a	n/a
Visibility Reducing Particles	8 Hour	**	Unclassified	n/a	n/a
Vinyl Chloride	24 Hour	0.010 ppm (26 µg/m ³)	Attainment	n/a	n/a

Source: San Joaquin Valley Air Pollution Control District. 2015.
Micrograms per cubic meter (µg/m³), parts per million (ppm), parts per billion (ppb)
** Statewide Visibility Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70%. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

of 15 µg/m³ and 24-hour PM_{2.5} standard of 65 µg/m³; the 2006 24-hour PM_{2.5} standard of 35 µg/m³; and the 2012 annual PM_{2.5} standard of 12 µg/m³.

SJVAPCD's Indirect Source Review (Rule 9510), applicable to construction and operation of new development projects, including transportation and transit development projects, is applicable to this project. Rule 9510 requires certain on-site emission reductions of PM₁₀ and NO_x emissions relative to baseline, or a fee for off-site emissions reductions, for projects which exceed two tons per year of NO_x or PM₁₀.

6.3.3 Potential Impacts

The potential for the proposed project to create adverse impacts to the San Joaquin Valley air quality was assessed and documented in the air quality technical document prepared for the project (Tetra Tech 2021b) (Attachment B). The assessment considered potential impacts associated with both the construction and operation of the project. Construction emissions, including heavy duty equipment exhaust, vehicular trip exhaust and fugitive dust, was estimated using the Road Construction Emission Model. Operational emissions are limited to combustion by-products associated with the internal combustion engines powering a portion of the pumps to be installed at three pump stations. Operational emissions were estimated using engine specific CARB certification values (CARB 2020a.)

AIR a): Would the proposed project conflict with or obstruct implementation of an applicable air quality plan? (No Impact)

SJVAPCD has established thresholds of significance for criteria pollutant emissions to ensure compliance with applicable air quality plans and attainment of state and national standards. The District's significance thresholds compared to the estimated emissions associated with the proposed project are shown in Tables 6-2 and 6-3. As shown in these tables, all estimated emissions are below District thresholds.

AIR b): Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation? (Less Than Significant Impact)

and

AIR c): Would the proposed project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal, state, or regional ambient air quality standard? (Less Than Significant Impact)

The estimated emissions associated with the proposed project, shown in Table 6-2 and Table 6-3, are all less than the thresholds of significance. Air quality impacts associated with the construction of the proposed project would be temporary in nature and therefore are not expected to contribute cumulatively to the net increase of any pollutants.

Air quality impacts associated with the operation of the proposed project are estimated to be a very small fraction of the thresholds of significance, as shown in Table 6-3, and therefore are not expected to contribute cumulatively to the net increase of any pollutants.

AIR d): Would the proposed project's emissions expose sensitive receptors to substantial pollutant concentrations? (Less Than Significant Impact)

The proposed project area is exclusively agricultural land use except for Raisin City, a census designated place partially encompassed by the northeastern boundary of the proposed project area. Sensitive receptors identified in the vicinity are the Raisin City Elementary School within the proposed project

boundary; Caruthers High School, approximately one mile east of the southeast corner of the proposed project boundary; Helm Elementary School, approximately two miles west of the southwestern corner of the proposed project boundary; San Joaquin Elementary School, approximately three miles west of the

Table 6-2. Construction Emissions

Emissions Component	Criteria Pollutant Emissions (Tons per Year)					
	ROG	NO _x	PM ₁₀	PM _{2.5}	SO _x	CO
Estimated Construction Emissions ¹	0.6	5.0	3.1	0.8	0.01	4.5
District Threshold ²	10	10	15	15	27	100
Above Threshold?	No	No	No	No	No	No
¹ Tetra Tech 2021b ² SJVAPCD 2015						

Table 6-3. Operations Emissions

Emissions Component	Criteria Pollutant Emissions (Tons per Year)					
	ROG	NO _x	PM ₁₀	PM _{2.5}	SO _x	CO
Estimated Operational Emissions ¹	0.05	0.02	0.002	0.002	ND	5.6
District Threshold ³	10	10	15	15	27	100
Above Threshold?	No	No	No	No	No	No
¹ Tetra Tech 2021b ² SO _x from Liquid Propane Gas considered insignificant. Not estimated here. ³ SJVAPCD 2015						

northwestern corner of the proposed project boundary; and Tranquility Elementary School and Tranquility High School approximately two miles northeast of the northeastern corner of the project boundary.

As shown on Table 6-3, the estimated emissions associated with the proposed project are all below the District's thresholds of significance. Emissions associated with the construction of the proposed project will be spread out over the 11.5-mile length of the proposed project. Emissions associated with the operation of the proposed project are estimated to be a small fraction of the thresholds of significance. The substantial distance between the emission sources and the potential sensitive receptors would result in significant dispersion of emissions. For these reasons, the proposed project's emissions are not expected to expose sensitive receptors to substantial pollutant concentrations.

AIR e): Would the proposed project create objectionable odors affecting a substantial number of people? (No Impact)

The only emissions anticipated to result from the proposed project are combustion emissions (construction equipment and pumps) and fugitive dust (earthmoving activities) as described and assessed above. Odors anticipated to arise from these sources are not considered to be objectionable in this instance as they would be dispersed before they reach any substantial population areas and would be generated on a temporary basis. There would be no impact.

6.4 BIOLOGICAL RESOURCES (BIO)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.4.1 Environmental Setting

The project area is located in the Kings River Basin of the San Joaquin Valley in rural Fresno County. The regional climate is characterized by semi-arid (Mediterranean) conditions typical of the central California San Joaquin Valley, including hot, dry summers and cool, moist winters. Mean annual average temperature is 65.2 degrees Fahrenheit and mean annual precipitation is 10.9 inches based on recorded data at Fresno Yosemite International Airport, 1990-2020 (AgACIS 2021). Topography in this agricultural region is generally flat to gently sloping.

Most of the valley is under cultivation with various agricultural crops and limited open, natural space. The Fresno Slough (James) Bypass, an ephemeral drainage, is found to the west-southwest of the project area and is adjacent to and just southwest of the North Expansion project area. The James Bypass may carry up to 4,736 cfs during flood flows but is dry through much of the year (Bachand et al. 2014). Paved and unpaved roads, many with adjacent agricultural ditches, dissect the entirety of the agricultural areas.

The biological resources team performed an initial desktop review of reference databases pertinent to special status species and sensitive habitats that may occur within the project area and region. Sources included the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database, which lists species protected under the federal Endangered Species Act (ESA) and other resources, such as critical habitat under USFWS jurisdiction that are known or expected to be on or near the project area (USFWS 2021a). The team also accessed the California Natural Diversity Database (CNDDB), which lists records of special status species and natural communities reported to the California Department of Fish and Wildlife (CDFW) (CDFW 2021).

Following the desktop study, the team performed a field survey to determine if special status species, habitats that may support special status species, evidence of special status species, or other sensitive habitats or environmental issues occurred within the project area (Tetra Tech 2021a) (Attachment C). During the survey, a team of biologists drove accessible roadways throughout the project area and recorded observations at points of interest noted during the desktop review. Such areas include dairies; locations of proposed project elements, such as pump stations and road crossings, groundwater dependent or other sensitive habitats and associated vegetation; and locations and points where representative biological features, suitable habitat for special status species, or evidence of wildlife use were observed. Since most of the project area is intensively managed for agricultural purposes, the biologists observed interiors of fields and orchards away from the roads to the extent possible from accessible rights-of-way. Biologists used binoculars to view areas or wildlife of interest distant from the observation locations and took one or more photographs at each data point to document the observed conditions.

The survey was documented in a Biological Reconnaissance Survey Report (Tetra Tech 2021a) (Attachment C). The results of the survey are summarized below.

Agriculture

Actively managed orchards, vineyards, row crops, and poultry and dairy product agricultural uses occupy the project area. Some lands are fallowed, disked, and/or being prepared for new orchard and vineyard plantings. Established crops included tree nuts, grapes, cherries, wheat, alfalfa, tomatoes, peppers, onions, and corn amongst other rotating crops. Most of the crops appeared to be either flood or drip irrigated. There are no areas subject to long-term flood irrigation, such as rice fields.

Roads driven throughout the project area were paved, dirt, and gravel surfaces. Some road shoulders contained mostly dry, shallow (~1–1.5 feet deep) agricultural ditches, though a few deeper (~4–6 feet deep), larger ditches were also encountered. Lift pumps transferring irrigation water into irrigation system distribution were observed at various locations adjacent to roads. In the northwest portion of the project

area, several gas wells were observed in operation co-located with agricultural fields. In addition, a truck-mounted drilling rig was observed near the co-located wells but was not in operation.

Plants

The plant community in the project area is typical of valley floor agricultural lands. The project area is comprised of row and field crops, vineyards, and orchards that have been leveled, irrigated, and intensively farmed for many years. Vegetation observed growing along roadside and farm field edges and adjacent to the Fresno Slough (James) Bypass included mainly annual and biennial broadleaf weed species, such as hairy fleabane (*Conyza bonariensis*), tumble pigweed (*Amaranthus albus*), prickly lettuce (*Lactuca serriola*), spikeweed (*Hemizonia pungens*), black mustard (*Brassica nigra*), redstem filaree (*Erodium cicutarium*), pineappleweed (*Matricaria matricarioides*), Russian thistle (*Salsola kali*), fiddleneck (*Amsinckia* spp.), and common groundsel (*Senecio vulgares*). In addition to the broadleaf weeds, annual and perennial grasses were observed at some roadside areas adjacent to and between crop/orchard/vineyard rows and in and adjacent to the Fresno Slough. Observed species included bermudagrass (*Cynodon dactylon*), sprangle-top (*Leptochola* spp.), rabbitsfoot grass (*Polypogon monspeliensis*), Johnsongrass (*Sorghum halepense*), crabgrass (*Digitaria* spp.), ryegrass (*Lolium* spp.), brome (*Bromus* spp.), barley (*Hordeum* spp.), wild oats (*Avena* spp.), and wheat (*Triticum* spp.).

Woody vegetation other than orchard trees was rarely observed. The only shrub species observed other than ornamental species planted or established in settlement areas was saltcedar (*Tamarix ramosissima*), which were single plants at two observed locations in/adjacent to the larger agricultural irrigation ditches. Tree species, other than orchard trees, were scattered and few throughout the project area and mostly concentrated where settlements were established. Most were smaller, ornamental trees adapted to the dry valley climate and planted for landscapes or windbreaks on private property. A few larger, mature deciduous and needleleaf evergreen trees were also observed in settlements.

Wildlife

Wildlife species which inhabit the project area are typical of dry valley floor intensively managed agriculture lands, including vineyards, row and field crops, orchards, and farm settlements. Coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*) are the predominant larger mammals in the area. California quail (*Callipepla californica*) and mourning dove (*Zenaida macroura*) are game species common to the area. Other species, including California ground squirrel (*Spermophilus beecheyi*), Audubon's cottontail (*Sylvilagus audubonii*), pocket gopher (*Thomomys bottae*), red-winged blackbird (*Agelaius phoeniceus*), Brewers blackbird (*Euphagus cyanocephalus*), European starling (*Sturnus vulgaris*), western scrub jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), western kingbird (*Tyrannus verticalis*), American robin (*Turdus migratorius*), house finch (*Haemorhous mexicanus*), American kestrel (*Falco sparverius*), and red-tailed hawk (*Buteo jamaicensis*) are common to the region. A variety of other migratory birds may use the area seasonally. Reptiles common to the region include the western fence lizard (*Sceloporus occidentalis*), western side-blotched lizard (*Uta stansburiana elegans*), alligator lizard (*Elgaria* spp.), and gopher snake (*Pituophis* spp.). Amphibians using ditches, canals, or agricultural ponds include Sierran tree frog (*Pseudacris sierra*), California toad (*Anaxyrus boreas halophilus*), and American bullfrog (*Lithobates catesbeianus*).

Wildlife observed during the survey included red-tailed hawk, red-winged blackbird, American crow, European starling, cliff swallow (*Petrochelidon pyrrhonota*), mourning dove, western scrub jay, killdeer (*Charadrius vociferus*), barn owl (*Tyto alba*), great egret (*Ardea alba*), and the California ground squirrel. Lizards were observed on eucalyptus trees in Raisin City Park but would immediately use the tree bark for cover and could not be identified. Tadpoles, presumably bullfrog species, were observed in a small, ponded depression within an agricultural ditch.

This low diversity of wildlife species observed in the project area is likely due to, and characteristic of, the large-scale conversion to agriculture and development (human intervention) in an area that once supported native riparian habitats, marshes, seasonal wetlands, and perennial grasslands. Row crops, orchards, and vineyards are intensively managed and frequently disturbed, and available habitats are highly fragmented and therefore of limited value. Though the Fresno Slough (James) Bypass occurs west-southwest of the project area and serves as a wildlife corridor, no wildlife corridors are found within the project area.

Special Status Plants, Wildlife, and Natural Communities in the Project Area

Special status species discussed here are those listed in the referenced databases, including species that have statutory protections, such as, but not limited to, federal- and state-listed species under respective Endangered Species Acts and those that are of special concern to CDFW. Based on the desktop literature review of the USFWS and CNDDDB database queries, 7 listed or otherwise special status plant and 13 listed or otherwise special status wildlife species may occur within the project area. Within a 5-mile radius and the surrounding eight USGS 7.5-minute topographic quadrangles of the project area, 15 listed or otherwise special-status plant and 25 listed or otherwise special status wildlife species have the potential to occur (CDFW, 2021a; USFWS, 2021a) (Table 6-4). The special status designation, habitat association, evaluation of the presence of suitable habitat, and potential impacts by the project are summarized for these species in Appendix A of Attachment C, respectively.

No federally designated critical habitat, or habitat areas essential to the conservation of a species listed under the federal ESA, occurs within the project area. No special status or sensitive natural communities, or communities which are considered rare within the region and may provide habitat conditions for special status wildlife species, were identified as potentially occurring in the CNDDDB query within the project area or the 5-mile vicinity of the project area. No other habitats or microhabitats for sensitive plant species (e.g., vernal pools, freshwater marsh, alkaline soils, adobe-heavy clay soils, alkali sink habitat, chenopod scrub habitat, cismontane woodlands, pinyon and juniper woodlands, meadows, playas, grasslands with rolling hills) are present on the project area or in the project vicinity.

Table 6-4. Special Status Species that may occur within the Project Area and Vicinity

Scientific Name	Common Name	Fed. Status	State/C NPS Status	Occurrence within the Project Area ¹
Birds				
<i>Agelaius tricolor</i>	Tricolored blackbird	None	T,SSC/-	Unlikely
<i>Athene cunicularia</i>	Burrowing owl	None	SSC/-	Possible
<i>Buteo swainsoni</i>	Swainson's hawk	None	T/-	Possible
<i>Charadrius montanus</i>	Mountain plover	None	SSC/-	Possible
Mammals				
<i>Antrozous pallidus</i>	Pallid bat	None	SSC/-	Absent
<i>Dipodomys ingens</i>	Giant kangaroo rat	E	E/-	Unlikely
<i>Dipodomys nitratoideis exilis</i>	Fresno kangaroo rat	E	E/-	Unlikely
<i>Eumops perotis californicus</i>	Western mastiff bat	None	SSC/-	Absent
<i>Lasiurus cinereus</i>	Hoary bat	None	None/-	Absent
<i>Perognathus inornatus</i>	San Joaquin pocket mouse	None	None/-	Absent
<i>Taxidea taxus</i>	American badger	None	SSC/-	Possible
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	E	T/-	Possible
Reptiles				
<i>Anniella pulchra</i>	Northern California legless lizard	None	SSC/-	Absent
<i>Arizona elegans occidentalis</i>	California glossy snake	None	SSC/-	Absent
<i>Gambelia silus</i>	Blunt-nosed leopard lizard	E	E, FP/-	Unlikely
<i>Phrynosoma blainvillii</i>	Coast horned lizard	None	SSC/-	Absent
<i>Thamnophis gigas</i>	Giant garter snake	T	T/-	Unlikely
Amphibians				
<i>Ambystoma californiense</i>	California tiger salamander	T	SSC/-	Unlikely
<i>Rana draytonii</i>	California red-legged frog	T	SSC/-	Unlikely
<i>Spea hammondi</i>	Western spadefoot	None	SSC/-	Unlikely
Fishes				
<i>Hypomesus transpacificus</i>	Delta smelt	T	T/-	Absent
Invertebrates				
<i>Bombus crotchii</i>	Crotch's bumble bee	None	CE/-	Unlikely
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	T	None/-	Unlikely
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	T	None/-	Unlikely
<i>Efferia antiochi</i>	Antioch efferian robberfly	None	None/-	Unlikely
<i>Lepidurus packardii</i>	Vernal pool tadpole shrimp	E	None/-	Unlikely
<i>Lytta molesta</i>	Molestan blister beetle	None	None/-	Unlikely
<i>Metapogon hurdi</i>	Hurd's metapogon robberfly	None	None/-	Unlikely
Plants				
<i>Atriplex cordulata var.cordulata</i>	Heartscale	None	None/1 B.2	Absent
<i>Atriplex cordulata var. erecticaulis</i>	Earlimart orache	None	None/1 B.2	Absent
<i>Atriplex depressa</i>	Brittlescale	None	None/1 B.2	Absent
<i>Atriplex subtilis</i>	Lesser saltscale	None	None/1 B.1	Absent
<i>Atriplex subtilis</i>	Subtle orache	None	None/1 B.2	Absent
<i>Caulanthus californicus</i>	California jewelflower	E	E/1B.1	Absent
<i>Chloropyron palmatum</i>	Palmate-bracted bird's beak	E	E/1B.1	Absent

Scientific Name	Common Name	Fed. Status	State/C NPS Status	Occurrence within the Project Area ¹
<i>Delphinium recurvatum</i>	Recurved larkspur	None	None/1 B.2	Absent
<i>Eriastrum Hooveri</i>	Hoover's eriastrum	Delisted	None/4.2	Absent
<i>Imperata brevifolia</i>	California satintail	None	None/2 B.1	Absent
<i>Lasthenia chrysantha</i>	Alkali-sink goldfields	None	None/1 B.2	Absent
<i>Layia munzii</i>	Munz's tidy-tips	None	None/1 B.2	Absent
<i>Lepidium jaredii ssp. album</i>	Panoche peppergrass	None	None/1 B.2	Absent
<i>Leptosiphon serrulatus</i>	Madera leptosiphon	None	None/1 B.2	Absent
<i>Puccinellia simplex</i>	California alkali grass	None	None/1 B.2	Absent

¹**Occurrence within the project area:**

Absent: No suitable habitat exists within the project area or vicinity.

Unlikely: No suitable natural habitat exists within the project area but may exist in the vicinity or a less than suitable man-made environment may substitute for the natural habitat in the vicinity.

Possible: Less than suitable natural or man-made habitat may occur within the project area.

Federal status:

E Listed as endangered under the Federal ESA

T Listed as threatened under the Federal ESA

State Status:

E Listed as endangered under the California ESA

T Listed as threatened under the California ESA

CE Candidate for Endangered

SSC Species of concern as identified by the CDFW

FP Fully protected

CNPS Listing:

1B Plant species that are rare, threatened, or endangered in California and elsewhere

4 Plant species that have limited distribution or infrequent throughout a broader area in California

2B Plants considered rare, threatened, or endangered in California, but more common elsewhere

Threat Extension Codes: .1 – Seriously threatened in CA, .2 – Moderately threatened in CA

Wetlands, Other Waters, and Groundwater Dependent Ecosystems

Though recent aerial photography depicts only active agricultural uses, biologists surveyed areas mapped as possible wetlands in the USFWS National Wetlands Inventory (NWI) to assess the possibility of the presence of wetland habitat in areas maintained as row and field crops, orchards, vineyards, and poultry and dairy cattle facilities.

Areas with the potential to support wetland conditions and where wetlands may develop were observed during the survey. Excavated and maintained agricultural ditches, other than those lined with concrete, may develop conditions suitable for wetlands development. Agricultural irrigation canals in the project area likely having a relatively permanent surface water connection to CWA Traditional Navigable Waters were observed at two locations and were concrete lined. One ditch ran north–south along S. Lassen Avenue, and the other ran southwest–northeast along S. McMullin Grade through a northwest corner of the project area. Other ditches were isolated, meaning they had no connection to the aforementioned canals, and likely served as tailwater collection systems for crop irrigation systems, distribution ditches, or another agricultural irrigation or drainage use. Isolated ditches were, for the most part, not lined with concrete. Some of these ditches had visible evidence of hydrology (pockets of standing water or filled with water throughout) and others were saturated or dry at the soil surface. Very little actively growing vegetation was observed in the isolated agricultural ditches, but these areas may support hydrophytic vegetation. Irrigation canals are represented in the NWI as riverine, unknown perennial, unconsolidated bottom, semi-permanently flooded, excavated (R5UBFx) features (USFWS 1987). Unlined agricultural ditches may contribute some groundwater recharge benefits but are not considered to be jurisdictional wetlands.

Dairy cattle and poultry facilities often contained one or more excavated ponds presumably used for agricultural wastewater or process water treatment purposes. Little to no vegetation occurred on the pond banks. These ponds were mostly represented in the NWI as palustrine, unconsolidated shore, seasonally flooded, excavated (PUSC_x) features (USFWS 1987). Additionally, the Fresno Slough (James) Bypass, an ephemeral drainage, lies just southwest of a portion of the project area and likely contains areas exhibiting seasonal wetland conditions. No surface water was observed in this feature.

California DWR Natural Communities dataset does not represent the agency’s determination of a groundwater dependent ecosystem (GDE), but is intended for use as an aid in identifying GDEs in California and includes two habitat classes associated with groundwater: (1) wetland features commonly associated with the surface expression of groundwater under *natural, unmodified conditions*; and (2) vegetation types commonly associated with the sub-surface presence of groundwater. The wetland features identified in this dataset align with a subset of the NWI dataset, and the vegetation features include communities such as riparian mixed hardwoods, willows, alkaline mixed grasses, and wet meadows. The dataset is limited, and a thorough understanding of geology, groundwater elevations, hydrology, and land use of a certain area is necessary for positive identification of GDEs (Klausmeyer et al. 2018).

No wetlands or vegetation communities indicative of potential GDEs were observed within the project area during the field surveys. Larger trees observed occasionally throughout the project area in settlement areas have likely become established due to landowners’ irrigation and are well adapted to the semi-arid climate. The Fresno Slough (James) Bypass is adjacent to and outside of the North expansion portion of the project area. This drainage may support or have the potential to support semi-arid riparian vegetation, such as willows, but none were observed during the survey.

6.4.2 Regulatory Setting

Federal

Clean Water Act (CWA)/California Porter-Cologne Act

The CWA has provisions for protecting biological resources within the aquatic environment through identification of beneficial uses and prohibitions on fill of wetlands or other Waters of the U.S. The primary functions of the CWA in protecting biological resources in this instance are to ensure that any impacts to wetlands or other waters are compensated for and to provide a framework for ensuring that water quality is maintained or improved.

Under Section 401 of the CWA the SWRCB considers that “waters of the State” include, but are not limited to, rivers, streams, lakes, bays, marshes, mudflats, unvegetated seasonally ponded areas, drainage swales, sloughs, wet meadows, natural ponds, vernal pools, diked bay lands, seasonal wetlands, and riparian woodlands. Under the Porter-Cologne Water Quality Control Act, all waters of the U.S. that are within the borders of California are also waters of the state. The SWRCB delegates authority to the Regional Water Quality Control Boards (RWQCBs), which take Section 401 water quality certification actions for activities subject to any permit issued by the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the CWA. Under Section 401 of the CWA and the Porter-Cologne Water Quality Act, the RWQCBs exercise jurisdiction over discharges that may affect jurisdictional wetlands and those non-isolated waters associated with Traditional Navigable Waters. The relevant RWQCB for the proposed project is the Central Valley RWQCB. Additional discussion of the CWA is provided in Section 10 (Hydrology).

Endangered Species Act (ESA)

The USFWS and National Marine Fisheries Service (NMFS) have jurisdiction over species listed as threatened or endangered under the Federal ESA of 1973, as amended, and candidate species proposed for listing. The ESA protects listed species from harm, or “take,” which is broadly defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” For any project with a Federal nexus (funding, permitting, or other approvals) that affects a listed species, the Federal agency must consult with the USFWS and/or NMFS Fisheries under Section 7 of the ESA. For projects without a Federal nexus, the lead agency must consult with USFWS and/or NMFS under Section 10 of the ESA. Under the ESA, critical habitat may be formally designated by the USFWS or NMFS for survival and recovery of listed species. Critical habitat designations are specific areas within a geographic region that are occupied by a species and determined to be critical to its survival in accordance with the ESA.

Migratory Bird Treaty Act (MBTA)

The MBTA of 1918 implements a series of international treaties that provide for migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds. The act provides that it shall be unlawful, except as permitted by regulations, “to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird...” (16 USC 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds. Permits for take of non-game migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health, safety, and personal property.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668c) prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald or golden eagles, including their parts, nests, or eggs.

The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

State

California Endangered Species Act (CESA)

Pursuant to CESA, a permit from CDFW is required for projects that could result in the "take" of a plant or animal species that is State listed as threatened or endangered. Under the CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species. The CESA definition of take does not include "harming" or "harassing," as the Federal ESA definition does. Therefore, the threshold for take is higher under CESA than under ESA. A state or local public agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the program area and determine whether the project would have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any proposed project that could affect a candidate species. For the potential taking of individual animals listed under CESA, Fish and Game Code Sections 2080.1 and 2081 provide for issuance of an incidental take permit. CDFW will issue an incidental take permit only if: (1) the authorized take is incidental to an otherwise lawful activity; (2) the impacts of the authorized take are minimized and fully mitigated; and (3) adequate funding is provided to implement the minimization and mitigation measures.

California Fish and Wildlife Code Sections 1600-1616

Under Sections 1600-1616, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream or lake, which support fish or wildlife (i.e., bed to bank). The CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." The CDFW has interpreted the term "streambed" to encompass all portions of the bed, banks, and channel of any stream, including intermittent and ephemeral streams, extending laterally to the upland edge of riparian vegetation. Construction and maintenance actions that may affect the streambed would be subject to creation of a Streambed Alteration Agreement under Section 1602. This agreement would include measures to protect fish, wildlife, and vegetation that may be affected during construction in the streambed.

California Fish and Wildlife Code Sections 3503 and 3503.5 Protection of Bird Nests and Raptors

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders falconiformes and strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. This statute does not provide for the issuance of any type of incidental take permit.

California Fish and Wildlife Code Fully Protected Species

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the CDFW Code. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take of fully protected species.

6.4.3 Potential Impacts

BIO a): *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (Less Than Significant Impact with Mitigation Incorporated)*

The proposed project area and the adjacent Fresno Slough (James) Bypass offer potential habitat for sensitive wildlife species. Potential habitat for special status species, including Crotch's bumble bee, burrowing owl, Fresno kangaroo rat, Swainson's hawk, mountain plover, American badger, and San Joaquin kit fox occurs in the project area. Of these species, those that merit specific discussion and possible mitigation actions are the San Joaquin kit fox, Swainson's hawk, Fresno kangaroo rat, and burrowing owl.

There are no permanently or semi-permanently inundated areas such as rice fields within the project area. There are no surface water bodies other than dairy ponds and irrigation drains, none of which will be affected by construction, and crops grown within the project area are primarily nut and fruit trees that do not offer inundated habitat. Therefore, species including the tri-colored blackbird and the giant garter snake, which require flooded conditions such as are found in rice fields, are highly unlikely to occur in the project area and are not further considered in this discussion.

San Joaquin kit fox

Potential to Occur: Intensively managed, frequently disturbed and occupied agricultural lands and development related to animal farming operations offer low-quality habitat for kit fox and their prey base. The lands that surround the project area are similarly developed and of low quality. One kit fox occurrence was listed within the project area in the CNDDDB database query, but no details of the occurrence were provided. Kit fox may disperse into agricultural areas if adequate prey species are available, but they would be unlikely to use the project area for any purpose other than to commute between suitable habitat locations elsewhere in the region.

Potential Impacts: Potential impacts may occur if kit fox, active year-round, were to den in the project area. Squirrel burrows were observed in several areas on and around the project area during the reconnaissance surveys (Appendix C of Attachment C). Squirrel burrows could be modified and used by kit fox, though no kit fox or evidence of kit fox use were observed. Kit fox may also den in human-made structures, such as culverts, abandoned pipes, and roadbed banks which occur throughout the project area, including the Main Canal alignment where excavation will occur. Disturbing kit fox dens or harming kit fox during construction excavation activities would constitute a violation of state and federal regulations and would be considered a significant impact. The project proponent will implement the avoidance and mitigation measures under BIO-1 (Section 4.2). By implementing these measures, the potential impacts will be reduced to a level of less than significant.

Swainson's hawk

Potential to Occur: Several mature trees found within the project area offer nesting habitat for Swainson's hawks. Such trees located in farm residence settlement areas are generally well outside of the area that would be affected by construction. Potential foraging habitat occurs within the project area where field crops and a few weedy and fallowed fields are found. Other areas are intensively managed orchards and row crops that are unlikely to be utilized by Swainson's hawks for foraging.

Potential Impacts: Swainson's hawks may use larger trees in the project area for nesting. Excavation occurring during construction near these trees during the nesting season of February 1–August 31 may result in nest abandonment and directly and adversely affect the hawk's ability to successfully reproduce. This would constitute a violation of state and federal regulations and would be considered a significant

impact. The project proponent will implement the avoidance and mitigation measures under BIO-2 (Section 4.2). By implementing these measures, the potential impacts would be reduced to a level of less than significant.

Burrowing owl

Potential to Occur: Burrowing owls in agricultural environments may use roadsides, fallow fields, and water conveyance structures (earthen ditches, open canals, and drains) surrounded by crops to nest. They are tolerant of human presence. Mammal burrows, like those excavated by the California ground squirrel and observed in various portions of the project area, are also utilized by burrowing owls for nesting. Culverts and pipes may also be used as nest sites.

Potential Impacts: Ground-disturbing activities, including excavation, temporary stockpiling, and heavy equipment presence, during the proposed project's construction may result in destruction of burrowing owl nests and/or burrowing owl injury and mortality. This would constitute a violation of state regulations and would be considered a significant impact. The project proponent will implement the avoidance and mitigation measures under BIO-3 (Section 4.2). By implementing these measures, the potential impacts would be reduced to a level of less than significant.

Fresno Kangaroo Rat/Giant Kangaroo Rat

Potential to Occur: Burrows were found at several locales along dirt roads, ditches, and field edges on the project site. Most burrow entrances were between 3-5 inches across, typical of ground squirrel burrows and larger than typical Fresno kangaroo rat burrows. No evidence of Fresno kangaroo rats or giant kangaroo rats, including tail drags, footprints, or feces, were identified at or near these burrows.

The CNDDDB reports that the Fresno kangaroo rat is extirpated in the project area (CDFW, 2021). The common and widely distributed Heermann's kangaroo rat is known to occur in the nearby Fresno Slough (James) Bypass. Although kangaroo rats in the project area could be the endangered Fresno kangaroo rat, they are more likely to be the Heermann's kangaroo rat.

Potential Impacts: Ground-disturbing activities, including excavation, temporary stockpiling, and heavy equipment presence, during the proposed project's construction may result in destruction of Fresno kangaroo rat burrows or direct injury and mortality of these species in the unlikely event that they are found in the excavation area. This would constitute a violation of state regulations and would be considered a significant impact. The project proponent will implement the avoidance and mitigation measures under BIO-5 (Section 4.2). By implementing these measures, the potential impacts would be reduced to a level of less than significant.

Swainson's hawk, San Joaquin kit fox, kangaroo rat, burrowing owl, and/or nesting birds, such as cliff swallows and red-tailed hawk, are known to occur near the project area. Overall, the proposed project could have negative effects upon sensitive wildlife and habitats. Several preventive avoidance measures are recommended and shall be implemented for Waters of the U.S. and State, San Joaquin kit fox, burrowing owl, kangaroo rats, Swainson's hawk, and nesting birds and their nests to avoid potential project impacts. These mitigation measures are identified in Section 4.2 as BIO-1 through BIO-6.

BIO b): Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (No Impact)

No riparian habitat or other sensitive natural communities occur within the project area. The CNDDDB and USFWS Critical Habitat online mapper do not list or depict any sensitive natural communities, including designated final critical habitat, within the project area (CDFW, 2021; USFWS, 2021a). Although critical

habitat for several listed species occurs in Fresno County, there is no designated critical habitat for any species within at least eight miles of the project area (USFWS, 2021b).

Habitats for sensitive species (e.g., vernal pools, freshwater marsh, alkaline soils, adobe-heavy clay soils, alkali sink habitat, chenopod scrub habitat, cismontane woodlands, pinyon and juniper woodlands, meadows, playas, grasslands with rolling hills) are not present on the project area, and thus sensitive species that may occur in these habitat types do not occur on the project area. Therefore, negative or adverse impacts will not occur to these other sensitive species or habitats due to construction and operation of the project.

BIO c): Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (No Impact)

No wetland disturbances are anticipated from implementation of the proposed project. Areas identified by the USFWS NWI as palustrine and riverine wetlands throughout the project area were surveyed and found to be occupied with the agricultural uses identified in this report. This confirmed that many of the features identified in the NWI as “palustrine wetlands” are relict features possibly present prior to agricultural uses, and those features identified as “riverine” features are typically associated with non-jurisdictional agricultural ditches.

BIO d): Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (Less Than Significant Impact)

The Fresno Slough (James) Bypass, adjacent to but outside of the project area, may be used by wildlife as a migratory corridor, and may occasionally be used as a native wildlife nursery site. No project actions will occur in the Fresno Slough (James) Bypass. Even though they are regularly disturbed, open fields along the Main Canal alignment and the road edges may be utilized by American badger, foxes, coyote, several common rabbit species, and other animals as a movement corridor during the night. The open conveyance canals and associated infrastructure could pose an impediment to normal movement for these nocturnal animals, but this impact is not expected to be significant because large numbers of such species are not expected to occur in the intensively farmed areas. These impacts are expected to be less than significant.

The proposed project area is located on the Pacific Flyway, which is one of the main migratory routes for waterfowl. The Sacramento and San Joaquin Valleys formerly provided extensive habitat for such species, but conversion of seasonally flooded wetlands to agricultural uses has greatly reduced the extent of such habitat. The fields that would be flooded under the proposed project would provide significant resting and forage habitat for migratory waterfowl and would be consistent with efforts by CDFW and USFWS to restore waterfowl habitat by flooding fallowed fields during the fall and spring migration periods.

BIO e): Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (No Impact)

The project will not trim, prune, or remove any nonagricultural vegetation and does not conflict with any local policies or ordinances protecting biological resources. No impacts would occur.

BIO f): Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (No Impact)

The project is not within any areas specified in any identified Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans. Therefore, the project would result in no impact to conservation plans.

6.5 CULTURAL RESOURCES (CUL)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6.5.1 Environmental Setting

The project area is situated in the Kings River Basin of the San Joaquin Valley, part of the Great Central Valley Geomorphic Province (Beck and Haase 1974). The province is comprised of a large northwest trending alluvial plain bounded between the Coast Ranges (west) and the Sierra Nevada Range (east). The Great Central Valley encompasses both the Sacramento Valley and the San Joaquin Valley that are drained by the Sacramento River (to the north) and San Joaquin River (to the south), which join and meet at the San Francisco Bay. The Central Valley is a forearc basin field with several thousand feet of sedimentary deposits that overlay Sierran basement rocks. As discussed in Section 6.7.1, deposits within the project area consist of Pleistocene to latest Holocene aged alluvium deposits. Alluvium deposition occurring from the late Pleistocene to the latest Holocene has been deposited over the course of known human occupation in the region and may potentially contain buried cultural deposits (Meyer et al. 2010). This is especially the case in areas near water sources with landforms suitable for habitation.

Prior to water diversions in the nineteenth century for agricultural and consumer use, and the introduction of nonnative species, the Central Valley basin contained a mosaic of biological diversity that was supported by climatic and hydrological conditions conducive to abundant resource availability (e.g., flora and fauna) and subsistence procurement by aboriginal populations (e.g., Yokuts). The project area is situated near the historic Fish/Fresno Slough, a tributary of the Kings River and part of the historic marsh and wetlands system north of Tulare Lake. Specifically, the northern project area is adjacent to the Fish/Fresno Slough and the eastern project area is east of the slough. Prior to water diversions for irrigation, the slough served as an overflow outlet for the waters of Tulare Lake, during periods of increased inundation, into the San Joaquin River. Tulare Lake was one of several terminal lakes that once occupied the Central Valley and acted as draws for aboriginal and historic human populations. In pre-contact times, it was the largest freshwater body west of the Mississippi River (Preston 1981), though only averaging approximately 40 feet deep. The Kings, Kaweah, Tule, and Kern Rivers flowed into Tulare Lake, expanding it during the winter and spring months to a maximum size of 486,000 acres. In extremely dry years, Tulare Lake would dry up completely, but in extremely wet years it would flow across the Kings River alluvial fan including Fish Slough, and the overflow would join the San Joaquin

River. This last occurred in 1878 (Croft 1969). Tulare Lake was slowly drained due to water diversions in the late nineteenth century and the lakebed was slowly given over to farming. However, in very wet years, the lakebed area still fills with water resulting in floods in the surrounding lands.

The Tulare Lake supported a vast band of tules (bulrushes, *Scirpus* sp.) along its margins and in shallow sloughs, like Fish Slough (Chapman and Gordon 1867). Near the lakeshore were large areas that were low and marshy, particularly during the winter and spring months, and supported tules, cattails, rushes, and sedges. On better-drained sites farther from the lake, grassland prairie habitat comprised of perennial bunchgrasses transitioned to oak savannahs further east towards the foothills. Because the alluvial fans held subsoil moisture, large strands of white oak and, on drier sites, blue oak and interior live oak, extended down between the branching channels of the major fan systems.

Prehistoric Setting

In the southern San Joaquin Valley, archaeological investigation have been conducted primarily along the old shorelines of the former terminal lakes of the valley, including Tulare, Kern, and Buena Vista lakes, where early human activity and settlement concentrated (Wallace and Riddell 1993; Moratto 1984; Wallace and Riddell 1989). The shores of Tulare Lake were occupied as far back as the Paleo-Indian period and the archaeological record reveals a long history with continuous occupation (Chartkoff and Chartkoff 1984:53; Rosenthal et al. 2007:151). Several key archaeologists have contributed to the development of the chronological framework for the Central Valley such as Fredrickson (1973, 1974, 1994), Bennyhoff (1994), Rosenthal et al. (2007), and others. The generalized cultural sequence collaborated by Rosenthal et al. (2007) includes the Paleo-Indian Period (13,500–10,500 cal B.P.), Lower Archaic Period (10,500–7,500 cal B.P.), Middle Archaic Period (7,500–2,500 cal B.P.), Upper Archaic Period (2,500 cal B.P.–cal A.D. 1000), and Emergent Period (cal A.D. 1000–Historic) and a brief summary is provided below:

Paleoindian Period (13,500 to 10,500 cal B.P.): During the Holocene, geological events such as periodic episodes of erosion and deposition have altered, buried, or removed much of the Late Pleistocene landscape (Rosenthal et al. 2007). Evidence of this period comes from scattered surface locations in the southern portion of the basin. The Paleo-Indian period is characterized by basally thinned and fluted projectile points typically found on the surface (Rosenthal et al. 2007). Populations were low in number and probably consisted of small mobile groups that focused around reliable water supplies, both for drinking water and to exploit the big game that gathered at Pleistocene lakes (Chartkoff and Chartkoff 1984:51-52). Tulare Lake Basin includes some of the oldest known occupation sites in the Central Valley, particularly along the lake's shoreline (Rosenthal et al. 2007:151).

Lower Archaic Period (10,500 to 7,500 cal B.P.): The environment at the end of the Pleistocene was significantly altered by climate change, which facilitated the production of alluvial fans and flood plains and changed the subsistence and habitation patterns of Central Valley aboriginal people (Rosenthal et al. 2007). Pleistocene large game became extinct and people began to focus on smaller prey and a wider range of plant species. Tulare Lake was one of the few interior lakes that persisted throughout the Lower Archaic Period and along with Buena Vista Lake, was one of regional importance (Chartkoff and Chartkoff 1984:99, 91). The Lower Archaic Period is characterized by isolated finds of stemmed points (similar to Borax Lake, Lake Mojave, Siler Lake, and Pinto wide stem types), stone crescents, and other formalized, flaked stone artifacts (Rosenthal et al. 2007). These types of artifacts were recovered from the Buena Vista Lake Site (Fredrickson and Grossman 1977), including faunal remains such as freshwater fish, waterfowl, freshwater mussels, and artiodactyl.

Middle Archaic Period (7,500 to 2,500 cal B.P.): The Middle Archaic climate was characterized by warmer and drier conditions facilitating the reduction or complete desiccation of Central Valley lakes.

Tulare Lake shrank in size and eventually dried during this period. As sea levels began to rise, new wetland habitats developed, leading to the formation of the Sacramento and San Joaquin Delta (Atwater and Belknap 1980; Goman and Wells 2000). Artifacts for this period are categorized by projectile points such as notched, stemmed, thick-leaf, and narrow concave base darts, groundstone, pottery, twined basketry, basketry awls, and polished stone plummets (Rosenthal et al. 2007). At this time, the classic Windmill Pattern burial mounds occur. This pattern represents riverine adaptations that were permanent, year-round, habitation sites (Rosenthal et al. 2007). Paleobotanical studies of the Windmill Pattern indicate early use of acorns and pine nuts. Faunal remains include large game animals (elk, deer, pronghorn), leporids, waterfowl, small and large fish, and small rodents. The fauna represented indicates the use of marshes, grasslands, and riverine forests. A component of the Tranquility site located near the Fresno Slough yielded radiocarbon dates to this time period. The site consisted of several burials, faunal remains (e.g. Tule Elk, antelope, fox, rabbits), obsidian, and chert lithic tools (e.g. stemmed and notched projectile points) and ground stone (e.g. manos, metates, mortars, and pestles) (Hewes 1946; Moratto 2004). During the later period of the Middle Archaic, sedentism increased with occupation sites centralized along the river corridors of the San Joaquin Valley (Moratto 1984; Ragir 1972; Rosenthal et al. 2007; Schulz 1970, 1981; White 2003a, 2003b).

Upper Archaic Period (2,500 cal B.P. to cal A.D. 1000): During the early portion of this period the environment was cooler and wetter. Populations were characterized by geographically complex sociopolitical organizations as evident from the diversity of artifact styles, cultural practices, and other items of material culture in the archaeological record (Rosenthal et al. 2007:156). Year-round villages are represented in the archaeological record at Buena Vista Lake and are characterized by a variety of residential features such as house floors and accumulations of aquatic and terrestrial dietary debris (Hartzell 1992; Rosenthal et al. 2007). Specialized technologies appeared during the Upper Archaic Period such as bone tools and implements and the production of saucer and saddle-shaped shell beads (Olivella) and ornaments (Haliotis), and ceremonial obsidian blades. This period was also marked by expanding trade networks and the increase of mortar and pestle use and plant procurement, specifically acorns (Rosenthal et al. 2007; Wohlgemuth 1996; Rosenthal and Wohlgemuth 2011). During the transition from the Upper Archaic Period to the Emergent Period, the Central Valley experienced drier conditions resulting in resource depression of valley and lowland resources. Native groups abandoned the valley floor and relocated to upland resource areas (Moratto 2004). As the climate improved, people expanded downslope again to the valley floor.

Emergent Period (cal A.D. 1000 to contact): The Emergent Period is characterized by the appearance of bow and arrow technology, the rise of wealth-linked social status, the specialization of bead manufacturing, and increased social complexity as indicated by increased variation in burial types and furnishings (Atchley 1994; Bennyhoff 1994; Bennyhoff and Frederickson 1994; Milliken and Bennyhoff 1993; Rosenthal et al. 2007). In the southern San Joaquin Valley, villages became prevalent along river channels and in the valley's sloughs (Rosenthal et al. 2007). This period is also marked by the intensification of plant resources, and the use of the mortar and pestle (Rosenthal et al. 2007; Wohlgemuth 1996; Rosenthal and Wohlgemuth 2011). Trade networks were further expanded, signified in part by the appearance of clam and Olivella shell bead money obtained through trade with groups along the coast and pottery obtained from the foothills. (Rosenthal et al. 2007:157).

Ethnohistoric Setting

The project area is within the ancestral territory of the Southern Valley Yokuts, who spoke a branch of the Penutian (Yok-Utian) language family. The Yok-Utian language is divided into only two distinct subbranches: the Miwok-Costanoan and Yokuts (Golla 2007). The word “Yokuts” mean people (Tachi Yokut Tribe 2021). The Southern Valley Yokuts territory encompassed the southern end of the San Joaquin Valley, including Tulare, Buena Vista, and Kern Lakes, their connecting sloughs, and the lower portions of Kings, Kaweah, Tule, and Kern Rivers (Wallace 1978:448). The Southern Valley Yokuts generally established villages on low, natural rises along lakes, major water courses, or tributaries. These water sources supported a large variety and abundance of natural floral, aquatic, and faunal resources.

The Southern Valley Yokuts lived in tribes and occupied permanent residences for most of the year (Wallace 1978:450). Although there was no overall political unity amongst the Southern Valley Yokuts tribes, self-governing local groups of about 350 people occupied set tracts of land. Often these political units comprised multiple villages, one of which was recognized as dominant (Wallace 1978:454).

The basic domestic and economic social unit of the Southern Valley Yokuts was the nuclear family. Additional grouping consisted of patrilineal totemic lineages represented by a totem symbol that was transmitted by father to all his children. Exogamous lineages were formed by families sharing the same totem (Wallace 1978). Certain official positions based on totemic animals were passed down through male (and occasionally female) offspring (Kroeber 1925:496; Wallace 1978:454). The Yokuts practice collective traditional ownership over specific desirable resource areas (e.g., fishing, hunting, seed-grasses, tree groves) among families, and among the tribelet (Wallace 1978; Gayton 1948:160, 1945:417). Friendly relations are thought to have prevailed between local groups, and the Tulare Lake tribes shared their abundant resources with outsiders (Kroeber 1925:483; Wallace 1978:449, 454).

The Southern Valley Yokuts lived in both single and multi-family houses. The single-family dwellings were oval, framed with wood and covered with tule mats. The larger houses, which sheltered 10 or more families each with their own fireplace, were long and had steep roofs. Every village had at least one communal sweathouse, in which the men did their daily sweating and sometimes slept. Semi-subterranean floors, common in other parts of California, were not employed by the Southern Valley Yokuts, as moisture and flood water would seep or flow in (Wallace 1978:450-451).

Yokuts were dependent on diverse subsistence patterns based around the collection of roots, seeds, shellfish, waterfowl, and acorns, as well as small game hunting and fishing. Fish, such as lake trout, chubs, perch, and suckers were caught in nets, driven into stick pens or speared. Geese, ducks, mudhens, and other aquatic birds were taken in snares or captured with long-handled nets. Duck and geese eggs were taken from nests and eaten. Large quantities of freshwater mussels were harvested. Pigeons, ground squirrels, jack rabbits, turtles, and elk were also eaten (Wallace 1978:450). Tule, growing only in marshy areas and sloughs, was essential to the fabrication of clothing, basketry, and watercraft. Tule root was grounded into meal, mixed with water and stone-boiled in baskets. Formalized trade networks were established with both coastal communities and with groups farther inland.

Historic contact between the Southern Valley Yokuts and European immigrants took a devastating toll on the indigenous people, beginning with the Spanish in the 1770s. Military raids, disease, epidemics, and forced servitude claimed many indigenous lives during the Spanish, Mexican, and American periods. In 1934, the Santa Rosa Rancheria was established as a reservation for the re-location of Yokuts on 40 acres of farmland in Lemoore, California. The Tachi Yokut Tribe reservation was established with 40 people enrolled. By the 1980s, more than 200 people lived on the Rancheria that had been expanded to 170 acres. Today, the reservation host a hotel and casino which provides employment, educational opportunities, and revenue for tribal members (Tachi-Yokut Tribe 2021).

Historic Setting

In California, the historic era is generally divided into three periods: the Spanish Mission Period (1769–1821), the Mexican Rancho Period (1821–1848), and the American Period (1848–present). A brief synopsis is provided below:

Spanish Mission Period (1769–1821): The Spanish Mission Period designates the time when the Spanish established missions along the California coast. The first recorded contact between California natives and Europeans occurred in 1542, when the Juan Rodriguez Cabrillo expedition traveled along the west coast of California (Wagner 1941). Between 1769 and 1833, the Spanish founded 21 missions from San Diego north to the San Francisco Bay area (Presidio). Mission San Jose (founded 1797), Mission Santa Clara (founded 1777), Mission Soledad (1791), Mission San Juan Bautista (founded 1797) and Mission Nuestra Senora de la Soledad (founded 1791) were established along the coast near the present Monterey Bay, over 100 miles west and southwest of the McMullin projects Phase II. The first documented contact between the Yokuts of the project region and European explorers occurred in 1772, when an expedition led by Pedro Pages, then acting governor of Alta California, passed through the Tejon Pass into the southernmost part of the San Joaquin Valley in pursuit of deserters from the Spanish Army (Hoover et al. 1962; Wallace 1978). Pages visited a native village on the shore of Buena Vista Lake before leaving the Central Valley for the San Luis Obispo area to the west (Hoover et al. 1962:99). Although the inland areas of the San Joaquin Valley were not settled by the Spanish, influences from coastal missions and presidios were felt inland by the end of the eighteenth century. The mission lands extended from the coast west to the San Joaquin Valley. The local Yokuts population was forcibly indoctrinated into the mission system and were baptized as neophytes. Many Yokuts were transported to the San Jose, Santa Clara, Soledad, San Juan Bautista, and San Antonio Missions. The padres used the Yokuts as laborers for the mission's large tract of land, putting them to work with agricultural and ranching duties. The mental and physical health of the Yokuts people suffered and many people died or tried to escape to the interior valley. The padres would send soldiers to search and retrieve the people that escaped; many were able to elude the soldiers. The ex-neophytes often lead raiding parties targeting the mission herds of cattle and horses. The transition between the Spanish releases of their northwest coast of California territory to Mexico occurred from 1821 to 1823.

Mexican Rancho Period (1821–1848): The period from 1821 to 1848 is referred to as the Mexican Rancho Period. In 1821, Mexico gained independence from Spain, and the secularization of the Missions was completed in 1834. It was during this period that large tracts of land called ranchos were granted by the various Mexican Governors of Alta California, usually to individuals who had worked in the service of the Mexican Government. No Mexican land grants were identified for the project area. This period is also characterized by declines in the Native American population in the San Joaquin Valley due to the introduction of new diseases and increasing military raids.

American Period (1848–post): Following the end of hostilities between Mexico and the U.S. in January 1847, the U.S. officially obtained California from Mexico through the Treaty of Guadalupe Hidalgo on February 2, 1848 (Hoover et al. 1962). In 1850, California was accepted into the Union of the United States, primarily due to the population increase created by the Gold Rush of 1849. Fresno County was established in April 1856, with present boundaries established in 1909. The county developed through four primary economies: mining, stock raising, general farming, and irrigated orchards. Mining brought settlers to the area until the early 1860s, with many ultimately turning to stock raising which dominated the region until about 1874. The development of general farming in the region was spurred and supported by construction of the railroad. As the agricultural and ranching industry grew, channelization of rivers and water-conveyance systems such as local canals and others were constructed to irrigate farmland, and some continue to serve the farms and residents today. This created the modern landscape and economy of vineyards, row crops, and orchards.

In 1900, the discovery of oil near the town of Coalinga stimulated a petroleum industry economic boom in the region. Sometime in the 1940s, oil was discovered in Helm and Raisin City. No data was available on the early oil production of the Raisin City Oil Field. Various companies drilled wells between 1956 and 2011. Between 1977 to 2011, five oil wells produced a total of 214,468 barrels of oil. A sixth well was used for injection rather than production. By 2017, responsible operators of the oil field were nowhere to be found and the wells are considered deserted or abandoned “orphan” wells (California Department of Conservation 2021).

Record Search Results

A California Historical Resources Information Center records search of the project and surrounding half mile area was conducted via the Southern San Joaquin Valley Information Center (SSJVIC), Division of Anthropology, California State University, Bakersfield, on June 1, 2021 (Records Search File No.: 21-189). The record search included the Phase II east and north project area boundary and a 0.5-mile radius. As part of this records search, the SSJVIC database of survey reports and overviews was consulted, as well as documented cultural resources, cultural landscapes, and ethnic resources. Additionally, the search included a review of the following publications and lists: California Office of Historic Preservation Historic Properties Directory, NRHP, California Office of Historic Preservation Archaeological Determinations of Eligibility, California Inventory of Historical Resources/CRHR, California Points of Historical Interest, and California Historical Landmarks. A literature search of ethnographic information, historical literature, historical maps and plats, and local historic resource inventories was also conducted.

The SSJVIC records search identified 12 previously conducted cultural resource studies that overlap with the project area (FR-00185, -00255, -00277, -00433, -00576, -00998, -01783, -01868, -02769, 02791, -02889, -02905). These studies include literature reviews, archaeological and architectural surveys and were conducted between 1975 and 2017. These previous studies cover less than 10% of the project areas. Three previously conducted studies are within 0.5-mile of the project area.

The SSJVIC search resulted in the identification of 12 previously recorded cultural resources: four prehistoric: lithic/ceramic scatters, bedrock mortars, habitat types; and one historic refuse scatter and seven built environment resources; buildings, a transmission line, and a Historic District within the eastern project area, no previously recorded resources were identified within the northern project area. The Historic District (P-10-004303: Bowles agricultural community) is eligible to the CRHR. Neither Sites P-10-005175 (building) nor P-10-006614 (Panoche-Kearney 230 kV transmission line) are eligible to the CRHR or NRHP. The remaining resources have not been evaluated for the CRHR or NRHP. Eight previously recorded resources are within 0.5 mile of the project areas.

The records search results for previously conducted surveys that overlap and are within 0.5 mile of the project area listed in Table 6-5. The record search results for previously recorded sites within and within 0.5 mile of the project area are listed in Table 6-6. The non-confidential record search results (SSJVIC data sheets and figures) are included in Attachment D.

Table 6-5. Previous Cultural Resource Surveys within the Project Area and a 0.5-mile Radius

Report No.	Year	Author(s)/Affiliation	Title	Survey Type
FR-00185	1975	Peak, Ann S., Gerry, Robert, Schulz, Peter D., and Riddell, Francis A./ Cultural Resources Section State Department of Parks and Recreation	<i>Archaeological Assessment of Cultural Resources-Mid-Valley Canal Project in Fresno, Tulare, Merced, Madera, and Kings Counties, California</i>	Archaeological Field Study
FR-00255	1999	Sandra S. Flint/ Applied Earthworks, Inc.	<i>Negative Archaeological Survey Report for the Manning Avenue Road Widening Project, Fresno County, California</i>	Archaeological Field Study
FR-00277	1991	Bissonnette, Linda Dick/ Michael Paoli and Associates	<i>An Archaeological Survey of the Rank Family Property for a Property Line Variance in Fresno County, California</i>	Archaeological Field Study
FR-00433	1977	Davis, Alan, Dick, Linda, and Varner, Dudley/ California State University, Fresno	<i>An Archaeological Reconnaissance of the Gates Substation to the Proposed Gregg Substation 500 KV Transmission Line, Fresno, and Madera Counties</i>	Archaeological Field Study
FR-00576	1988	Noble, Daryl and Weigel, Larry/ California Department of Transportation	<i>Negative Archaeological Survey Report for the Placement of an AC Overlay on Existing Pavement for Route 145, Fresno County, California</i>	Archaeological Field Study
FR-00804	1988	Weaver, Richard A./US Army Corps of Engineers	<i>Cultural Resources Survey Lower San Joaquin River and Tributaries Channel Clearing, Fresno and Madera Counties, California</i>	Archaeological Field Study
FR-00998	1987	Wren, Donald G./ Individual Consultant	<i>An Archaeological Reconnaissance of the Uhles Land, Kerman, California</i>	Archaeological Field Study
FR-01783	2000	Collet, Tom/ Terracon	<i>Indian Religious Site and American Historical Site Determination for Proposed Cellular Communication Towers Various Locations</i>	Literature Search
FR-01868	2002	Brady, Jon L. and Hobbs, Kelly J./ Community Development Division, Fresno County Planning & Resource Management Department	<i>Architectural Inventory and Historical Evaluation of Ferrer Property, Raisin City, Fresno County, California</i>	Architectural/Historical Evaluation
FR-02316	2008	Pruett, Catherine Lewis/ Three Girls and a Shovel	<i>A Cultural Resources Assessment of the Fresno Slough (James) Bypass Water Regulation and Recharge Project, James Irrigation District, Western Fresno County, California</i>	Archaeological Field Study
FR-02769	2016	Asselin, Katie, Baloian, Randy, Morlet, Aubrie, Mirro, Michael, Whiteman, Jennifer, Tibbet, Josh, and Baloian, Mary/ Applied Earthworks	<i>Cultural Resources Inventory and Evaluation for the Central Valley Power Connect Project, Fresno, Kings, and Madera Counties, California</i>	Archaeological Field Study and Architectural/Historical Evaluation
FR-02791	2016	Baloian, Mary/ Applied Earthworks	<i>Historic Property Survey Report for the Replacement of Bridges 42C0066 and 42C0067 over James Bypass on West Manning Avenue, Fresno County, California</i>	Architectural/Historical Field Study
	2016	Asselin, Katie/ Applied Earthworks	<i>Archaeological Survey Report/Extended Phase 1 Report for the Replacement of Bridges 42C0066 and 42C0067 over James Bypass on West Manning Avenue, Fresno County, California</i>	Archaeological Excavation and Field Study
	2018	Jones, Jessica and Baloian, Mary/ Applied Earthworks	<i>First Supplemental Archaeological Survey Report Replacement of Bridges 42C0066 and 42C0067 over James Bypass on West Manning Avenue, Fresno County, California</i>	Archaeological and Architectural/Historical Field Study
FR-02889	2017	Lloyd, Jay B./ Applied Earthworks, Inc.	<i>Cultural Resource Inventory in Support of the Kings River Conservation District McMullin On-Farm Capture Project, Fresno County, California</i>	Archaeological Field Study
FR-02905	2017	Peterson, Cher/ Helix Environmental Planning	<i>Cultural Resources Records Search and Site Visit Results for AT&T Mobility, LLC Candidate CVL02076 (Burrell), West Kamm Avenue and Mountain View Avenue, Riverdale, Fresno County, California</i>	Archaeological Field Study

*McMullin On-Farm Flood Capture Expansion Project
Draft Initial Study and Mitigated Negative Declaration*

Report No.	Year	Author(s)/Affiliation	Title	Survey Type
FR-02908	2017	Lloyd, Jay B. and Wingate, Ernest/Applied Earth Works, Inc.	<i>Cultural Resource Inventory in Support of a Section 408 Permit for the Kings River Conservation District Kings River Levee Evaluation Project, Fresno and Kings Counties, California</i>	Archaeological Field Study

*see attached data sheets

Table 6-6. Cultural Resources Previously Recorded within the Project Area and within 0.50-mile

Primary or Trinomial #	Time Period	Site Type/Name	Date/Recorder	CRHR/NRHP Eligibility
P-10-000528	Prehistoric	Lithic Scatter, Ceramic Scatter, Steatite Sherds, and Bedrock Milling Feature	1972 (E. Allen)	Not Evaluated
P-10-000530	Prehistoric	Lithic Scatter and Bedrock Milling Feature	1972 (E. Allen)	Not Evaluated
P-10-000533	Prehistoric	Lithic Scatter, Bedrock Milling Feature, Hearths/Pits	1975 (Gerry Peak)	Not Evaluated
P-10-000562	Prehistoric	Lithic Scatter	1975 (Gerry Peak)	Not Evaluated
P-10-004303	Historic	Historic District- Bowles: agricultural Japanese and American farmers.	1980 (Isami Arifuku Waugh, Ethnic Minority Cultural Resources Survey)	Eligible for CRHR
P-10-005175	Historic	Building: Ferrer Property- 9162 S. Oleander Avenue Raisin City 93652	2002 (Kelly Hobbs)	Not Eligible
P-10-006134	Historic	Refuse Scatter	2012 (Melinda Patrick, Patrick GIS Group, Inc.)	Not Evaluated
P-10-006614	Historic	Linear Structure: Panoche-Kearney 230 kV transmission line	2015 (Randy Baloian, Applied EarthWorks, Inc.)	Not Eligible
P-10-006628	Historic	Building: 1-3 Story Commercial Building	2015 (Jim Jenks, Applied EarthWorks, Inc.)	Not Evaluated
P-10-006629	Historic	Building: Single Family Property and Ancillary Building	2015 (Jim Jenks, Applied EarthWorks, Inc.)	Not Evaluated
P-10-006630	Historic	Building: Single Family Property, Ancillary Building, and Engineering Structure	2015 (Jim Jenks, Applied EarthWorks, Inc.)	Not Evaluated
P-10-006636	Historic	Building/Roadway: Raisin City Dragways/Raisin City Drag Strip	2015 (Randy Baloian, Applied EarthWorks, Inc.)	Not Evaluated
Previously Recorded Sites within 0.50 mile				
P-10-000552	Prehistoric	Prehistoric Burials	1975 (Peak, Gerry)	Not Evaluated
P-10-000554	Prehistoric	Lithic Scatter	1975 (Peak, Gerry)	Not Evaluated
P-10-000555	Prehistoric	Lithic Scatter	1975 (Peak, Gerry)	Not Evaluated
P-10-000556	Prehistoric	Features: originally recorded as two depressions (possible Hearths/Pits). A 2008 site update notes two depressions and no surface artifacts observed, a shovel test pit within depression did not yield any artifacts.	1975 (Gerry Peak); 2008 (Peggy Murphy, Catherine Pruett, Dorothy Fleagle, Three Girls and a Shovel); 2015 (K. Asselin, J. Tibbet, Applied EarthWorks, Inc.)	Not Evaluated
P-10-000557	Prehistoric	Lithic Scatter (originally recorded as 2 flakes). A 2008 site update notes the site could not be located.	1975 (Gerry Peak); 2008 (Peggy Murphy, Catherine Pruett, Dorothy Fleagle, Three Girls and a Shovel)	Not Evaluated
P-10-000558	Prehistoric	Habitation: originally recorded as a Low rise/mound with 3 house depressions and 2 additional possible depressions. A 2008 site update notes the site/features could not be located.	1975 (Gerry Peak); 2008 (Peggy Murphy, Catherine Pruett, Dorothy Fleagle, Three Girls and a Shovel)	Not Evaluated
P-10-004680	Historic	Water Conveyance System: Wristen Canal at the crossing of the Burlington Northern Santa Fe Railway; Element of district	2000 (Bai "Tom" Tang, CRM TECH)	Not Evaluated
P-10-0006617	Historic	James Bypass and Flood Channel; Fresno Slough Bypass;	2015 (Randy Baloian, Applied EarthWorks, Inc.)	Not Eligible (NRHP)

Disclosure of site locations prohibited. Information contained in this document is confidential, in compliance with 36 CFR 800.11(c), and access to this information is restricted by the National Historic Preservation Act of 1966 (as amended) Section 1 (16 USC 470), and the Archaeological Resources Protection Act of 1979 (as amended).

Historic United States Geological Survey Map and General Land Office Plat Map and Historic Aerial Review

Historic maps and aerial imagery were reviewed for indications of the potential for historic buildings, structures, or other features within the McMullin Projects Phase II North and East. These included historic U.S. General Land Office (GLO) plats and U.S. Geological Survey (USGS) maps, and historic aerial imagery. The review suggest that the Phase II project areas did not experience intensive development until the early twentieth century when the existing canal and road system was developed. The area appears as rural agricultural land with divided plots of various sizes (row-crops, orchards, or pastures) with associated scattered buildings and structures. The results of the review of available historic aerial photos, GLOs, and USGS quadrangle maps are presented in Table 6-7 below.

Table 6-7. Review of Historic USGS Maps and Aerial Photographs

Map Name	Date(s)	Author	Legal Description	Description of Potential Resource within Project Area
GLO	1854	John Hays	T15S, R18E, S25-36	No buildings, features, or structures illustrated.
GLO	1854	John Hays	T16S, R18E, S1-15, 23, 24	No buildings, features, or structures illustrated. Tulare Swamp is identified west and southwest of the project area in S18, 17, 20, 28, 27, and 35.
GLO	1854	John Hays	T15S, R19E, S22,23, 26-35	No buildings, features, or structures illustrated.
GLO	1854	John Hays	T16S, R19E, S2-11, 15-19, 21, 22	No buildings, features, or structures illustrated.
GLO	1854	John Hays	T15S R17E S6, 14-16, 21-23	No buildings, features, or structures illustrated. Tulare Swamp is identified west and southwest of the project area in S18, 19, 20, 29, 28, and 33
USGS 1:31,680 Helm, CA	1925	USGS Staff	T15S R17E S14-16, 21-23	The area appears undeveloped. Several roads are illustrated: Manning Avenue, Coalinga Road, and Madera Avenue. The town of Helm and James Bypass Canal are illustrated east of the project.
USGS 1:31,680 7.5' Helm, CA	1947	USGS Staff	T15S R17E S14-16, 21-23	The area appears relatively undeveloped. A well and windmill is illustrated in S15/14, and three wells are illustrated along the east edge of S22. Several roads are illustrated: Manning Avenue, Lassen Avenue, Parlier Avenue. The Fresno Slough Bypass (also James Bypass Canal) are illustrated west of the Project, and the Raisin City Oil Field is northeast of the Project.
USGS 1:24,000 7.5' Helm, CA	1963	USGS Staff	T15S R17E S14-16, 21-23	The area appears relatively undeveloped except for agricultural land use: several two-track roads and a storage bin are illustrated in S22, a well and several two track roads are illustrated in section 21, The Raisin City Oil Fields development has expanded south in section 24 and 19, east of Project. Manning Avenue, Lassen Avenue, and Parlier Avenue are still present.
USGS 1:31,680 7.5' Raisin, CA	1925	USGS Staff	T15S R18E S25-27, 34-36; T15S R19E S22, 23, 26-35; T16S R18E S1-3, 10-15, 23, 24; T16S R19E S2-11, 15-19, 21, 22	Most of the area appears as relatively rural undeveloped land. Several scattered buildings and windmills are illustrated, and improved and unimproved roads (Manning Avenue, Dinuba Avenue, Nebraska Avenue, Grant Avenue, Hayes Avenue, Mountain View Avenue, Kamm Avenue, etc.). The town of Raisin City is present with several roads, buildings, and the northwest to southeast trending Southern Pacific Railroad (also aligned with Henderson Avenue). A north to south trending powerline (labeled the San Joaquin Light and Power Corporation) is illustrated to the east.
USGS 1:24,000 7.5' Raisin, CA	1947, 1963	USGS Staff	T15S R18E S25-27, 34-36; T15S R19E S22, 23, 26-35; T16S R18E S1-3, 10-15, 23, 24; T16S R19E S2-11, 15-19, 21, 22	The area appears a rural agricultural land with few changes since 1925. In 1963, the railroad is no longer extant, Henderson and Kamm roads appear improved, and the Caruthers Substation is present in T16N, R19E, S22.
USGS 1:61,680 7.5' Caruthers, CA	1925	USGS Staff	T15S R19E S23, 26, 35; T16S R19E S2, 11	The area appears as rural undeveloped land with a few scattered buildings and several roads (e.g., Brawley Avenue, Manning Avenue). The Southern Pacific Railroad is illustrated within T15S R19E S35 and T16S R19E S2. The town of Caruthers (illustrated spelling) is to the south.
USGS 1:24,000 7.5' Caruthers, CA	1947, 1963	USGS Staff	T15S R19E S23, 26, 35; T16S R19E S2, 11	The area appears as primarily rural undeveloped agricultural land. No major changes since 1925 except the railroad is no longer extant in 1947, and some roads appear improved by 1963.
USGS 1:61,680 7.5' Jameson, CA	1924	USGS Staff	T15S R17E S6	The area appears as undeveloped land with a pond or natural water feature, and a building and two-track road that leads to building. The town of Jameson and the east to west trending Southern Pacific Railroad is to the south of the Project.
USGS 1:24,000 7.5' Jameson, CA	1947, 1963	USGS Staff	T15S R17E S6	Area appears similar to previous map except for the addition of a windmill, and improved roads: White Bridge Road to the south, Yuba Avenue to the west, and Butte Avenue to the east. By 1963, two two-track roads divide the section in quarters, an additional well is also present.

Map Name	Date(s)	Author	Legal Description	Description of Potential Resource within Project Area
USGS 1:61,680 7.5' Kerman, CA	1922	USGS Staff	T15S R17E S14-16	There project area appears as undeveloped land and no building is illustrated. Two unnamed two-track roads are present.
USGS 1:24,000 7.5' Kerman, CA	1947, 1963	USGS Staff	T15S R17E S14-16	1947: The Raisin City Oil field is illustrated with roads and structures in S14, and Lassen Avenue S15/14. No other structures or buildings illustrated. No major changes by 1963 except for the expansion of the Raisin City Oil Field within a portion of S15 and several water features (flooded areas or ponds).
USGS 1:61,680 7.5' San Joaquin CA	1925	USGS Staff	T15S R17E (S16, 21)	The map is not sectioned. In T15S R17E the area appears primarily undeveloped with several scattered buildings, roads, the Main Bypass Canal, Tap Ditch, the town of Caldwell, and a segment of the northwest to southeast trending Southern Pacific Railroad illustrated. The town of San Joaquin is west of the Project.
USGS 1:24,000 7.5' San Joaquin CA	1947, 1963	USGS Staff	T15S R17E S16, 21	The area appears as previous map except the Enterprise Canal (abandoned) is illustrated. By 1963, S16: several roads are present, S21 several roads are present, and a pond or water feature is illustrated.
Historic Aerial	1946	Netonline	T15S R17E S14-16, 21-23; T15S R18E S25-36; T15S R19E S22, 23, 26-35; T16S R18E S1-15, 23, 24; T16S R19E S2-11, 15- 19, 21, 22	The area appear primarily as undeveloped land with little agricultural use. The James Bypass Canal is visible to the west. No aerial imagery was available for the eastern portion of the eastern project area.
Historic Aerial	1955 and 1958	Netonline	T15S R17E S14-16, 21-23; T15S R18E S25-36; T15S R19E S22, 23, 26-35; T16S R18E S1-15, 23, 24; T16S R19E S2-11, 15- 19, 21, 22	By 1955 and 1958, the project areas appear as rural agricultural land (divided property with row crops), scattered buildings, and roads. Some portions remain as undeveloped alluvial formations. No aeriels are available for the eastern portion of the eastern project area.
Historic Aerial	1962	Netonline	T15S R17E S14-16, 21-23; T15S R18E S25-36; T15S R19E S22, 23, 26-35; T16S R18E S1-15, 23, 24; T16S R19E S2-11, 15- 19, 21, 22	The project area appear as rural, developed agricultural lands (row crops, orchards), irrigation canals, roads, and scattered buildings. The towns of Raisin and Caruthers are present.

T=Township, R=Range, Netonline=Historic Aerials by Netonline 2021. Electronic database located at <https://www.historicaerials.com/viewer> accessed 7/2/2021.

Federal Land Patent Search

A search of federal land patents through the Bureau of Land Management's General Land Office Records website identified several early patent holders that overlap with the Phase II East and North project areas (Table 6-8). Federal land patents provide information on the initial transfer of land titles from the federal government to private (individuals or companies) or local governments by the title transfer authority.

Table 6-8. Historic Land Patents that overlap with the McMullin Projects Phase II East and North - Townships, Ranges, and Sections, Mount Diablo Meridian

Patent # or BLM Accession #	Date	Patentee	Legal Description overlapping with Project	Transfer Authority
AGS-0354—089 to -096	1872	Bradford, AC	T15S, R18E, S30 and 32	July 2, 1862: State Grant-Agri College (12 Stat. 503)
CACAAA 118349	1869	Head, Addison E	T15S, R19E, S26	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CACAAA 117145	1877	Southern Pacific Railroad	T15S, R19E, S26	July 27, 1866: Grant-RR-Atlantic and Pacific (14 Stat. 292)
AGS-0310-392 - 404	1871	Dunn, Thomas	T16S, R18E, S4, 12, 26 (several other sections)	July 2, 1862: State Grant-Agri College (12 Stat. 503)
CA1420__100	1870	Droge, John C	T16S, R18E, S10 (several other sections)	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CACAAA 117143	1872	Burrell, C	T16S, R18E, S34	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CACAAA 076373	1892	Southern Pacific Railroad	T16S, R18E, S5, 7, 9 (several other sections)	July 27, 1866: Grant-RR-Atlantic and Pacific (14 Stat. 292)
CACAAA 000001 U8	1854	State of California	T16S, R19E, S16	March 3, 1853: California Enabling Act (10 Stat. 244)
CA1420__086	1870	Codington, William	T16S, R19E, S22	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CACAAA 118322	1870	Hauxhurst, Walter	T16S, R19E, S2, 18	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CACAAA 118349	1869	Head, Addison E	T16S, R19E, S2	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
AGS-0310-362	1871	Illinois Industrial University, Morris Speyer and Company	T15S R17E S6, 15, 20, 22	July 2, 1862: State Grant-Agri College (12 Stat. 503)
CA1420__115	1870	Mowe, George W, Peters, JD	T15S R17E S14	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CACAAA 115779	1872	Simpson, John G	T15S R17E S20	April 24, 1820: Sale-Cash Entry (3 Stat. 566)

BLM=Bureau of Land Management

Native American Heritage Commission Sacred Lands File Search

As part of the record search, a Native American Heritage Commission (NAHC) Sacred Lands File Search (SLF) was requested on May 18, 2021. The NAHC responded on June 22, 2021, that the SLF record search results were negative for the Phase II project areas (Attachment D). The NAHC provided a list of tribal representatives and recommended contacting those listed for information regarding known and recorded sites within or near the project area. The following tribes were sent McMullin Projects coordination letters on July 13, 2021:

- Big Sandy Rancheria of Western Mono Indians
- Cold Springs Rancheria of Mono Indians
- Dumna Wo-Wah Tribal Government
- Kings River Choinumni Farm Tribe
- North Valley Yokuts Tribe
- Santa Rosa Rancheria Tachi Yokuts Tribe
- Table Mountain Rancheria
- Traditional Choinumni

- Tule River Indian Tribe
- Wuksache Indian Tribe/Eshom Valley Band

The coordination letters are for data gathering purposes only and not considered formal government to government consultation. Native American tribal government to government consultation is part of the lead CEQA agency's responsibilities under Assembly Bill (AB) 52, and part of the lead NEPA agency's responsibilities under Section 106 of the NRHP.

6.5.2 Regulatory Setting

The federal, state, and local laws, ordinances, and regulations are provided below.

Federal

National Historic Preservation Act, Section 106

The principal federal law addressing cultural resources is the NHPA of 1966, as amended (16 United States Code [USC], Section 470), and its implementing regulations (36 Code of Federal Regulations 800), which primarily address compliance with Section 106 of the NHPA. The NHPA is the principal federal law guiding federal agency action pertaining to treatment of cultural, archaeological, and historic resources. Section 106 (54 USC Section 306108) of the NHPA requires that federal agencies consider the effects of their undertakings on "historic properties" listed or eligible for listing on the NRHP and give the Advisory Council on Historic Preservation and SHPO a reasonable opportunity to comment on the Undertaking. A historic property is "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places" (54 USC Section 306108).

State

California Environmental Quality Act

CEQA (Section 21084.1) requires a lead agency determine whether a project could have a substantial adverse change in the significance of a historical resource or tribal cultural resources (Public Resource Code [PRC] Section 21074 [a][1][A]-[B]).

California Health and Safety Code, Sections 7052 and 7050.5

Section 7052 of the Health and Safety Code states that it is a felony to disturb Native American burials. Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If determined to be Native American, the coroner must contact the California Native American Heritage Commission (NAHC).

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act (Act) applies to both state and private lands. The Act requires that upon discovery of human remains, construction or excavation activity cease and that the county coroner be notified. If the remains are Native American, the coroner must notify the NAHC. The NAHC will then identify and notify a most likely descendant (MLD). The Act stipulates the procedures the MLD may follow for treating or disposing of the remains and associated grave goods.

California Public Resource Code, Section 5097

PRC Section 5097 specifies the procedures to be followed in the event of an unexpected discovery of human remains on non-federal land. The disposition of Native American remains falls within the jurisdiction of the NAHC. Section 5097.5 of the Code states:

“No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.”

As used in this section, “public lands” means lands owned by, or under the jurisdiction of the state or any city, county, district, authority, public corporation, or any agency thereof.

Assembly Bill 52

Under CEQA, AB 52 requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. Consultations must include discussing the type of environmental review necessary, the significance of tribal cultural resources, and the significance of the project’s impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the tribe. That consultation must take place prior to the determination of whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project.

California State Senate Bill 18

California State Senate Bill 18, signed into law in September 2004 and implemented March 1, 2005, requires cities and counties to notify and consult with California-recognized Native American Tribes about proposed local land use planning decisions for the purpose of protecting Traditional Tribal Cultural Places. The Governor’s Office of Planning and Research was mandated to amend its General Plan Guidelines to include the stipulations of Senate Bill 18 and to add advice for consulting with California Native American Tribes.

Local

County of Fresno

The Fresno County General Plan Update Environmental Impact Report (County of Fresno 2000) applies CEQA Guidelines for resource significance and cultural resources management in the County. The County’s General Plan provides the following policies regarding Historic, Cultural and Tribal Resources:

- Policy OS-J.1 The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archaeological, paleontological, and cultural sites and their contributing environment from damage, destruction, and abuse to the maximum extent feasible. Project-level mitigation shall include accurate site surveys, consideration of Project alternatives to preserve archaeological and historic resources, and provision for resource recovery and preservation when displacement is unavoidable.
- Policy OS-J.2 The County shall, within the limits of its authority and responsibility, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.
- Policy OS-J.3 The County shall solicit the views of the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or sites of cultural importance.

- Policy OS-J.4 The County shall maintain an inventory of all sites and structures in the County determined to be of historical significance (Index of Historic Properties in Fresno County).
- Policy OS-J.5 The County shall support the registration of property owners and others of cultural resources in appropriate landmark designations (i.e., National Register of Historic Places, California Historical Landmarks, Points of Historical Interest, or Local Landmark).
- Policy OS-J.6 The County shall provide for the placement of historical markers or signs on adjacent County roadways and major thoroughfares to attract and inform visitors of important historic resource sites. If such sites are open to the public, the County shall ensure that access is controlled to prevent damage or vandalism.
- Policy OS-J.7 The County shall use the State Historic Building Code and existing legislation and ordinances to encourage preservation of cultural resources and their contributing environment.
- Policy OS-J.8 The County shall support efforts of other organizations and agencies to preserve and enhance historic resources for educational and cultural purposes through maintenance and development of interpretive services and facilities at County recreational areas and other sites.

6.5.3 Potential Impacts

CUL a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? (Less Than Significant with Mitigation Incorporated)

No historic resources were identified within the north project area as a result of the SSJVIC records search. The SSJVIC record search identified twelve previously recorded cultural resources within the eastern project area. These twelve resources include: the Bowles Historic District (P-10-004303: Japanese American farmland/community and Buddhist church) that is eligible to the CRHR; sites P-10-005175 (building) and P-10-006614 (Panoche-Kearney 230 kV transmission line) that are not eligible to the CRHR; and four prehistoric archaeological sites (a lithic scatter, lithic/ceramic scatter, lithic scatter/bedrock milling feature, and lithic scatter/bedrock milling features/hearth), a historic refuse scatter, and four historic built environment resources that have not been evaluated for the CRHR eligibility. The four prehistoric sites were recorded in 1975 and have not been revisited in over 45 years, hence their condition is unknown. The nine resources that have not been evaluated for CRHR eligibility are considered potential historic resources. P-10-00517 and 006614 are not eligible for the CRHR and are not historic resources, therefore, no mitigation is recommended for these two sites. The remaining 10 resources would not be directly impacted by the current alignment of the Main Canal. However, the resources would potentially be subjected to the temporary flooding, which may result in erosion and/or siltation (i.e., burying), depending on the rate of water flow at each site's location; or through the construction of open channel lateral systems, which may result in ground disturbance if a landowner does not have an existing or sufficient irrigation system. If water flows are sufficiently low enough so as to only deposit sediments atop the resources, avoiding erosion and essentially capping them, this would be a beneficial impact that would protect the sites from surface disturbances. However, the rate of water flow at each site location is unclear. In addition, if construction ground disturbance (e.g., for laterals) depths extend to native soils, there would be a potential to impact previously unrecorded subsurface cultural resources. With implementation of Mitigation Measures CUL-1 through CUL-4, impacts to previously unrecorded cultural resources will be less than significant.

CUL b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? (Less Than Significant with Mitigation Incorporated)

As discussed above, four prehistoric archaeological resources (P-10-000528, -000530, -000533, -000562) and one historic archaeological resource (P-10-006134) were identified within the eastern project area. The five archaeological resources have not been evaluated for CRHR eligibility. Ground disturbance

within the boundaries of these sites could cause a substantial adverse change in the significance of these sites. These archaeological resources are not within the current alignment of the Main Canal. However, the previously recorded resources would potentially be subjected to the temporary flooding or lateral construction, as discussed above. The entirety of the proposed Main Canal components and potential lateral systems have not been surveyed. Additional cultural resources may exist in these areas and would be similarly impacted by the project. The project area is considered sensitive for unidentified cultural resources (including potential historical resources, archaeological resources, tribal cultural resources, and human remains), given the prehistoric cultural and environmental context of the area. The density of previously recorded resources in the area also suggest the prehistorically active nature of the region. It is recognized that the archaeological resources occur within a historic floodplain and within areas that have been disturbed by agricultural activities (e.g., disced land, canals, roads, etc.) disturbed land. However, the current condition of previously recorded resources within the project area is unknown. As discussed in Section 6.7.1, deposits within the project area consist of Pleistocene to Late Holocene aged alluvium, playa, and terrace deposits. Late Pleistocene to Late Holocene deposits are typically considered sensitive for buried prehistoric resources. If construction ground disturbance depths extend to native soils, there would be a potential to impact previously unrecorded subsurface cultural resources. If water flows are sufficiently low enough to only deposit sediments atop the resources, avoiding erosion and essentially capping them, this would be a beneficial impact that would protect the sites from surface disturbances. However, the rate of water flow at each site location is unclear. With implementation of Mitigation Measures CUL-1 through CUL-4, impacts to previously recorded and previously unrecorded subsurface cultural resources will be less than significant.

CUL c) Would the project disturb any human remains, including those interred outside of formal cemeteries? (Less Than Significant Impact)

No human remains, or cemeteries were identified within the project area as a result of the SSJVC record search. One previously recorded archaeological site with burials was identified within 0.5-mile of the project area. Existing regulations require that if human remains and/or cultural items defined by Health and Safety Code, Section 7050.5, are inadvertently discovered, all work in the vicinity of the find would cease and the Fresno County Sheriff's Coroner (559-600-3400) would be contacted immediately. The following steps will occur if an inadvertent discovery of human remains occur:

- If the construction staff or others inadvertently discover human remains during ground-disturbing activities, they will halt work within a 100-foot radius of the discovery, the person that discovered the find will immediately contact the on-site lead foreman or project manager and on-site cultural monitors (as applicable), and ensure that the remains are not disturbed further and that the remains and other cultural items are protected;
- The project lead foreman or project manager will immediately notify the Fresno County Coroner;
- Project personnel will ensure confidentiality of the find under a need-to-know basis and ensure that the remains are treated with dignity, not touched, moved, photographed, and not discussed on the news or social media sources (e.g., Facebook, Twitter, Instagram, etc.), or further disturbed.
- If the remains are found to be Native American as defined by Health and Safety Code, Section 7050.5, the Fresno County coroner will contact the Native American Heritage Commission by telephone within 24 hours. The coroner will have 2 working days to examine the remains after being notified by the responsible person.
- If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission;
- When the NAHC receives notification of a discovery of Native American human remains from the county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it

shall immediately notify those persons it believes to be most likely descended from the deceased Native American (California Public Resources Code § 5097.98 (a);

- The most likely descendent has 48 hours to make recommendations to the landowner, or representative, for the treatment or disposition, with proper dignity, of the human remains and grave goods;
- Reburial of human remains, and/or funerary objects shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b);
- Construction will not proceed within the 100-foot area (or larger) around the discovery until the appropriate approvals are obtained.

Compliance with existing regulations will ensure that any impacts to human remains would be less than significant.

6.6 ENERGY (ENE)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6.6.1 Environmental Setting

Most of the natural gas and electricity used in the project area is provided by PG&E. Primary uses of energy in the proposed project area are residences, agricultural equipment and associated vehicles, and stationary uses, such as groundwater wells and surface water pumps.

6.6.2 Regulatory Setting

Federal

There are no federal energy regulations that apply to this project.

State

Warren-Alquist Act

The Warren-Alquist Act was created to respond to energy resource needs in the 1970's and created the California Energy Commission. The California Energy Commission, California Public Utilities Commission and the California Independent System Operator shape policies on energy standards, supply, and usage. California Energy Code is in Title 24, Part 6 of the CCR. It includes standards to increase energy efficiency in residential and non-residential buildings.

Clean Energy and Pollution Reduction Act

The Clean Energy and Pollution Reduction Act (SB 350) establishes clean energy, clean air, and greenhouse gas (GHG) reduction goals, including reducing GHG to 40% below 1990 levels by 2030 and to 80% below 1990 levels by 2050. SB 350 increases California's renewable electricity procurement goal from 33% by 2020 to 50% by 2030. This objective will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. SB 350 also requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030.

Regional

San Joaquin Valley Air Pollution Control District Climate Change Action Plan (CCAP)

In August 2008, the SJVAPCD Governing Board adopted the CCAP. The CCAP directed the District Air Pollution Control Officer to develop guidance to assist Lead Agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change.

San Joaquin Valley Air Pollution Control District Guidance for Addressing Greenhouse Gas Emissions

On December 17, 2009, the SJVAPCD adopted the guidance: Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA and the policy: District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency. The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards (BPS), to assess significance of project specific greenhouse gas emissions on global climate change during the environmental review process, as required by CEQA.

6.6.3 Potential Impacts

ENE a) Would the potential project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? (Less Than Significant Impact)

During construction, there would be a temporary increase in fuel demand (gasoline and diesel) from the use of construction equipment, truck trips, and vehicle trips generated by construction workers. The construction contractor will be required to ensure that they use the most fuel-efficient equipment and methods available. The minimal amount of grading and distribution of soils will be performed, and all excavated soils will be distributed onsite rather than being hauled to a disposal facility. Idling times will be limited, and any other BMP that may contribute to energy efficiency will be followed.

Construction equipment will be operated in accordance with Title 13, Chapter 10 of the California Code of Regulations. This minimizes equipment idling time and eliminates resource wastefulness. Energy consumed during construction activities would not result in the wasteful, inefficient, and unnecessary consumption of energy. Impacts associated with construction would be less than significant.

Title 24 Building Energy Efficiency Standards provides guidance on construction techniques to maximize energy conservation. Contractors and owners are encouraged to use recycled materials and products originating from nearby sources to reduce materials costs. Materials used in construction and construction vehicle fuel energy would not involve the wasteful, inefficient, or unnecessary consumption of energy. Building efficiency standards would be applied to each pump station. Impacts associated with long-term operation of pump station buildings would be less than significant.

Pumps will be operated infrequently and only for receiving available storm or flood flows. For the McMullin Expansion, the pumps are expected to operate an annualized 30 days per year (Table 1-2). Pumps used in this project will include both natural gas powered and electric pumps. Each pump station will be designed to have three electric powered pumps and two natural gas powered pumps. The amount of energy used at the project areas during project operation would directly correlate to the size of the proposed pump stations and the energy consumption of associated frequency of use. Section 6.8 outlines how the project will comply with the State's GHG reduction plan.

The project will adhere to energy conservation requirements and greenhouse gas reduction requirements and would not result in wasteful and inefficient use of nonrenewable resources. Therefore, any impacts are less than significant.

ENE b) Would the potential project conflict with or obstruct state or local plan for renewable energy or energy efficiency? (Less Than Significant Impact)

Both construction and operation of the proposed project will adhere to energy conservation requirements and greenhouse gas reduction requirements and would not result in wasteful and inefficient use of nonrenewable resources. The GHG section (Section 6.8) of this study summarizes methods the project proponent will implement to meet clean energy goals and comply with energy efficiency plans. Impacts are less than significant.

6.7 GEOLOGY AND SOILS (GEO)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.7.1 Environmental Setting

Geology

The project area is located in the San Joaquin Valley, an area comprised of a deep reservoir of marine sediment deposits, overlain by over 1,000 feet of quaternary continental deposits Table 6-9). The project area is located on the Quaternary Geologic Unit (Q), which consists of Pleistocene-Holocene aged alluvium, lake, playa, and terrace deposits of mostly non-marine water bodies (Brown and Caldwell 2006). Quaternary sediment is underlain by marine sediment deposits, as sedimentation in the San Joaquin Valley began in the Jurassic Period (208 to 144 million years ago), but most sedimentation occurred in Cenozoic Era (beginning 65 million years ago). Sediment is an estimated 2,400 feet thick and up to 9,000 feet thick in the Tulare Basin near Fresno (USGS 1999). Some is marine sediment that filled the valley when it was an inland sea during the Miocene Epoch (5 to 23 million years ago).

Table 6-9. Geologic Units in the Project Area (adapted from Brown and Caldwell 2006, Table 4-1)

Geologic Unit	Geologic Age	Lithology	Approximate Thickness	Paleontological Significance?
Post Modesto Alluvial Deposits	Holocene	Unconsolidated alluvium (gravel, sand, silt, clay)	< 30 feet	No
Modesto Formation	Late Pleistocene	Alluvium consisting of silt and clay sized material, as well as poorly sorted sand and gravel	10-30 feet	Yes, plants and vertebrates
<i>A-clay</i> ¹	<i>Pleistocene and Holocene</i>	<i>Clay, unconfined aquifer. Blue, olive brown, or dark greenish-gray</i>	<i>Up to 50 feet</i>	<i>No</i>
Riverbank Formation	Middle Pleistocene	Alluvial fan deposits. Higher fan deposits are coarse, lower are finer and poorly sorted	200-300 feet	Yes, plants
<i>C-clay</i> ¹	<i>Middle Pleistocene</i>	<i>Clay, yellowish-brown to grayish blue</i>	<i>10-40 feet</i>	<i>No</i>
Tulare Formation (west), Turlock Lake Formation (east)	Early to Mid-Pleistocene	Alluvial fan deposits consisting of boulder to sand size sediment. Silt and clay sediment interbedded in alluvium and terrace deposits	100-1000 feet	Yes, invertebrates, vertebrates, Turlock - plants
<i>E-clay (Corcoran Clay)</i> ¹	<i>Early to Mid-Pleistocene</i>	<i>Clay, acts as an aquitard</i>	<i>None given, generally thickest clay layer</i>	<i>No</i>
Laguna Formation	Middle to Late Pleistocene	Fine grained, arkosic sand. Some gravel and clay lenses	None given	

¹The clay units listed are not continuous lithologic units. They are generally found between the geologic units listed or as a part of (interbedded with) the above or below listed geologic units.

Soils

Soils contain several physical characteristics that are important to consider for any construction project. In particular, erodibility, drainage, septic limitations, expansibility, and depth to water table can have important implications for the feasibility of a construction project. These characteristics or representative engineering indices for the project area are presented in Table 6-10. Soils information is presented in Attachment F as a custom NRCS soils report for the eastern expansion area of the project.

Susceptibility to Wind Erosion

The wind erodibility index indicates soil susceptibility to wind erosion. Wind erosion closely correlates with surface layer texture, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Most soils in the Project Area have low organic matter content in the 0.2 – 0.35% range (NRCS 2021b, Attachment F). Soil moisture and frozen soil layers also influence wind erosion. Group 1 soils are the most susceptible to wind erosion, and Group 8 least. In the Project Area, 35% of soils are assigned to Group 2 and 64% to Group 3. Group 2 soils correspond to a Wind Erodibility Index of 134 tons per acre annually, and Group 3 to 86 tons per acre annually. These data indicate soils within the project area may be moderately to highly susceptible to wind erosion.

Expansive Soils

Expansion and subsidence are two geotechnical considerations affecting canal construction projects. Expansive (swelling) soils or soft bedrock are those that substantially increase volume with wetting and shrink with drying due to the presence of certain clays (e.g., bentonite, montmorillonite). The force from expansion can damage foundations, slabs, and other confining structures resulting in severe structural damage, cracked driveways and sidewalks, heaving of roads and highway structures, and disruption of pipelines and other utilities. Destructive forces may be upward, horizontal, or both. Soils can be classified into three expansive soil classes with low, moderate, and high potential for volume changes:

- **Low.** Includes sands and silts with relatively low amounts of clay minerals. Sandy clays may also have low expansion potential if the clay is kaolinite. Kaolinite is a common clay mineral.
- **Moderate.** Includes silty clay and clay textured soils, if the clay is kaolinite, and also includes heavy silts, light sandy clays, and silty clays with mixed clay minerals.
- **High.** Includes clays and clay with mixed montmorillonite, a clay mineral, which expands and contracts more than kaolinite.

Construction on swelling soils can be done successfully, though more expensively, using appropriate construction design and mitigation measures. Soils composed only of sand and gravel have no potential for volume changes.

According to the Expansion Index Tests (Uniform Building Code Standard 29-2), a soil expansion index greater than 20 (determined in accordance with ASTM D4829 (International Building Code – I ICC 2021)) indicates expansive soil. Expansive soils within Fresno County generally occur outside the Project Area, in a northwest trending belt approximately parallel to the Friant-Kern Canal foothills in Kings Canyon National Park, along the Fresno Slough from Madera County to Kings County, and roughly parallel to the San Luis Drain west of Tranquility and San Joaquin (Fresno County 2000a).

Some engineering analyses are used to assess soil suitability for construction. The American Association of State Highway and Transportation Officials (AASHTO 2021) Soil Classification has been developed to classify soils as a geotechnical assessment tool. Within the Eastern Expansion Area, 54% of the soils are considered good to excellent subgrade material (Table 6-10, Figure 6.7.1). The Unified Soil

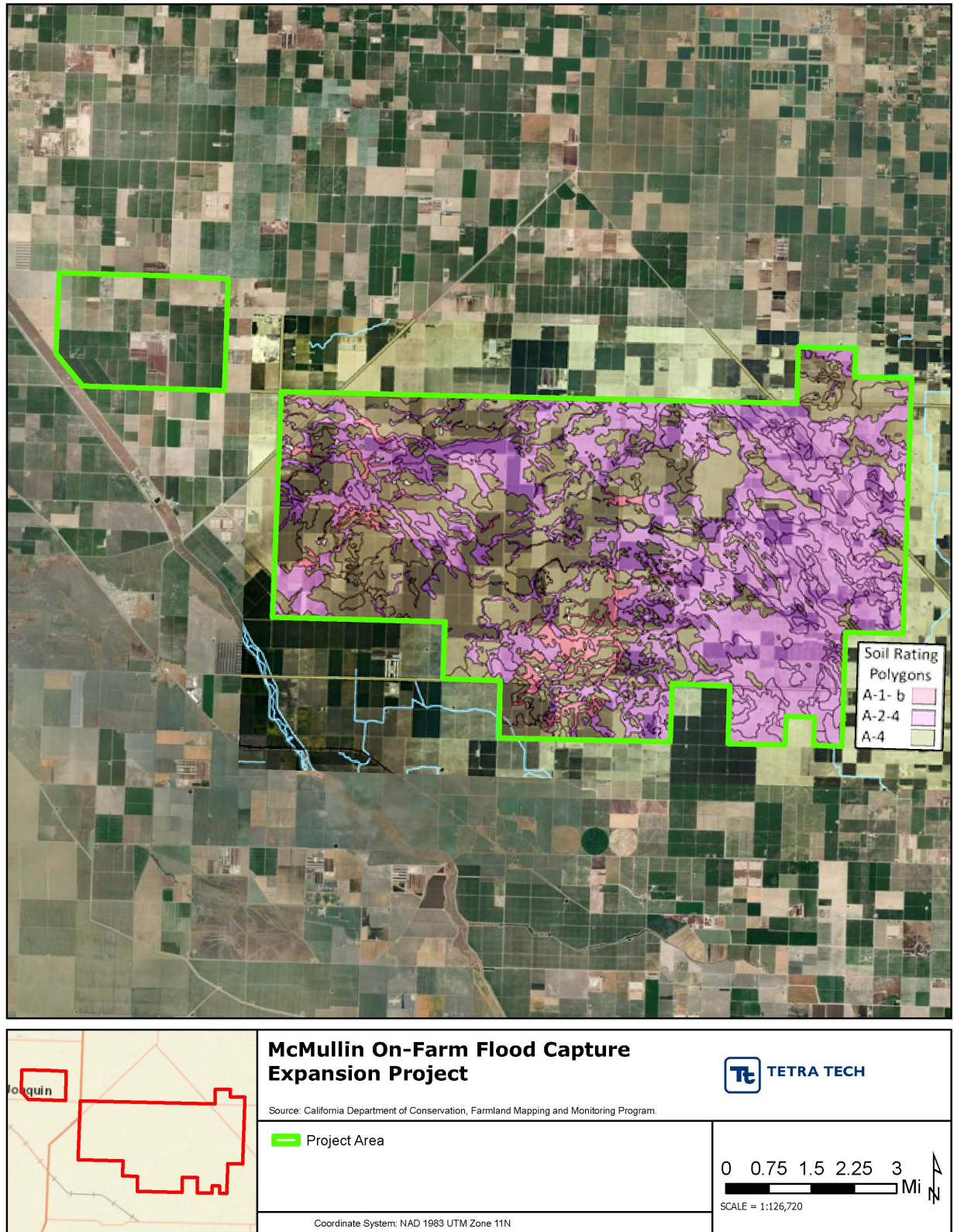


Figure 6.7.1. AAHSTO Soil Classification System

Table 6-10. Soil and Land Use Classifications within the Eastern Expansion Area

Classification	Acres	% of Area
Farmland		
Farmland of statewide importance	16,553	45%
Not prime farmland	6,270	17%
Prime farmland if irrigated	8,045	22%
Prime farmland if irrigated and drained	531	2%
Prime farmland if irrigated and reclaimed of excess salts and sodium	5,107	14%
Texture		
Fine sandy loam	11,232	31%
Loam	80	0%
Loamy coarse sand	1,220	3%
Loamy sand	11,652	32%
Sand	87	0%
Sandy loam	12,106	33%
Silt loam	17	0%
Hydrologic Soils Group		
A	12,968	35%
B	10,551	29%
C	7,479	21%
D	5,394	15%
Drainage Class		
Moderately well drained	67	0%
Poorly drained	312	1%
Somewhat excessively drained	12,957	35%
Somewhat poorly drained	6,913	19%
Well drained	16,144	44%
Erodibility Index		
Group 1	87	0%
Group 2	12,872	35%
Group 3	23,338	64%
Group 4	23	0%
Group 5	74	0%
Unified Soil Classification System (ASTM 2006)		
ML (silt)	146	0%
SC (clayey sand)	9,877	27%
SM (silty sand)	26,087	71%
SP-SM (poorly graded sand with silt and gravel)	87	0%
AAHSTO Soil Classification System (from AASHTO M 145 or ASTM D3282)		
A-1-b (subgrade excellent to good)	1,220	3%
A-2-4 (subgrade excellent to good)	18,427	51%
A-4 (subgrade fair to poor)	16,745	46%
Grand Total	36,506	100%
1. 114 Acres were not classified within the Area		
2. Data from WebSoil NRCS data base utilizing SSURGO data from Eastern Fresno Area (CA654)		

Data from NRCS 2021b.

Classification System (ASTM 2006) is used in engineering and geology to describe the texture and grain size of a soil and identifies nearly all the Project Area as a type of sand.

Regional Faults and Seismic Hazards

The nearest known active faults (historic displacement within previous 200 years) include the San Andreas Fault (west of the project area) and Owens Valley Faults (east of the project area) (Figure 6.7.2). The nearest faults to the project area are southeast and northwest of Helm and are classified as Pre-Quaternary faults or faults without recognized Quaternary displacement (CDC 2017a, CDC 1985, CDC 1986), which means there is no record of these faults having been displaced. It is not certain whether these faults are inactive (CDC 2017a); however, none of these faults is located within the project area.

The Fresno and surrounding areas are located in a region of high seismic activity, even though there are no active faults within the project area, as defined by the Alquist-Priolo Earthquake Fault Zoning Act. A map of historic earthquakes shows that since 1769 the nearest earthquake to the project area was a 5.8 magnitude earthquake and occurred on July 25, 1926, 18 miles southwest of San Joaquin. Its depth was 15 kilometers. Earthquakes have not been frequent in the San Joaquin Valley region in the last 250 years. However, historically, large earthquakes have occurred along the San Andreas fault and in the Pacific Ocean. While shaking from these larger magnitude earthquakes may be felt in the project area, the magnitude would be decreased as the project area is over 50 miles from the San Andreas fault, and substantial shaking is not expected.

The California State Geological Survey publishes maps to provide shaking potential estimates for California. According to the metadata provided by CDC (CDC 2017c), the shaking potential is based on local soil conditions, National Seismic Hazard Maps, average shear wave velocity in the upper 30 meters of the surface (Wills et al., 2015), and a site amplification model. Predictions are made for a 2% exceedance probability in 50 years. Earthquake shaking potential through the project area ranges from 0.65 to 0.35, the mid to low range of shaking potential (highest is along the San Andreas Fault), according to the Earthquake Shaking Potential for California map (CDC 2017c). The map is revised following each update of the National Seismic Hazard Maps.

Liquefaction

Liquefaction is a phenomenon that can occur when saturated soils are subjected to dynamic forces, such as strong shaking. Under the right set of conditions, strong shaking can cause soils to lose their strength and cohesion. Areas with conditions that can lead to liquefaction are areas with loose, uniformly sandy soils and a low water table (less than 30 feet below the ground surface) (Fresno 2000a, Fresno 2000b). Since the water table is currently much greater than 30 feet throughout the project area, liquefaction is not expected to impact the area. In addition, the soils in the project area are coarser than sand and/or have higher clay content (Fresno 2000b, NRCS 2013); therefore, if the water table did increase to less than 30 feet as a result of the project, liquefaction is not predicted to become a hazard for the project area. Given that the depth to groundwater is greater than 100 feet and the project area is in a hydrologic cone of depression, it is not expected that the water table will increase to levels that would affect the project area or the surrounding area (CDC 2017c).

Landslides

Landslides are in the category of mass wasting events, which also include rock falls and debris flows. A landslide occurs when material on a slope is triggered by a mechanism that changes or exceeds the cohesion of material on a slope. Triggers can include earthquakes, saturation from rainfall, or erosion. There is no risk of landslides in the project area because the topography is flat (Fresno 2000b, CDC 2017b). Likewise, project activities will take place on flat topography and have no risk of inducing a

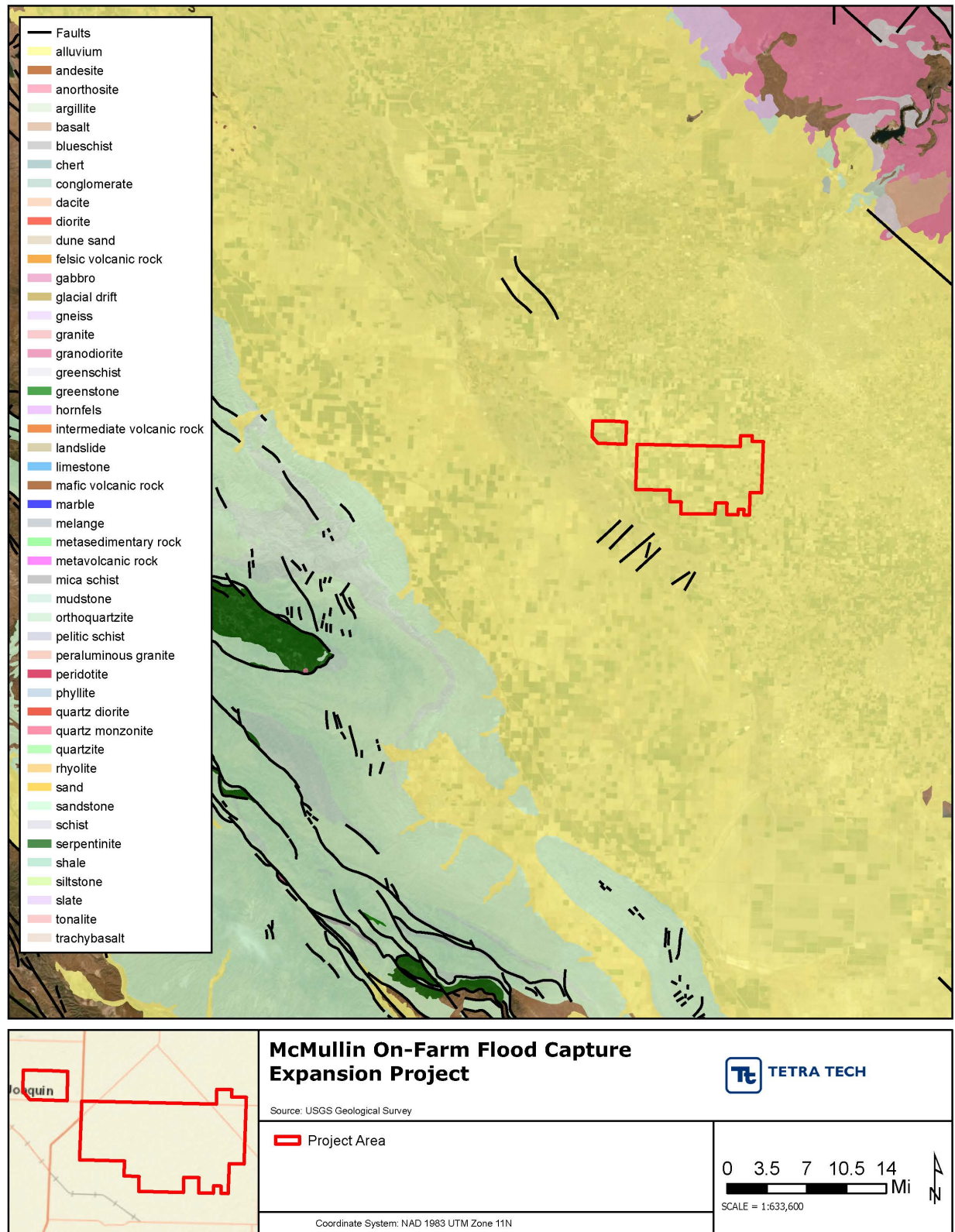


Figure 6.7.2. Surface Soils and Faults

landslide. Smaller areas of river or creek bank slumping are more common in the region (Fresno 2000b), but these areas are not present in the project area.

Tsunamis and Seiche

The project area is inland and therefore not susceptible to seiches or tsunamis.

Subsidence

Subsidence is the settling or sinking of the Earth's surface. It can be gradual or sudden and is the result of removal of subsurface material, such as groundwater oil, gas, or another substance, or it can occur from a reorganizing of material from compaction or tectonic activity (MAGSA 2020). Additionally, some soil types are more vulnerable to subsidence than others, meaning subsidence may be caused by groundwater withdrawal or tectonic activity in one area but not another nearby area. The areas that are most vulnerable to subsidence are located on soils with high silt or clay content where the groundwater table is also very low or has been drawn down. However, minimal subsidence (3-7 feet) has occurred, primarily from groundwater use, and there are no known substantial impacts which would include the loss of functionality of structures (MAGSA 2020).

Paleontological Resources

Paleontological resources are nonrenewable resources that can include fossilized remains or impressions of plants and animals (vertebrates and invertebrates), as well as micro plants and animals. These resources can have cultural importance as well as scientific and educational importance to help understand the history of life on earth. Fossils increase our understanding of historic geologic environments (including local plants, lithology, geomorphology, topography, and atmosphere) and help determine the geologic age of lithology and certain geologic events. Because paleontological resources are capable of shedding light on historic, prehuman earth environments, important paleontological resources are defined as mid-Holocene aged (> 5000 years old) or older (SVP 2010).

The Society of Vertebrate Paleontology (SVP) uses the following four categories to determine the paleontological sensitivity (potential) of a rock unit: high, low, undetermined, and no potential (SVP 2010). The SVP defines paleontological sensitivity based on rock type, history of geologic unit in producing significant fossils, and fossil localities recorded from that unit. A record of known geologic units with paleontological potential is maintained through the University of California Berkeley website. That database was searched to determine geologic units with paleontological significance within the proposed project area. Within 1,000 feet of the ground surface, there are three geologic units with paleontological significance underlying the project area (Table 6-9): (1) The Modesto Formation (10-30 feet), (2) the Riverbank Formation (200-300 feet), and (3) the Tulare Formation / Turlock Formation (100-1000 feet).

6.7.2 Regulatory Setting

Federal

National Earthquake Hazards Reduction Program (NEHRP)

NEHRP was established in 1977 when the U.S. Congress passed the Earthquake Hazards Reduction Act. The purpose of NEHRP is to reduce the risk to life and property from earthquakes. The goals of the program are to facilitate improved design and construction methods using prediction techniques, early warning systems, and by conducting and implementing earthquake related research and to coordinate emergency preparedness plans with communities by engaging in and coordinating public education and involvement programs. Four agencies coordinate to make the goals of NEHRP possible: (1) the National Institute of Standards and Technology (NIST), (2) the National Science Foundation (NSF), (3) USGS,

and (4) FEMA. NIST is the lead agency for NEHRP and it facilitates and coordinates research and implementation activities. The NSF funds earthquake related research and empirical research performed by post-earthquake reconnaissance teams. The USGS maintains, develops, and expands the Advanced National Seismic System and the Global Seismographic Network (both monitor earthquake activity), and also conducts and reports on research related to earthquake assessment and monitoring. FEMA's role is to implement, through dissemination of research and data and outreach with communities and organizations, earthquake risk reduction factors by translating the research and development into building codes and rehabilitation of vulnerable infrastructure.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1971 provides regulations meant to reduce loss of life and property associated with surface fault rupture throughout the State of California. The act requires earthquake faults to be identified and zoned to ensure public safety. Safety is protected by prohibiting building most structures for human occupancy across active faults that are a potential hazard (CDC 2017a).

Seismic Safety Act

The California Alfred E. Alquist Seismic Safety Commission was established in 1975 when the Seismic Safety Act was passed. The Seismic Safety Act was based on evidence for the following: First, many different agencies at various levels of government have substantial responsibilities in the fields of earthquake preparedness and seismic safety. Second, there is a pressing need to provide a consistent policy framework and a means for coordinating on a continuing basis the earthquake-related programs of agencies at all governmental levels and their relationships with elements of the private sector involved in practices important to seismic safety. This need is not being addressed by any continuing state government organization. Third, through concerted efforts of broad scope, coordinated by a Seismic Safety Commission, long-term progress should be made toward higher levels of seismic safety. Fourth, it is not the purpose of this chapter to transfer to the commission the authorities and responsibilities now vested by law in state and local agencies (Seismic Safety Act 2006).

Seismic Hazards Mapping Act (SHMA)

The Seismic Hazards Mapping Act of 1990 directs the CDC, California Geological Survey, Seismic Hazards Zonation Program, to "identify and map areas prone to liquefaction, earthquake-induced landslides and amplified ground shaking." The purpose of the act is to mitigate damage to property and loss of life by identifying, evaluating, and minimizing seismic hazards (CDC 2017a). The State Geologist is required by SHMA to establish regulatory zones of seismic hazards and distribute maps to cities, counties, and state agencies for use in planning and construction. Cities use the information determined by SHMA and the Alquist-Priolo Fault Zone Act to inform potential buyers and new building construction to better protect the public from seismic hazards. Through NEHRP, FEMA has helped implement building codes that have been adopted by the International Code Council (ICC), which states implement as part of their building codes.

Local

Fresno County General Plan

The Fresno County General Plan includes policies pertaining to potential geologic hazards and unique geologic and palaeontologic resources (Fresno 2000c). The following local policies are relevant to the project:

- Policy HS-D.3: The County shall require that a soils engineering and geologic-seismic analysis be prepared by a California-registered engineer or engineering geologist prior to permitting development, including public infrastructure projects, in areas prone to geologic or seismic hazards (i.e., fault rupture, ground shaking, lateral spreading, lurch cracking, fault creep, liquefaction, subsidence, settlement, landslides, mudslides, unstable slopes, or avalanche).
- Policy HS-D.4: The County shall require all proposed structures, additions to structure, utilities, or public facilities within areas subject to geologic-seismic hazards as identified in the soils engineering and geologic-seismic analysis to be sited, designed, and constructed in accordance with applicable provisions of the Uniform Building Code (Title 24 of the California Code of Regulations) and other relevant professional standards to minimize or prevent damage or loss and to minimize the risk of public safety.
- Policy HS-D.5: Pursuant to the Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code, Chapter 7.5), the County shall not permit any structure for human occupancy to be placed within designated Earthquake Fault Zones unless the specific provisions of the Act and Title 14 of the California Code of Regulations have been satisfied.
- Policy HS-D.7: The County shall ensure compliance with State seismic and building standards in the evaluation, design, and siting of critical facilities, including police and fire stations, school facilities, bridges, large public assembly halls, and other structures subject to special seismic safety design requirements.
- Policy HS-D.8: The County shall require a soils report by a California-registered engineer or engineering geologist for any proposed development, including public infrastructure projects, that requires a County permit and is located in an area containing soils with high “expansive” or “shrink-swell” properties. Development in such areas shall be prohibited unless suitable design and construction measures are incorporated to reduce the potential risks associated with these conditions.
- Policy HS-D.9: The County shall seek to minimize soil erosion by maintaining compatible land uses, suitable building designs, and appropriate construction techniques. Contour grading, where feasible, and revegetation shall be required to mitigate the appearance of engineered slopes and to control erosion.
- Policy OS-J.1: The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archeological, paleontological, and cultural sites and their contributing environment from damage, destruction, and abuse to the maximum extent feasible. Project-level mitigation shall include accurate site surveys, consideration of project alternatives to preserve archeological and historic resources, and provision for resource recovery and preservation when displacement is unavoidable.
- Policy OS-J.9: In approving new development, the County shall ensure, to the maximum extent practicable, that the location, siting, and design of any project be subordinate to significant geologic resources.

6.7.3 Potential Impacts

GEO a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

- i) ***Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. (Less than Significant Impact)***
- ii) ***Strong seismic ground shaking? (No Impact)***
- iii) ***Seismic-related ground failure, including liquefaction? (No Impact)***
- iv) ***Landslides? (No Impact)***

Earthquake hazards in California can include ground shaking, surface fault rupture, liquefaction, landslides, tsunamis, and seiches. Within the project area, there is potential for ground shaking, but very little chance of surface fault rupture, liquefaction, or landslide hazards, as no active faults have been identified. There is no potential for tsunami or seiche hazards because of the project area's distance from the ocean and other sizeable water bodies.

The project area is not within an Alquist-Priolo Earthquake Fault Zone (CDC 2017a). Maps published by the CDC in accordance with the Alquist-Priolo Fault Zoning Act show that there are no known faults in the project area (CDC 2017a). This means that there are no known faults that have ruptured or been otherwise delineated in the project area, and it is not in a fault rupture hazard zone.

While there are no known faults or fault ruptures, the project area is in a seismically active region, as is much of California. Earthquakes generated from the movement of nearby faults, such as the San Andreas, or high magnitude earthquakes at more distant faults, could result in ground shaking within the project area. Mapping of ground shaking potential shows that the Kings River Valley lies within an area where expected intensity of ground shaking is low relative to other areas in California (CDC 2017a, CDC 2017b, CDC 2017c). Therefore, the potential for destructive ground shaking in the project area is minimal.

Portions of Fresno County lie within landslide and liquefaction susceptibility areas. The most susceptible landslide areas are located near the mountainous regions west (Sierra Nevada Range) and east (Diablo Range) of the project area. The project footprint and vicinity are categorized as having no risk of landslides, based on both rock strength and slope (Fresno 2000b, CDC 2017b). Likewise, project activities will take place on flat topography and have no risk of inducing a landslide. Smaller areas of river or creek bank slumping are more common in the region (Fresno 2000b), but these are not considered landslide hazards.

No county-wide liquefaction risk assessment has been performed. Soil materials, depth of the water table, and strong seismic shaking contribute to the potential for liquefaction. Because there are no areas with uniformly sandy soils and a high water table (less than 30 feet below the surface), the potential for liquefaction is low. In addition, the potential for strong seismic shaking is also low. The depth to groundwater in the project area is between 190 and 250 feet, and soils are primarily loamy rather than sandy; therefore, the potential for liquefaction is low.

GEO b): Result in substantial soil erosion or the loss of topsoil? (Less Than Significant Impact)

During construction, no soils will be removed from the site. Soils excavated for the canals will be reused or spread onto adjacent farm fields to prevent flooding off the designated recharge areas. Recharge waters will remain on the fields until they are infiltrated and will not be returned to surrounding waterbodies. Therefore, no loss of soils from construction and recharge areas is likely to occur. Some erosion may occur as floodwaters cross the site, but such erosion will be in the interior of the recharge area and will be localized. Any soils eroded in this manner will remain on site. Measures to control soil loss and erosion are described in Mitigation Measure WAT-1, under which the construction contractor will prepare a SWPPP.

As shown in Table 6-10, almost all soils in the project area may be moderately to highly susceptible to wind erosion (Erodibility Index primarily Group 2 and Group 3 soils). Dust generated by construction equipment and wind passing over disturbed soils could generate substantial amounts of fugitive dust if not controlled properly. The construction contractor will prepare a Fugitive Dust Control Plan, as described under Mitigation Measure AIR-2, reducing potential impacts to less than significant.

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

The proposed project area and the surrounding area are flat (primarily 0-3% slope) and are not prone to landslides. The proposed project would not steepen any areas or destabilize any hillsides, therefore, there would be no impacts associated with landslides.

Liquefaction occurs where the soils are uniformly sandy, the water table is high, and strong seismic shaking is predicted. Soils in the project area are primarily loamy and depth to groundwater is between 190-250 feet; under recharged conditions, the water table would still be well below 50 feet. Liquefaction is not likely to occur within the project area.

Subsidence is most likely to occur where groundwater is overdrafted. Since the project is intended to recharge overdrafted aquifers, no subsidence is likely to occur as a result of the proposed project.

Lateral spreading occurs where sloping ground starts to move downhill, causing cracks to open up. It is often associated with cut and fill failure along road cuts and building excavations. The project area has low-relief and cut and fill on slopes will only occur in small, localized areas. This disturbance will be minor and is unlikely to result in lateral spreading.

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

Soils in the Project Area have textures mostly defined as some type of sand, loam or combination (Table 6-10). This generality carries through the Unified Soil Classification System as well, with 71% of soils characterized as silty sand and 27% as clayey sand.

Expansive soils are soils that expand and contract due to changes in moisture content. USGS mapping of expansive soils indicate areas where clay soils are present and the potential for which they might expand or contract. Expansive soils within Fresno County generally occur outside the Project Area (Fresno County 2020a).

The Swelling Clays Map of the Conterminous United States shows that soils within the project area contain little or no swelling clay (Olive et al. 1989). For this reason, soils in the project area are expected to fall within a soils expansion index of less than 20, as determined in accordance with ASTM D4829 as referenced in the ICC (ICC 2021), indicating that the project area is not located on expansive soils. Further, the project does not involve construction of habitable structures or structures whose failure would create substantial risk to life or property. Therefore, there would be no related substantial risks to life or property created by the project.

GEO e): Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? (No Impact)

The proposed project does not include installation or use of septic tanks. Septic tanks are likely in use at dwellings in the project area, but the proposed conveyance structures and recharge areas will be located at distances greater than 100 feet from the nearest dwelling and will not affect the ability of soils to support the use of septic systems. No other discharge of wastewater associated with the proposed project is anticipated.

GEO f): Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (Less Than Significant with Mitigation)

Paleontologically significant rock units are found in the project area (UCMP 2021, Table 1). The Modesto Formation occurs at depths of approximately 10-30 feet. The proposed construction and excavation depth of canals for the project is anticipated to be less than 10 feet for most of the alignment, which would likely put construction activities in the Holocene aged, Post Modesto, unconsolidated alluvium, which does not have paleontologically significant resources. However, the Post Modesto unconsolidated alluvium is not uniformly thick and may be thinner in some areas. If a thinner area is encountered and excavated, it would impact the paleontologically significant Modesto Formation. Current mapping is not sufficient to know where these thinner areas may be located. With Mitigation Measure GEO-1, the impact to paleontological resources would be less than significant with mitigation.

6.8 GREENHOUSE GAS EMISSIONS (GHG)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6.8.1 Environmental Setting

Greenhouse gases (GHGs) trap heat in the atmosphere. Of the four main types of GHGs, carbon dioxide (CO₂) constitutes over 80% of the total for the U.S. in 2013 (EPA, U.S. Greenhouse Gas Inventory Report: 1990-2013). CO₂ is produced by the burning of fossil fuels such as coal, natural gas, and oil, solid waste, trees, and wood products. CO₂ also results from manufacture of cement as well as certain other chemical processes. CO₂ is absorbed by plants and is thus removed from the atmosphere, though not in sufficient quantities to prevent a build-up of GHGs in the atmosphere.

In 2018, emissions from GHG emitting activities statewide were 425 million metric tons of carbon dioxide equivalent (MMTCO₂e), 0.8 MMTCO₂e higher than 2017 levels and 6 MMTCO₂e below the 2020 GHG Limit of 431 MMTCO₂e (CARB 2020b).

CARB estimated total CO₂ equivalent emissions in 2012 at 459 million tons, down from 493 million tons in 2004 but up from 451 tons in 2011. Of the 2012 total, 37% came from transportation sources, 21% from power generation, 22% from industrial use, 8% from agriculture, 12% from commercial and residential use, and less than 1% from other sources. CO₂ emissions constitutes 85% of the total GHG gases. (CARB 2020b, California Greenhouse Gas Emissions Inventory.)

6.8.2 Regulatory Setting

The CARB is responsible for the development, implementation, and enforcement of California's motor vehicle pollution control program, GHG statewide emission estimates and goals, and development and enforcement of GHG emission reduction rules. California's greenhouse gas regulations are summarized in Table 6-11.

The CARB has promulgated several regulations to address climate change. The "California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms" enacted to reduce emissions of greenhouse gases associated with large entities through the establishment, administration, and enforcement of the California Greenhouse Gas Cap-and-Trade Program; The "Mandatory Greenhouse Gas Emissions Reporting" enacted to establish mandatory GHG reporting, verification, and other requirements for operators of certain facilities that directly emit GHGs, suppliers of certain fuels and

carbon dioxide, electric power entities, verifiers of GHG emissions data reports and offset project data reports submitted pursuant to the cap-and-trade regulation, and verification bodies; “Regulations to Achieve Greenhouse Gas Emission Reductions” enacted to reduce emissions of GHGs associated with specific sources or industries. Among the source specific regulations is the “Greenhouse Gas Emission Requirements for New 2014 and Subsequent Model Heavy-Duty Vehicles,” which include requirements for medium and heavy-duty vehicles.

Table 6-11. Summary of California Greenhouse Gas Regulations

Bill, Year	Description
AB 4420, 1988	Directed California Energy Commission, in consultation with the CARB and other agencies, to “study and report...on how global warming trends may affect California’s energy supply and demand, economy, environment, agriculture, and water supplies.”
AB 1493, 2002	Requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards apply to automobiles and light trucks beginning with the 2009 MY. Although litigation was filed challenging these regulations and EPA initially denied California’s related request for a waiver, the waiver request has now been granted.
Executive Order (E.O) S-3-05, 2005	The goal of E.O. S-3-05 is to reduce California’s GHG emissions to: (1) year 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80% below the 1990 levels by 2050.
AB 32, California Global Warming Solutions Act of 2006	Sets overall GHG emissions reduction goals and mandates that CARB create a plan that includes market mechanisms and implement rules to achieve “real, quantifiable, cost-effective reductions of greenhouse gases.” Requires statewide GHG emissions be reduced to 1990 levels by 2020. (The 1990 CO ₂ e level is 427 million metric tons of CO ₂ e (CARB 2020a)). Directs CARB to develop and implement regulations to reduce statewide emissions from stationary sources. Specifies that regulations adopted in response to AB 1493 be used to address GHG emissions from vehicles. Requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels. Includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.
Senate Bill 1368	Requires the establishment of emission performance standards for any entity supplying electricity to California customers.
E.O. S-01-07, 2007	Requires the carbon intensity of California’s transportation fuels to be reduced by at least 10% by 2020.
Senate Bill 97	Chapter 185 of this bill directed the Natural Resources Agency, in coordination with the Governor’s Office of Planning Research, to address the issues through Amendments to the CEQA Guidelines. The revised Guidelines were adopted December 30, 2009, to provide direction to lead agencies about evaluating, quantifying, and mitigating a project’s potential GHG emissions.

SJVAPCD In August 2008, the SJVAPCD’s Governing Board adopted the CCAP. The CCAP directed the District Air Pollution Control Officer to develop guidance to assist Lead Agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change.

On December 17, 2009, the District adopted the guidance: Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA and the policy: District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency. The guidance and policy are based on the concept of performance-based standards, otherwise known as BPS, to assess significance of project specific greenhouse gas emissions on global climate change during the environmental review process, as required by CEQA. Use of BPS is a method

of streamlining the CEQA process of determining significance and is not a required emission reduction measure. Guidance and policy rely on a tiered approach to determine significance.

For projects which are not exempt from CEQA, if the project complies with an existing GHG emission reduction plan or mitigation program which substantially reduces emissions within the area, the project would be determined to have less than significant individual and cumulative impact. Otherwise, if the project implements BPSs, the project would be determined to have less than significant individual and cumulative impact. Projects not implementing BPS would need to quantify emissions and demonstrate a 29% reduction in GHG emissions from business-as-usual (BAU) to ensure consistency with AB 32 and determine that the project would have a less than significant individual and cumulative impact.

The District has issued a notice soliciting public input on several topics regarding the development of BPS for internal combustion engines serving irrigation pumps. No specific BPSs apply to linear construction projects such as the proposed canal extension project. The potential mitigation measures discussed in the air quality section above would constitute BMPs for meeting air quality standards and GHG emission reduction.

6.8.3 Potential Impacts

The potential for the proposed project to create adverse impacts to climate change was assessed and documented in the air quality technical document prepared for the project (Tetra Tech, 2021b) (Attachment B). The assessment considered potential impacts associated with both the construction and operation of the project. Construction emissions, including heavy duty equipment exhaust and vehicular trip exhaust, was estimated using the Road Construction Emission Model (SMAQMD, 2018). Operational impacts include emissions associated with the internal combustion engines powering a portion of the pumps to be installed at three pump stations, as well as offsite emissions associated with the electric power generation for the electric pumps. Operational combustion emissions were estimated using engine-specific CARB certification values; electric power generation emission factors are from CalEEMod (CACOA 2021).

GHG a): Would the proposed project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (Less Than Significant Impact)

GHG emissions related to the construction of the proposed project would primarily result from the use of fossil fuel in trucks, heavy equipment, and personal vehicles. Heavy equipment would be used for excavation and placement of new materials and equipment (i.e., pumps). Trucks would be used to transport excavated materials to nearby fields and deliver new materials and equipment to the site. Given the rural location of the project area, employees would likely arrive and depart using their personal vehicles.

The GHG emission sources associated with the construction of the proposed project comply with the State climate change plan, and specifically, CARB's "Regulations to Achieve Greenhouse Gas Emission Reductions." Because the construction of the proposed project complies with this emission reduction plan, the construction of the proposed project would have a less than significant individual and cumulative impact on the environment

GHG emissions associated with the operation of the project would result from combustion emissions from the internal combustion engines driving the booster pumps and offsite emissions associated with the electrical power usage by the electric pumps at the Floral Pump Station and the booster pump stations.

Although the District has not established a numerical threshold of significance for GHGs relative to CEQA, several other air districts have. Table 6-12 summarizes some of these along with thresholds for CARB programs.

Table 6-12. Numerical Thresholds of Significance- Various Jurisdictions

Agency	Threshold (Metric Ton CO_{2e}/yr)
San Luis Obispo Air Pollution Control District Stationary Sources	10,000
Sacramento Metropolitan Air Quality Management District Stationary Sources	10,000
Bay Area Air Quality Management District Stationary Sources	10,000
CARB Mandatory Greenhouse Gas Emissions Reporting	10,000
CARB CA Cap on GHG Emissions and Market-Based Compliance Mechanisms	25,000

Annual operational GHG emissions, shown in Table 6-13, are estimated to be 709 metric tons. A comparison to the numerical thresholds shown in Table 6-12 indicates emissions associated with the proposed project are substantially less than thresholds established by various jurisdictions throughout California.

Additionally, the estimated GHG emissions associated with the operation of the proposed project are substantially reduced from business as usual (BAU) because the majority of the power provided to service the pumps will be electric as opposed to fossil fuel. A comparison of estimated project emissions to BAU is shown in Table 6-13. As shown in Table 6-13, the proposed project meets the SJVAPCD threshold of significance of 29% reduction from BAU; therefore, the project would have a less than significant individual and cumulative impact on the environment.

Table 6-13. Operational Emissions

	CO _{2e} (MT)
Proposed Project	709
BAU	1,224
% Reduction	42%
Target (% reduction)	29%
Meets Target?	Yes
Source: Tetra Tech 2021b	

GHG b): Would the proposed project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? (Less than Significant Impact)

All aspects of the construction and operation of the proposed are consistent with all plans, policy, and regulations as discussed above. Compliance with the goals of AB 32 and the Climate Change Scoping plan are demonstrated by meeting the District's determination of less than significant impacts.

6.9 HAZARDOUS MATERIALS (HAZ)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.9.1 Environmental Setting

The proposed project area is either used for agricultural production or is undeveloped. The surrounding area is primarily agricultural, irrigation canals, or rural residences. The San Joaquin Airport CA-32 is approximately five miles east of the project. The Du Bois Ranch Airport is approximately 5.5 miles north of the project boundary. Raisin City Elementary School is within the proposed project boundary. Caruthers High School is approximately one mile east of the southeast corner of the proposed project boundary. Helm Elementary is approximately two miles west of the southwestern corner of the proposed project boundary. San Joaquin Elementary is approximately three miles west of the northwestern corner of the proposed project boundary.

American Avenue Landfill is located approximately three miles north of the project area and is unlikely to result in the presence of hazardous materials in the project area. The Raisin City Oil Field, located in the northeastern corner of the project area, is a monitored source of chloride, boron, and total dissolved solids (TDS). There is little evidence of historical presence of other heavy industry, chemical production, filling stations, or other potential sources of contamination within the project area. It is likely that pesticides, herbicides, and other agricultural chemicals have been applied throughout the project area due to past and ongoing agricultural practices.

6.9.2 Regulatory Setting

Federal

Federal regulations on hazardous materials are contained in the CFR primarily Titles 29 Labor, 40 Protection of the Environment, 42 Public Health and 49 Transportation. The EPA is the principal federal regulatory agency responsible for the safe use and handling of hazardous materials.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) enables the EPA to administer a regulatory program that extends from the manufacturing of hazardous materials to their disposal, thus regulating the generation, transportation, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) allows the federal government authority to respond directly to releases of hazardous substances that may cause harm to public health or the environment, provides mechanisms to remediate uncontrolled or abandoned contaminated sites, defines liability and establishes funding sources for the cleanup of contamination. The development of CERCLA enabled revisions to the National Contingency plan, which led to the development of the National Priorities List.

Hazardous Materials Transportation Act

U.S. Department of Transportation (USDOT) regulates hazardous materials transport throughout the United States through the Hazardous Materials Transportation Act (HMTA) 49 USC Section 5101 et seq. This law protects against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce. The HMTA was amended in 1990 by the Hazardous Materials Transportation Uniform Safety Act and the Hazardous Materials Transportation Authorization Act in 1994. These regulations require employees to be properly trained in safe handling procedures, have complete background checks, and use uniform hazardous materials and hazardous waste packaging and labeling for transport.

State

The EPA has granted the State of California primary oversight responsibility to administer and enforce hazardous waste management programs. California regulations are equal to or more stringent than federal regulations. The Department of Toxic Substances Control (DTSC) is a sub agency of the California State Environmental Protection Agency (Cal/EPA), and is authorized to enforce the provisions of RCRA. The DTSC has enforcement authority and tracks hazardous materials management and hazardous waste throughout the state.

Hazardous waste regulations applied by DTSC are contained within Title 22, Division 4.5, Chapter 11 of the California Code of Regulations (CCR). Chapter 11 Article 3 defines as substances that are toxic, ignitable, reactive, or corrosive. California also defines an extremely hazardous material as a substance that shows high acute or chronic toxicity, is carcinogenic, has bioaccumulative properties, is persistent in the environment, or is water reactive. Additional health and safety requirements, management release response plans and liability determinations are outlined California Health & Safety Code (HSC) Division 20, Miscellaneous Health and Safety Provisions. A release of hazardous materials is any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of into the environment, unless permitted or authorized by a regulatory agency (HSC Section 25501).

State Water Resources Control Board

As discussed in the Hydrology and Water Quality section, the SWRCB has the authority to preserve and enhance water resources in the state. The SWRCB regulates and maintains records of releases of hazardous substances and petroleum-based materials and releases that could affect groundwater or surface water. It also regulates point and non-point pollution generators and discharge permits from irrigated agricultural lands.

Local

Fresno County - Fresno County regulates the use, storage, transport and disposal of hazardous substances, cleanup and underground storage tanks by issuing permits, monitoring regulatory compliance, and other enforcement activities. The county developed a Hazardous Waste Management Plan (HWMP) in accordance with California Health and Safety Code Section 24135 et seq. It identifies the amount of waste produced, the locations of hazardous waste generators and guidance on reducing the need for future hazardous waste facilities by focusing on hazardous waste reduction techniques. The HWMP has not been approved by the State. Fresno County and the Department of Community Health, Environmental Health System coordinate responses to hazardous waste emergencies.

Fresno County is responsible for enforcing the state regulations governing hazardous substance generation and storage. The Fresno County Department of Public Health regulates the use, storage, and disposal of hazardous substances in the county by issuing permits, monitoring regulatory compliance, and other enforcement activities. The application of agricultural products including pesticides and herbicides is regulated, monitored, and enforced by the Fresno County Department of Agriculture, Weights and Measures in accordance with the provisions of the California Department of Food and Agriculture Pesticide Regulation Program (PUE).

Fresno County Policies

- HS-A.1 The County shall, through the Fresno County Operational Area Master Emergency Services Plan, maintain the capability to effectively respond to emergency incidents, including maintenance of an emergency operations center.
- HS-B.1 The County shall review project proposals to identify potential fire hazards and to evaluate the effectiveness of preventive measures to reduce the risk to life and property.
- HS-B.2 The County shall ensure that development in high fire hazard areas is designed and constructed in a manner that minimizes the risk from fire hazards and meets all applicable State and County fire standards. Special consideration shall be given to the use of fire-resistant construction in the underside of eaves, balconies, unenclosed roofs and floors, and other similar horizontal surfaces in areas of steep slopes.
- HS-C.2 The County shall require that the design and location of dams and levees be in accordance with applicable design standards and specifications and accepted design and construction practices.
- HS-C.3 The County shall promote a floodplain management approach in flood hazard areas that are presently undeveloped by giving priority to regulation of land uses over development of structural controls as a method of reducing flood damage.
- HS-C.6 The County shall promote flood control measures that maintain natural conditions within the 100-year floodplain of rivers and streams and, to the extent possible, combine flood control, recreation, water quality, and open space functions. Existing irrigation canals shall be used to the extent possible to remove excess stormwater. Retention-recharge basins should be located to best utilize natural drainage patterns.

6.9.3 Potential Impacts

HAZ a): Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (Less Than Significant Impact with Mitigation Incorporated)

and

HAZ b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (Less Than Significant Impact with Mitigation Incorporated)

The construction contractor will transport, store, and use hazardous materials, such as fuels and lubricants to operate construction equipment such as excavators, compactors, haul trucks, and loaders and employee vehicles. Operating and maintaining the canals and pumps may include the use of fuels, lubricants, and other hazardous materials. The construction contractor is required to develop a project-specific Spill Prevention and Response Plan (SPRP) that conforms to applicable local, state, and federal requirements. The SPRP will be on site during construction. Employees are to be trained on the processes included in the SPRP. The SPRP includes measures that ensure the safe transport, storage, use, and disposal of hazardous materials used or encountered during construction. The plan will outline specific handling and reporting procedures for hazardous materials and disposal of hazardous materials removed from the site at an appropriate offsite disposal facility. The SPRP will outline the volume of materials on site, refueling procedures, location of spill kits, sensitive areas and spill response procedures to be followed by the construction contractor. A stormwater pollution prevention plan (SWPPP) with site-specific BMPs will be developed by the contractor to ensure water quality standards are met during construction. Spill response measures related to stormwater runoff will also be outlined in the SWPPP.

HAZ c): Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (No Impact)

Raisin City Elementary is the only school within ¼-mile of the proposed project area, but it is located approximately 3 miles from the nearest location of construction. There will be no impacts to schools.

HAZ d): Would the project be located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? (No Impact)

According to GeoTracker, five leaking underground storage tank facilities are within the project limits. Cleanup of the petroleum fuel spills has been completed and the cases are closed (EDR 2021). One active underground storage tank is within the project but not near active construction (EDR 2021). There is one large quantity and two small quantity generators and two Envirostar sites within the project area (EDR 2021). The Environmental Data Resources summary map is included as Attachment E. None of the aforementioned sites are within the limits of construction. There will be no impacts associated with this criterion.

HAZ e): For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? (No Impact)

There are no airstrips within the project limits. The San Joaquin Airport CA-32 is approximately five miles from the easternmost project boundary and the Du Bois Ranch Airport is approximately 5.5 miles from the northernmost project boundary. The project area is included in the Airport Influence Area or Land Use Compatibility Zone as identified in the Fresno County Comprehensive Airport Land Use Plan (ALUCP) (Coffman 2018). As a groundwater recharge project that will pose no aircraft safety hazards nor create hazards for airstrips, there will be no impacts.

HAZ f): Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (Less Than Significant Impact)

There may be minor, temporary increases in traffic during the mobilization of construction equipment and materials. The contractor's traffic control plan will ensure unhindered emergency vehicle access. Construction activities impacting traffic flow would cease during an evacuation. This project will not impair or impact an emergency response plan or emergency evacuation plan, resulting in a less than significant impact.

HAZ g): Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? (No Impact)

The proposed project area is rural and highly developed agriculture land. The risk of wildland fire is low due to lack of grasses or underbrush in most of the project area. There is a slightly increased risk of fire during construction due to the potential for sparks from construction machinery. This risk is still considered low. Post construction, the risk of fire during operations will be reduced from current conditions due to the large area that will be flooded. The groundwater recharge project area will be managed for weed control, which will reduce fire potential. The California Office of the State Fire Marshal mapped the project area as Local Responsibility Area (LRA) Unzoned and determined that this area has no Very High Fire Hazard Severity Zones (Coffman 2018). There will be no impacts associated with wildland fire.

6.10 HYDROLOGY AND WATER QUALITY (WAT)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) result in substantial erosion or siltation on or off site;	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.10.1 Environmental Setting

Regional Topography and Climate

Topography of the watershed, generally, is highest in the eastern portion, in the foothills of the Sierra Nevada Range, and decreases westward toward the San Joaquin Valley. Topography in the San Joaquin Valley is generally very low to flat, but subtly decreases to a low of approximately 150 feet above sea level along the Fresno Slough and then increases slightly to the west toward the Diablo Range, which is over 5,000 feet above sea level. Topography in the valley decreases slightly to the north along the San Joaquin River. In the project area, topography dips to the northwest toward the Fresno Slough.

The region is in a Mediterranean climate and receives approximately 11 inches of rain annually (Bachand et al. 2012). Direct precipitation occurs primarily in the form of rain or fog.

Surface Water Hydrology

The Kings River originates high in the Sierra Nevada Mountains near the Inyo County line and flows southwest through the central part of Fresno County and into Tulare County at Reedley (Figure 6.10.1). Kings River flows are regulated by Pine Flat Dam, completed in 1954 for flood control, recreation, irrigation, and hydroelectric purposes. Pine Flat Reservoir has a storage capacity of approximately one million acre-feet. Flood control is managed by the U.S. Army Corps of Engineers, while the releases for irrigation diversion are managed by the Kings River Water Association (KRWA). Additional reservoirs upstream of Pine Flat are owned and operated by Pacific Gas and Electric for hydroelectric power generation. These facilities have a combined storage capacity of about 252,000 acre-feet. Two uncontrolled creeks, Hughes Creek and Mill Creek, flow into the Kings River below Pine Flat Dam. Pine Flat Reservoir has adequate storage capacity to avoid emergency releases in most storm events, but these downstream creeks can add significant flow to the river.

The Kings River provides approximately 85% of the surface water used in the Kings Subbasin (MAGSA 2020) (Figure 6.10.2). Kings River Water Association (KRWA), which is made up of 28 agencies, manages flow on the Kings River (KRWA 2018). KRWA manages water using analysis of anticipated weather, upstream flows, and ability of downstream users to receive the water. Significant adjustments may be necessary, and a variety of operations are considered, including storing or routing water through alternate sloughs or requesting users accept additional water. Fresno Slough and the James Bypass are normally dry except for groundwater seepage and irrigation returns. Flow is diverted to the South Fork Kings River only in very wet years.

The Kings Subbasin is over-drafted by more than 120,000 acre-feet annually (MAGSA 2020). Although surface waters on the Kings River and San Joaquin River are over-appropriated under normal flows (MAGSA 2020), flood risks present a major issue in the Kings Subbasin from January to July. Releases from Pine Flat Reservoir can be high when the reservoir, which accommodates snowmelt from the Sierra Nevada Range, is anticipated to meet capacity. Flood risk mitigation typically incurs costs up to \$20 million per year (Bachand et al. 2014). Large floods in 1983, 1995, and 1997 incurred a total of \$1.55B (2020 dollars) in damages (Bachand et al. 2014, Reclamation 2005).

Surface Water Quality

Surface water quality on the upper Kings River is high due to its origins primarily as snowmelt high in the Sierra Nevada mountains. As the river enters the valley, its quality tends to diminish as it receives returns from agriculture. Although the lower Kings River, downstream of the Island Weir near the fork between

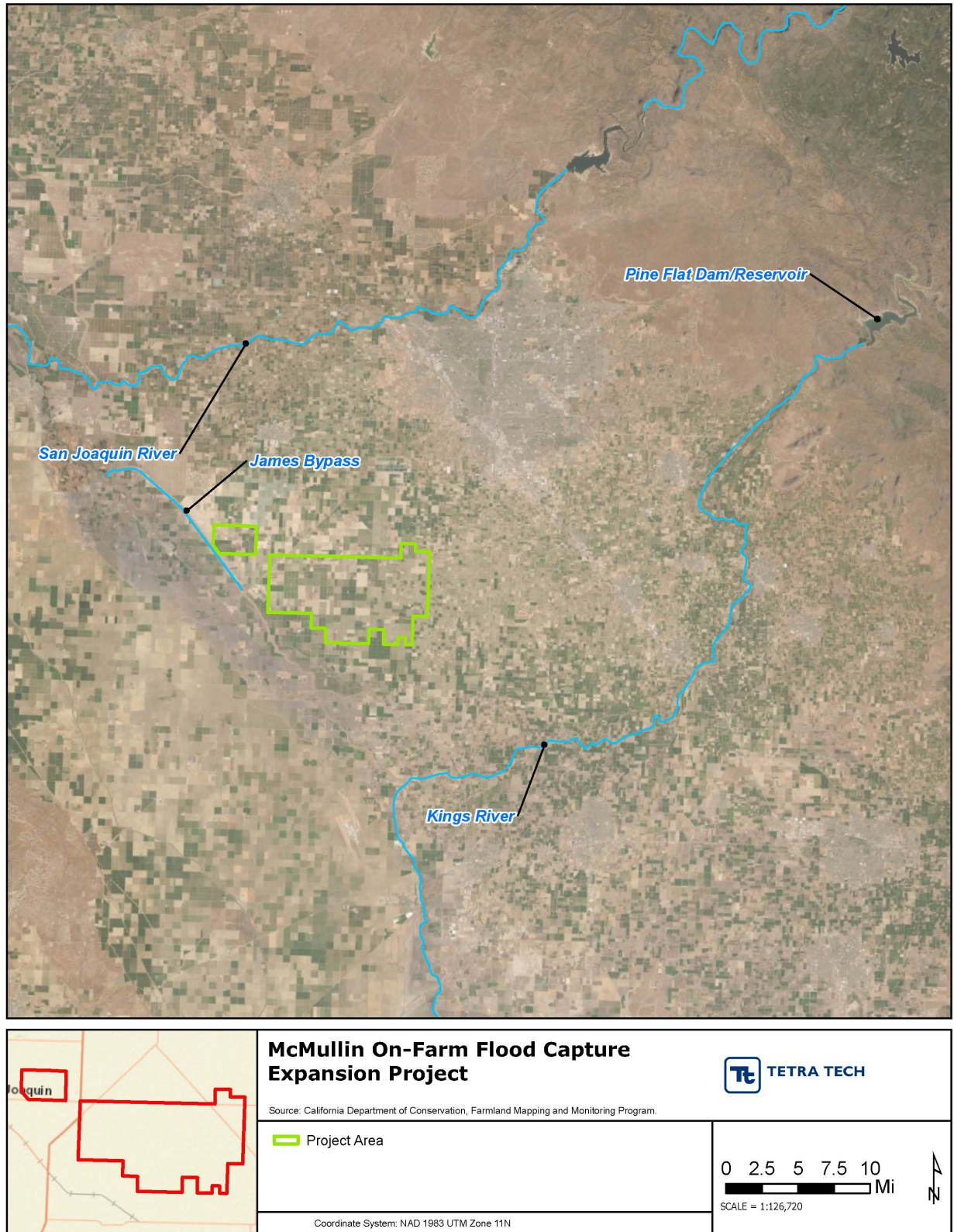


Figure 6.10.1. Key Hydrologic Features

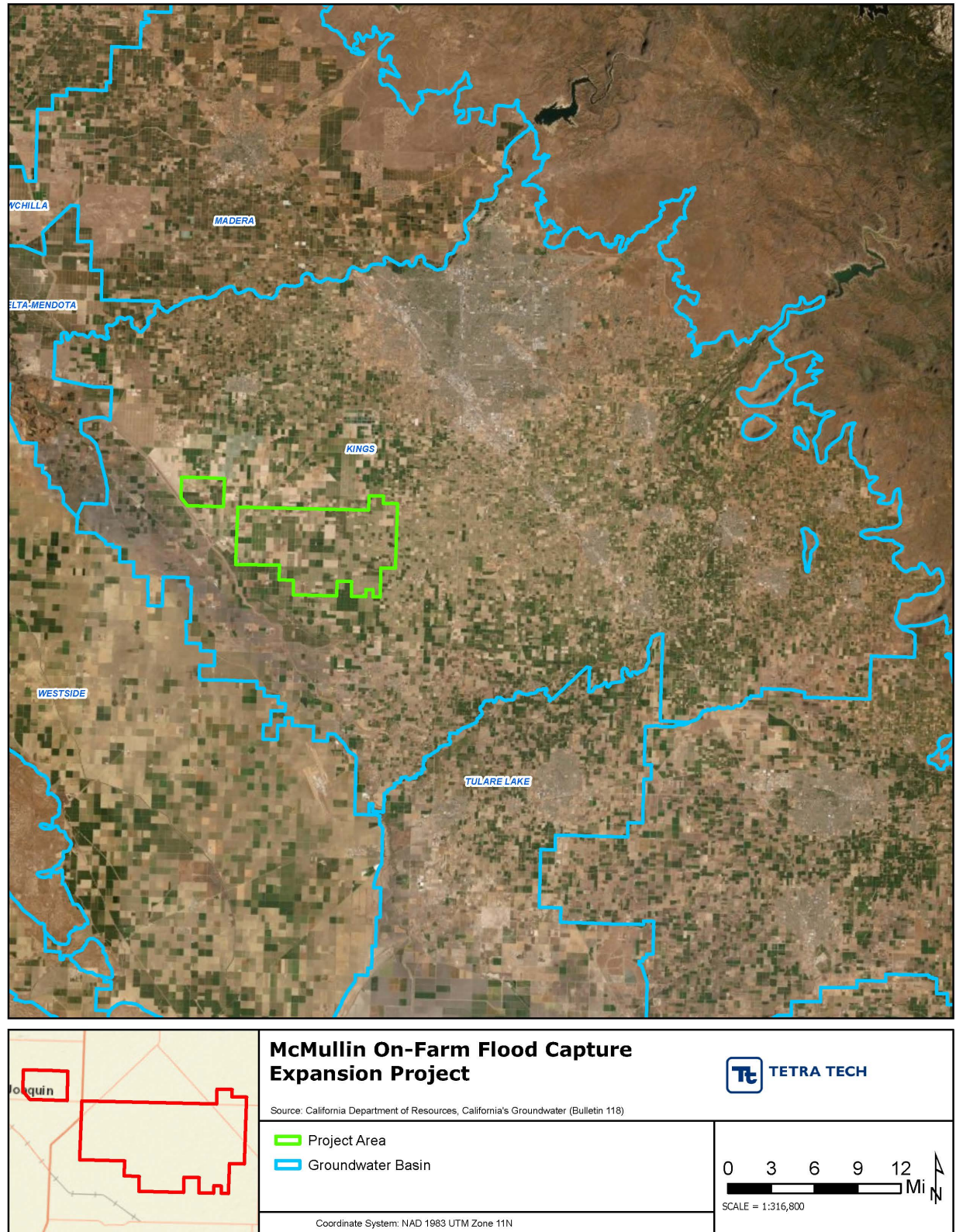


Figure 6.10.2. Groundwater Boundary

the north and south Kings River, has elevated levels of salinity, molybdenum, and toxophene; the elevated levels only warrant a low priority rating by the State Water Resources Control Board (KBWA 2018). The Water Quality Control Plan (WQCP) for the Tulare Lake Basin covers the Kings River and addresses surface water contamination, most of which is from agricultural drainage (KBWA 2018). The WQCP recommends BMPs, many for on-farm practices, to address potential contamination from agricultural runoff. Another BMP is a surface water monitoring network where samples can be collected, and contaminant levels can be monitored monthly for salinity, pH, and temperature. Less frequent monitoring for nutrient levels and toxic substances is recommended by the WQCP.

Groundwater Hydrology

Groundwater is the primary source of irrigation water in MAGSA. With the exception of the James Groundwater Sustainability Agency (GSA), the other GSAs in the Kings Subbasin use unmetered private wells (KSGSA 2021). In the James GSA, all irrigation groundwater wells are owned and operated by the James Irrigation District (JID) (KSGSA 2021). Despite the unmetered wells, it is possible to estimate groundwater use based on land use. In the 2019/2020 Water Year (WY), it was an estimated 1.3 million acre-feet, 1.2 million acre-feet of which was for agriculture (KSGSA 2021). Groundwater use can fluctuate between 1 million acre-feet and 2.2 million acre-feet (Bachand et al. 2012). Of the groundwater pumped, the McMullin Area GSA used the second most (0.37 million acre-feet) of all the GSAs in the 2019/2020 WY.

The groundwater gradient decreases toward a cone of depression in the project area and increases on either side to the northeast and to the southwest (KSGSA 2021). In 2015, the groundwater surface elevation within the project area ranged from an estimated 50 feet below sea level to 120 feet above sea level. As of Spring 2020, the groundwater gradient was largely unchanged compared to that of 2015 (KSGSA 2021).

Infiltration rates are an important factor in identifying the most suitable locations for water recharge. NRCS information on Drainage Class and Hydrologic Soils Group provides an overall expectation for drainage and infiltration. Nearly 80% of the soils are categorized with Drainage Classes of “somewhat excessively drained” and “well drained” (Table 6-10). Relative soil permeability is shown in Figure 6.10.3.

The actual infiltration rates are more difficult to estimate. Current estimated infiltration rates are extrapolated from saturated hydraulic conductivity values laboratory determined for different soil texture classes and infiltration rate tests (Bachand et al. 2014, 2016, 2021). From these data sources, infiltration rates are estimated at approximately 2.5 to 4.8 inches/day within the Project Area.

Groundwater Quality

The California State Water Resources Control Board (SWRCB) has enacted a Groundwater Quality Protection Strategy (GWQPS) for the Central Valley region. The SWRCB seeks to maintain high-quality drinking groundwater resources wherever it is present by limiting bacteria, organic and inorganic chemical constituents, and maintaining acceptable taste and odor so potential beneficial uses are not adversely affected. The GWQPS lists several existing groups and their actions to protect groundwater quality. Because the region is heavily reliant on groundwater for the majority of its water use, groundwater is used for drinking water and municipal wells are monitored for compliance with safe drinking water standards. While municipal wells are monitored for safe drinking water standards, domestic wells are not always monitored.

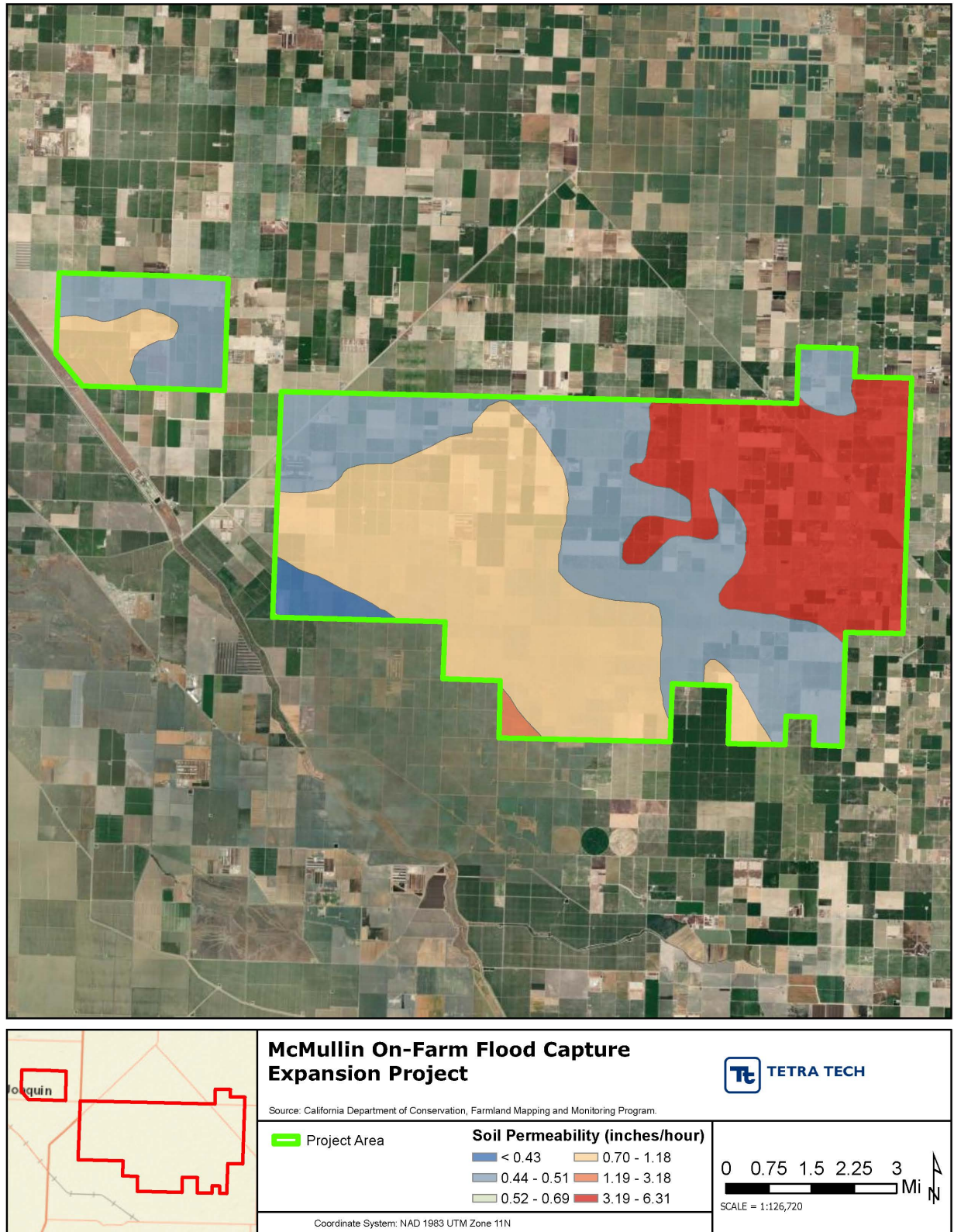


Figure 6.10.3. Soil Permeability

Groundwater quality within MAGSA area is generally excellent for agriculture and good for municipal uses (MAGSA 2020). Eight possible constituents have been identified at inconsistent levels over the last several decades in the MAGSA area. These include arsenic, chloride, 1,2 Dibromo-3-chloropropane (DBCP), manganese, nitrates, sodium, total dissolved solids (TDS), 1,2,3 Trichloropropane (1,2,3 TCP), and uranium. Possible sources of these constituents include agricultural inputs and the Raisin City Oil Field, located in the northeast corner of the study area. Although there have been brief historical exceedances of Maximum Contaminant Levels (MCLs) of some of these constituents, there is no indication of trends that would cause significant concern to MAGSA water quality. Few exceedances of pesticides have been identified (MAGSA 2020).

MAGSA will continue to track plume expansion or movement through the groundwater monitoring network it maintains around the Raisin City Oil Field and will continue to track identified constituents using data from public water supply wells and from the NRCS's Groundwater Ambient Monitoring and Assessment Program (GAMA). MAGSA will continue to comply with California Code of Regulations (CCR) Title 22, which requires groundwater monitoring and reporting by community water systems and non-community public supply wells. MAGSA will utilize this data to identify future groundwater quality concerns and implement mitigation measures if needed.

6.10.2 Regulatory Setting

Federal

Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES)

The CWA established water quality standards for surface waters and the basis for regulating the discharge of pollutants into the waters of the United States (WOTUS). Under the CWA, the EPA has implemented pollution control programs, including wastewater standards for industry and water quality standards for contaminants in surface water. It became unlawful to discharge any pollutant from a point source (a discrete conveyance, such as a pipe or man-made ditch) under the CWA unless a permit was obtained. The EPA NPDES controls discharges of pollutants to navigable waters by requiring permits that help regulate point source discharges from industry, municipalities, and other facilities (EPA 2020).

National Flood Insurance Act

Under the National Flood Insurance Act, the federal government subsidizes flood insurance to landowners in high flood risk areas. The Federal Emergency Management Agency (FEMA) prepares Flood Insurance Rate Maps (FIRMs) that display the 100-year flood zone and other flood-related features.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act was enacted in the State of California in 1969 to protect water resources, including groundwater. Through this legislation, the California SWRCB and its nine Regional Boards were given authority to preserve and enhance water resources in the state. The legislature “finds and declares that the people of the state have a primary interest in the conservation, control, and utilization of the water resources of the state, and that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state” (SWRCB 2013).

Any construction activities greater than one acre require coverage under the SWRCB NPDES General Permit for Discharges from Construction Activities, Order No. 2010-0014-DWQ, NPDES No. CAS000002 (Construction General Permit). This general permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP) and the implementation of BMPs to minimize offsite sedimentation during construction projects.

State Water Resources Control Board

Responsibility for addressing water quality issues in California falls to the SWRCB. The SWRCB carries out its duties under the Porter-Cologne Water Quality Control Act through regional water basin plans. The project area is in the Central Valley Regional Water Quality Control Board (CVRWQB) jurisdiction. The *Water Quality Control Plan for the Tulare Lake Basin, Third Edition* is the master document for protecting water resources in the region (CVRWQCB 2018).

Regional Water Quality Control Board

The CVRWQCB administers the NPDES stormwater-permitting program in the Central Valley region. Construction activities on one acre or more are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit), which requires the preparation and implementation of a SWPPP. A SWPPP includes specifications for BMPs to be implemented during project construction to control degradation of surface water by preventing the potential erosion of sediments or discharge of pollutants from the construction area. BMPs in the California Storm Water Best Management Practice Handbook (CASQA 2003) reduce degradation of surface waters to an acceptable level. Additionally, a SWPPP describes measures to prevent or control runoff degradation after construction is complete and identifies a plan to inspect and maintain these facilities or project elements.

AB 3030 Groundwater Management Act (1992)

AB 3030 was passed to provide opportunities for local groundwater management. Many basins developed Groundwater Management Plans (GWMPs) to increase the level of management and coordination of monitoring, operation, and administration of groundwater basins. Much of the substance of AB 3030 pertaining to medium and high priority basins was replaced by the Sustainable Groundwater Management Act (SGMA) in 2014, but it is still applicable to low or very low priority basins.

Sustainable Groundwater Management Act (SGMA) of 2014

SGMA is a three-bill legislative package that was signed into law on September 16, 2014. It is the first law with a framework for sustainable groundwater management. SGMA requires that groundwater be managed such that supplies can be maintained and reach sustainability within 20 years of implementing a sustainability plan. SGMA directs the California Department of Water Resources (DWR) to complete multiple activities, including, but not limited to, adoption of regulations for local agency proposed revisions to groundwater basin boundaries, adoption of regulations for evaluating and implementing local agency-prepared groundwater sustainability plans, update the prioritization of basins, and conduct groundwater assessments.

DWR classifies groundwater basins into high, medium, low, and very low. The classifications are determined through a technical process to weigh the eight components outlined in the California Water Code Section 10933(b). Governments and water agencies of high and medium priority basins must cease groundwater use and bring levels back to a balance between pumping and recharge, so they are no longer

actively depleted. All basins with a high and medium priority are required to have a Groundwater Sustainability Plan (GSP), and basins with low and very low designations are encouraged to have a GSP.

The Kings Subbasin has a GSP with which any groundwater project must comply. The GSPs are updated annually.

State Board Resolution 68-16: Statement of Policy with Respect to Maintaining High Quality of Waters in California (Antidegradation Policy)

In instances where existing water quality is better than that prescribed by the objectives, the State Antidegradation Policy applies. The Antidegradation Policy states that “whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality would be maintained until it has been demonstrated to the State that any change would be consistent with maximum benefit to the people of the State, would not unreasonably affect present and anticipated beneficial use of such water, and would not result in water quality less than that prescribed in the policies.” Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to high quality waters would be required to meet waste discharge requirements. These requirements would result in the best practicable treatment or control of the discharge necessary to assure that a pollution or nuisance would not occur. Furthermore, the requirements would assure that the highest water quality consistent with maximum benefit to the people of the State would be maintained.

California Government Code 65302 (d)

Code 65302 (d) was created to ensure that local general plans include an element for the conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, and minerals. The conservation elements consider the effect of development within the jurisdiction, as described in the land use element, on natural resources located on public lands, including military installations. That portion of the conservation element including waters shall be developed in coordination with any countywide water agency and with all district and city agencies, including flood management, water conservation, or groundwater agencies that have developed, served, controlled, managed, or conserved water of any type for any purpose in the county or city for which the plan is prepared. Coordination shall include the discussion and evaluation of any water supply and demand information described in Section 65352.5 if that information has been submitted by the water agency to the city or county. The conservation element may also cover all the following:

- (A) The reclamation of land and waters
- (B) Prevention and control of the pollution of streams and other waters
- (C) Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan
- (D) Prevention, control, and correction of the erosion of soils, beaches, and shores
- (E) Protection of watersheds
- (F) The location, quantity, and quality of the rock, sand, and gravel resources
- (G) Flood control

Irrigated Lands Regulatory Program

The Irrigated Lands Regulatory Program (ILRP) addresses discharge of wastes including sediments, pesticides, and nitrates from commercial irrigated lands. The goal of the ILRP is to protect surface water and groundwater quality and to reduce impacts of irrigated agricultural discharges to waters of the State.

The Central Valley Regional Water Quality Control Board has adopted Waste Discharge Requirements that address discharges to both surface water and groundwater, thus requiring ILRP enrollment for all commercially irrigated agricultural operations.

Tulare Lake Basin Plan

The CVRWQCB adopts and administers the Basin Plan for the Tulare Lake system and freshwater tributaries and groundwater resources (CVRWQCB 2018). In addition to establishing water quality standards, the basin plan contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code, §13240-13247).

The Basin Plan defines beneficial uses for surface waters and groundwater. Beneficial uses that apply to the project area are summarized in Table 6-14, and definitions are contained in the Basin Plan (CVRWQCB 2018).

Water Quality Objectives. Water Quality Objectives (WQOs) to protect beneficial uses are both narrative and numerical. Narrative objectives are general descriptions of water quality that must be attained through pollutant control measures and watershed management. Numerical objectives typically describe pollutant concentrations, physical/chemical conditions of the water itself, and the toxicity of the water to aquatic organisms. These objectives represent the maximum amount of pollutants that can remain in the water column without causing any adverse effect on organisms using the aquatic system as habitat, on people consuming those organisms or water, and on other current or potential beneficial uses. Together, the narrative and numerical objectives define the level of water quality that shall be maintained within the region. Groundwater quality objectives relevant to this project are summarized in Table 6-15.

County and Regional

The Fresno County General Plan (Fresno County 2000) provides for a comprehensive, long-term framework designed to protect Fresno County's agricultural, natural, and cultural resources. Specific policies in the plan have been developed to protect water resources in Fresno County.

- Policy OS-A.1 The County shall develop, implement, and maintain a plan for achieving water resource sustainability, including a strategy to address overdraft and the needs of anticipated growth.
- Policy OS-A.4 The County shall update, implement, and maintain its Groundwater Management Plan.
- Policy OS-A.6 The County shall support efforts to create additional water storage that benefits Fresno County, and is economically, environmentally, and technically feasible.
- Policy OS-A.13 The County shall encourage, where economically, environmentally, and technically feasible, efforts aimed at directly or indirectly recharging the county's groundwater.
- Policy OS-A.15 The County shall, to the maximum extent possible, maintain local groundwater management authority and pursue the elimination of unwarranted institutional, regulatory, permitting, and policy barriers to groundwater recharge within Fresno County.
- Policy OS-A.16 The County shall permit and encourage, where economically, environmentally, and technically feasible, over-irrigation of surface water as a means to maximize groundwater recharge.
- Policy OS-A.17 The County shall directly and/or indirectly participate in the development, implementation, and maintenance of a program to recharge the aquifers underlying the county. The program shall make use of flood and other waters to offset existing and future groundwater pumping.
- Policy OS-A.24 The County shall require new development near rivers, creeks, reservoirs, or substantial aquifer recharge areas to mitigate any potential impacts of release of pollutants in storm waters, flowing river, stream, creek, or reservoir waters.
- Policy OS-A.25 The County shall minimize sedimentation and erosion through control of grading, cutting of trees, removal of vegetation, placement of roads and bridges, and use of off-road vehicles. The County shall discourage grading activities during the rainy season unless adequately mitigated to avoid sedimentation of creeks and damage to riparian habitat.
- Policy OS-A.26 The County shall continue to require the use of feasible and BMPs to protect streams from the adverse effects of construction activities and urban runoff.

6.10.3 Potential Impacts

WAT a): Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality? (Less Than Significant Impact with Mitigation Incorporated)

The proposed project could violate water quality standards or degrade water quality if it:

- Increased sediment loading during construction or operations;
- Diminished beneficial uses or WQOs described in Tables 6-14 and 6-15; or,
- Released contaminants into surface waters or groundwater.

Agricultural flooding during operation

Three thousand acres are estimated for inundation under the OFR program (Bachand et al 2011a, 2011b) and would be expected to require both structural (e.g., terracing, small berms, surface water channels, water control structures) and non-structural/management (e.g., timing, duration, distribution).

Under Phase 1, a FFCP was developed for OFR management practices (Bachand and Cameron 2021). MAGSA will develop a FFCP for the McMullin Expansion Project, similar to that which was developed for Phase 1 of the McMullin Projects (Mitigation Measure WAT-2). In addition, MAGSA will inspect water control structures (Mitigation Measure WAT-5) to ensure that no failures of berms, piping, or conveyance features occurs, which could inadvertently discharge field recharge waters to surrounding lands. Importantly, OFR targets shallow water levels in fields which reduce the potential for accidental flooding of adjacent fields and associated damage.

Groundwater Quality

Groundwater quality evaluation includes an assessment of a standard suite of constituents of concern (COCs), a focus on nitrate and salts, and pesticides.

General groundwater quality effects from infiltration of and dilution by surface flood waters during OFR operations. Kings River flood flow samples had COCs [i.e., nitrate (NO₃), electrical conductivity (EC), phosphate (PO₄), ammonium (NH₄), and total dissolved solids (TDS)] concentrations lower than the pumped groundwater in the project region, generally nearly 0 ppm (Bachand et al. 2014). Studies predict groundwater quality would improve from dilution with the higher quality surface water once COCs are flushed from the vadose zone (Tetra Tech and Bachand & Associates, 2018; Bachand et al. 2014; Bachand et al. 2017).

Landowners participating in the OFR program will comply with the requirements of the ILRP, which includes water quality monitoring. Furthermore, MAGSA, as the agency responsible for developing the programs and projects to achieve sustainable groundwater under California's Sustainable Groundwater Management Act, is developing a groundwater monitoring program to track progress towards meeting stated groundwater goals, and to develop operational data for its various programs, including the McMullin Expansion Project. Participating landowners will assist in working towards sustainable groundwater goals and targets as member landowners within MAGSA.

Potential nitrate and salt leaching to groundwater from OFR. Bachand et al. (2017b) studied the potential of salt and nitrate leaching to groundwater under OFR under tomatoes, almonds and vineyards. The study (using soil core data and an integrated cultural practices-vadose zone model-groundwater model framework) assessed the potential export of nitrate and salts to groundwater from two sources:

- Current – from current crop cultural and fertilization practices, and
- Legacy – legacy nitrate and salts from past agricultural crops and history stored in the root and vadose (unsaturated) zones.

The study concluded nitrate and salts from both current and legacy sources would be exported to groundwater during OFR, with greatest export loads during early OFR applications when legacy nitrate and salt loads were highest. Other studies have shown most vadose zone nitrate and salt flushed during OFR (Bachand et al, 2011a, 2014, 2017a). Over time, average N concentrations across water exported to groundwater from OFR decreased, with the time and decrease dependent upon crop cultural practices. In Within one decade of recharge, groundwater N levels were being diluted under the three tested crops (tomatoes, grapes, vineyards) for the input recharge scenarios (Bachand et al 2017b), consistent with an initial conceptual model put forth by Bachand et al (2011a).

Bachand et al (2017b) recommended OFR management practices to reduce nitrate loading. These practices are built into the mitigation measures listed in Section 4.6, and described as follows:

- Practice good nutrient management consistent with Irrigated Lands Regulatory Program (Mitigation Measure WAT-4);

- Avoid intentional recharge operations on fields historically or currently flood irrigated with dairy lagoon water (Mitigation Measure WAT-2),
- Fields should be used repeatedly for recharge where possible to decrease the opportunity for flushing legacy loads from the vadose zone (Mitigation Measure WAT-2), and
- Consider effects on existing wells when planning recharge operations to minimize short-term water quality impacts and achieve long-term overall improvement in groundwater quality (Mitigation Measure WAT-3).

These recommendations are basic foundational goals of the FFCP developed for Phase 1 (Bachand et al 2021) which will be the template for the McMullin Expansion Project FFCP.

Dairy. Potential adverse impacts to groundwater quality could occur on silage fields where diluted dairy wastes are applied as fertilizer to corn, sorghum, or other crops that are then fed to dairy cows. MAGSA is aware of the location of such fields in the Project Area and will exclude these fields from use as recharge areas. If subsequent testing of soils in silage fields indicated that concentrations of salts, nitrates, or other COCs were such that they would not have significant adverse effects to groundwater if exposed to recharge actions, they may be considered for future use. The FFCP developed under Mitigation Measure WAT-2 will include a strategy to manage discharge from farmlands, including dairy, by ranking and prioritizing fields, and by developing methods to manage and control legacy loads.

Pesticides. The California Department of Pesticide Regulation (CDPR) regulates the use of pesticides. CDPR maintains a detailed list of pesticides and their registration status, use, sales, active ingredients, fate of the active ingredients, and whether or not it is on the groundwater protection list (GWPL). Pesticides that are on the GWPL are those that have the potential to pollute groundwater. As of 2019, there are 105 pesticides on the GWPL (CDPR 2019).

Groundwater Protection Areas (GWPA)s are identified where conditions, such as shallow groundwater table, high infiltration rate, and high legacy soil contamination or pesticide use, increases the potential for groundwater contamination by regulated pesticides. GWPA)s are identified in maps produced by CDPR, and four townships within the project area are identified as GWPA)s with leeching potential (CDPR 2020). GWPA)s with leeching potential must abide by strict rules regarding water use, flooding, and pesticide use to reduce the impact of pesticides in the soil and groundwater. Although no pesticide exceedances were detected during the 2018 sampling period (KRWQC 2019), the potential for pesticide contamination is present and would be a potentially significant impact. MAGSA will comply with Mitigation Measure WAT-3, which requires compliance with all pesticide use regulations enforced by the CDPR, and Mitigation Measure WAT-2 to exclude these properties if they are not suitable and would result in increased movement of contaminants into the groundwater. With the implementation of WAT-2 and WAT-3, the potential for contamination of the groundwater table by pesticides would be less than significant with mitigation.

Other Constituents. Groundwater contamination from septic systems is most likely in areas where soils are well-drained, populations are dense, and groundwater tables are shallow (Nolan et al. 1998). Soil types in the proposed project area are loamy, comprised of a mix of silt, sand, and clay, and are generally not well-drained. The proposed project area is very sparsely developed, and the number of existing septic systems is very low. Additionally, the proposed project area vicinity does not provide an attractive area for development, as there is no economic base to support large population increases. Finally, the groundwater table would not be raised to the point where leachates from septic fields would be encountered. Therefore, contamination of groundwater from septic systems is not likely to occur and this impact would be less than significant.

Table 6-14. Potential Impacts on Groundwater Beneficial Uses

Beneficial Uses of Waters		Potential Impacts
REC2	Non-contact Water Recreation	Beneficial impact, project may attract waterfowl and increase hunting opportunities
WILD	Wildlife Habitat	Possible beneficial impact, as increased groundwater levels may help to maintain streamflow during periods when reproduction and early development of warm water fish may occur in the Project Area
AGR	Agricultural Supply	Beneficial impact, as increased groundwater table will reduce pumping costs and the potential for overdraft
IND	Industrial Service Supply	No impact, diversions will occur only during periods of flood flows so availability for industrial services will not be reduced
MUN	Municipal and Domestic Supply	Beneficial impact, as increased groundwater table will reduce pumping costs and the potential for overdraft
PROC	Industrial Process Supply	Beneficial impact, as increased groundwater table will reduce pumping costs and the potential for overdraft

Table 6-15. Potential Impacts on Groundwater Water Quality Objectives

Factor	Objective	Likelihood of Significant Impairment	Notes
Bacteria	2.2/100 ml	Low	Groundwater table is very deep, bacteria are likely to be removed from soil by natural methods before moving to groundwater
Chemical Constituents	0.015 mg/l	Low	Source waters are generally lower in most COCs than indigenous groundwater. Initial spike in nitrate concentration likely due to leaching from soils, followed by dilution from groundwater inputs
Pesticides	Below threshold values	Low	Pesticides will likely break down before reaching water table, area is not within a GWPA, pesticides of concern not used in Project Area
Radioactivity	Below MCLs	Low	No source of radionuclides from ongoing operations or project construction, no background levels in soils
Salinity	Maximum average annual increase in EC not to exceed 4 umhos/cm	Low	Source water inputs lower than in indigenous groundwater. Initial spike due to leaching likely from soils, followed by reduction in concentration due to dilution
Tastes and Odors	None	Low	Taste and odor may be slightly affected at the beginning of the project, but this effect is expected to be minor and temporary due to mixing of new groundwater and indigenous groundwater during extraction
Toxicity	None	Low	The proposed project will not introduce new source of toxins
MCL: maximum contaminant levels			

WAT b): Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? (No Impact)

The Kings Subbasin is over-drafted by more than 120,000 AF annually (MAGSA 2020). The average depth to groundwater in the Project Area is approximately 155 feet below ground surface and is declining at an average rate of 1.5 ft/yr (MAGSA 2020). Generally, groundwater use outpaces recharge, as groundwater levels have trended downward since the 1980's (KSGSA 2021). After wetter years, such as 2016 and 2017, upward fluctuations have occurred; however, the general trend is down.

The groundwater gradient decreases toward a cone of depression in the Project Area and increases on either side to the northeast and to the southwest (MAGSA 2021). In 2015, the groundwater surface elevation within the Project Area ranged from an estimated 50 feet below sea level to 120 feet above sea level. As of Spring 2020, the groundwater gradient was largely unchanged compared to that of 2015 (KSGSA 2021). The project area is the location of the greatest depth to groundwater, and a large cone of depression, in the Kings Subbasin (MAGSA 2020). Farmers in this area rely almost entirely on groundwater pumping to maintain farming. The regional dependence on groundwater threatens the eventual economic sustainability in the region.

The Project will recharge an annualized average of 16,800 AF, calculated from historical data. This project will support MAGSA in achieving its groundwater sustainability goals, mandated under SGMA. The primary goal is to ensure the basin is managed to maintain reliable water supply for current and beneficial uses by 2040, achieving this goal through increasing or maintaining groundwater supply.

Moreover, the Project will enroll an estimated 3,000 acres of farmland in OFR to achieve the necessary infiltration and percolation rates. Infiltration rates are an important factor in identifying the most suitable locations for water recharge. Current estimates are based on saturated hydraulic conductivity values based upon soil textures determined from NRCS soils data, and on field determined infiltration rate tests determined during OFR investigations (Bachand et al. 2014, Bachand et al. 2016). From these data sources, infiltration rates are estimated at approximately 2.5 to 4.8 inches/day within the Project Area (Bachand et al. 2016, Bachand and Cameron 2021). Most favorable locations for recharge considering soils and their associated infiltration rates, as well as other factors (e.g., field slope, crop, surface water availability) will be assessed in the FFCP to identify the most favorable OFR locations (Mitigation Measure WAT-2). Data such as maps of Drainage Capacity and Hydrologic Soil Groups will be used during initial site screening.

Together, these factors will increase groundwater supplies, improve and increase groundwater recharge activities and support MAGSA in sustainable groundwater management of the basin. This project will benefit groundwater supplies.

WAT c): Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

- i) result in substantial erosion or siltation on- or offsite?(Less Than Significant Impact with Mitigation Incorporated)***

Sedimentation during construction

Construction activities, especially those occurring during the wet season, could increase erosion and impact surface water quality in the short term by discharging sediment and pollutants bound to sediment. Other pollutants associated with construction, such as trash, solvents, sanitary waste from portable

restrooms or sewage treatment facilities, and concrete curing compounds could flow into and adversely affect the quality of any surface water. The proposed project is subject to the requirements of an NPDES Construction General Permit (CGP) because the construction footprint exceeds one acre of disturbance.

As specified under Mitigation Measure WAT-1, a Stormwater Pollution Prevention Plan (SWPPP) will be developed prior to construction to manage potential discharges from the site during construction that could affect area surface water quality. The SWPPP will require the construction contractor to implement measures to:

- Control all pollutants and their sources (e.g., construction, construction site erosion, other activities associated with construction);
- Identify and eliminate all discharges unrelated to stormwater that are not otherwise required to be under a RWQCB permit;
- Implement effective site BMPs to reduce or eliminate pollutants (i.e., stormwater discharges, authorized construction discharges unrelated to stormwater) to the level of Best Available Technology/Best Conventional Technology standards;
- Complete and correct calculations, design details, and BMP controls for the SWPPP; and,
- Install stabilization to reduce or eliminate pollutants post-construction.

OFR and conveyance features will be inspected prior to initial field flooding for each year flooding occurs (Mitigation Measure WAT-4) and OFR operation will be conducted according to the FFCP (Mitigation Measure WAT-2).

- ii) ***substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;***
- iii) ***create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;***
or
- iv) ***impede or redirect flood flows?***
(Less Than Significant Impact with Mitigation Incorporated)

The Project will divert available flood flows off the Kings River, utilizing the previously-constructed Phase 1 turnout and other existing foundational infrastructure.

Manage shallow flooding within Project Area on OFR lands for recharge of captured flood waters

The proposed project is intended to temporarily increase flooding of agricultural lands in the Project Area by redirecting flood flows onto an estimated 3,000 acres of agricultural lands for an OFR program. These redirected flows will be contained within the boundaries of farm properties for the purpose of groundwater recharge, and will help to attenuate downstream flooding by storing floodwaters. A hydraulics and hydrology study prepared for the McMullin Projects found that in the Kings River (North), there is a limiting flow capacity of 4,750 cfs in the entire reach between the upstream Crescent Wier and the James Bypass (Fresno Slough), and that the James Bypass also has an assumed capacity of 4,750 cfs (Bachand et al., 2014). Therefore, any diversions from the James Bypass as part of the proposed project would not result in changes to the operating criteria in the Kings River system.

Water depths will typically be between 0.5–2.0 feet. Flooded fields will be surrounded by small levees and berms if needed. The berms will contain the recharge waters and prevent flooding of adjacent lands or area waterbodies. Mitigation Measure WAT-5 will be implemented to ensure that there is no berm failure or piping that would allow for inadvertent release of recharge waters into surrounding areas. Mitigation Measure WAT-2 (FFCP) will be implemented to provide farmers and landowners guidelines and cultural/management practices to effectively implement OFR.

Farm-related structures and residences are found within the project boundaries, and the project area is surrounded by agricultural fields that may have crops growing in them at any time of year. Failure of berms surrounding the recharge areas could result in localized flooding, but such releases would be minor due to the shallow water depths of the recharge areas. Therefore, releases of recharge waters would not constitute a risk of injury or death but could lead to losses of root vegetables or other crops if they were maturing in fields that were inadvertently flooded. Since the project proponent would implement Mitigation Measure WAT-5, which would require periodic inspections of the berms surrounding the recharge areas, as well as repair of damaged sections, these types of losses are unlikely to occur.

Stormwater Drainage

Culverts for the Main Canal and the lateral canals will be built under roadways to accommodate farm operations and project requirements. For the Main Canal, box culverts with a design capacity of 300 cfs will be built at county road crossings. Up to ten additional culverts will be built to accommodate farm road crossings. Crossings will be designed to accommodate up to 300 cfs.

Other stormwater drainage systems in the project area include toe ditches along Highway 145 and county roads, which ultimately drain into the James Bypass. During construction, runoff over disturbed soils during storm events could introduce sediments into the toe ditches and James Bypass, leading to turbidity and loss of topsoil. Given that the lands are very flat and minimal precipitation is anticipated during the construction period, this impact is expected to be less than significant, and would be further reduced by implementing Mitigation Measure WAT-1, under which MAGSA or the construction contractor will prepare and implement a SWPPP. These features make losses from localized flooding due to the project unlikely to occur.

WAT d): In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? (Less Than Significant Impact with Mitigation Incorporated)

Tsunami or seiche zones

The proposed project area is located well inland of any area that could be reached by a tsunami or seiche. Therefore, there would be no impact associated with tsunami or seiche.

Inundation of farmlands within FEMA 100-year floodplain or flood hazard zone

The proposed project area is not located within a FEMA 100-year floodplain or a flood hazard zone.

Release of Pollutants

While the project will increase inundation on selected farmlands, the quality of surface water that would be applied to the fields is generally greater than that of the groundwater in the region and the project and its infrastructure are not expected to introduce additional sources of pollution. WAT-2 will be implemented to ensure lands with low pollutant levels are chosen to participate in the project, and WAT-3 will be in effect to ensure compliance with regulations of CDPR regarding the use of herbicides and pesticides in areas designated for groundwater recharge.

Reduction in downstream flood volumes and associated risks to communities along the Kings and San Joaquin Rivers

The diversions of flood flows from the Kings River onto the McMullin Expansion Project would be approximately 25% of Kings River flood flows and volumes, based on historical data. Historic flood flows through the James Bypass often exceed the design channel flow capacity of 4,750 cfs and average about 1,900 cfs based upon historical Kings River flow data at the James Bypass available through the California Data Exchange (DWR 2021). Median flood flow volumes on years in which flood flows have occurred past the James Bypass gauging station are just under 190,000 AF. The average calculated

diversion flood flows of both Phase 1 and the McMullin Expansion combined are about 40% of historical flood volumes past the James Bypass monitoring station (DWR 2021).

This diversion will alleviate flooding concerns downstream on the Kings and San Joaquin Rivers (Bachand et al. 2014). Flood events can be in response to snowpack and storm driven releases at Pine Flat Reservoir, found on the Kings River upstream of the project area. Despite upstream reservoir management for flood control and for water supply, \$1.55B (2020 dollars) in damage has occurred downstream along the San Joaquin and Kings Rivers during four historic storm events: 1983, 1986, 1995, and 1997. The proposed project would mainly reduce damages associated with 10-, 50-, and 100-year storm events. Flooding has historically affected Disadvantaged Communities (DACs) and the proposed project would disproportionately benefit DACs. Downstream flood risks and volumes will be greatly decreased by this project.

Flood flow diversions onto the McMullin Expansion area will reduce flooding elsewhere, such as to more urban areas downstream along the Kings and San Joaquin Rivers, many of them DACs, and damages to commercial, industrial, public and residential structures (Bachand et al, 2014). Water quality impacts associated with downstream flooding will be reduced with the implementation of this project.

WAT e): Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? (Less Than Significant Impact with Mitigation Incorporated)

The primary goal of the Kings Subbasin GSP is to ensure the basin is managed to maintain reliable water supply for current and beneficial uses by 2040. The MAGSA GSP provides a plan to achieve sustainable groundwater conditions by 2040 in the portion of the Kings Subbasin within MAGSA's jurisdiction. The goal can be achieved by increasing or maintaining groundwater supply, or by reducing demand. Sustainable groundwater as defined under SGMA also ensures sustainable groundwater not only considers a balanced water budget, but also that the result is not achieved at the expense of decreasing water quality, increasing subsidence, or reducing the surface water to groundwater connection (MAGSA, 2020).

The proposed project is intended to increase groundwater supply to help achieve the GSP goal of sustainable water supply by 2040. The proposed project is identified in the GSP as a priority action. There is no danger of subsidence when increasing the groundwater supply. There is also no danger of decreasing the current surface to groundwater connection when increasing the groundwater supply. Currently, depths to groundwater levels in the MAGSA region are generally over 120 feet below ground elevations, and in some areas much more than that. It is likely the project would either increase the surface water to groundwater connection or have no change. In accordance with the GSP, MAGSA maintains a network of groundwater level monitoring wells to characterize changes in the surface and groundwater connection. MAGSA will continue this monitoring.

The Tulare Lake Basin WQCP describes the water quality objectives for groundwater (Table 6-15). Potential impacts to beneficial uses or WQOs are anticipated and will be mitigated by Mitigation Measures WAT-2 and WAT-3. Therefore, the impacts will be less than significant with mitigation. WAT-2 will be implemented to ensure OFR lands will have low pollutant levels, and WAT-3 will be in effect to ensure compliance with regulations of CDPR regarding the use of herbicides and pesticides in areas designated for groundwater recharge. WAT-1 will be implemented to ensure appropriate measures are taken during construction such that excessive erosion does not occur and vehicle and equipment fluids do not leak.

Because the proposed project will use surface water that is of higher water quality than the groundwater, there is also potential to improve groundwater quality in disadvantaged communities that rely on shallow wells with poorer water quality.

6.11 LAND USE AND PLANNING (USE)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.11.1 Environmental Setting

The proposed project area is in a rural, agricultural area approximately 13 miles southwest of the city of Fresno in Fresno County. Land uses are predominately agricultural in nature; however, Raisin City is located within the proposed project area. Raisin City is a census-designated place with a population of approximately 400, an elementary school, two churches, and three markets. Other nearby communities include Helm (approximately 2 miles southwest of the proposed project area), San Joaquin (3 miles west) and Kerman (8 miles north). From the mid-1800s the land has been used for livestock grazing and a variety of agricultural production. More information about the history and prehistory of the area can be found in the Cultural Resources section of this document.

6.11.2 Regulatory Setting

Federal

There are no federally administered lands within the project area; therefore, federal land use regulations do not apply to this project.

State

There are no state land use regulations that apply to the project area.

County and Regional

Fresno County General Plan

The applicable land use plan for the project area is the Fresno County General Plan (Fresno County 2000c). The Plan provides for a comprehensive, long-term framework designed to protect Fresno County's agricultural, natural, and cultural resources. It also provides a framework for development in the county. The current plan, adopted in 2000, is in the process of being amended.

With the exception of Raisin City, all of the land within the project area is zoned AE20 – Exclusive Agricultural. In this instance, “20” refers to the minimum size lot (20 acres) that may be created in the district. Raisin City is zoned A-1 which is Agricultural District. Lands with this designation may be subdivided to allow for more typical residential development (Figure 6.11.1).

The General Plan’s Agricultural Goals and Policies applicable to the proposed project are as follows:

- Goal LU-A To promote the long-term conservation of productive and potentially- productive agricultural lands and to accommodate agricultural-support services and agriculturally related activities that support the viability of agriculture and further the County’s economic development goals.
- Policy LU-A.1 The County shall maintain agriculturally designated areas for agriculture use and shall direct urban growth away from valuable agricultural lands to cities, unincorporated communities, and other areas planned for such development where public facilities and infrastructure are available.
- Policy LU-A.16 The County should consider the use of agricultural land preservation programs that improve the competitive capabilities of farms and ranches, thereby ensuring long-term conservation of viable agricultural operations. Examples of programs to be considered should include: land trusts; conservation easements; dedication incentives; new and continued Williamson Act contracts; Farmland Security Act contracts; the California Farmland Conservancy Program Fund; agricultural education programs; zoning regulations; agricultural mitigation fee program; urban growth boundaries; transfer of development rights; purchase of development rights; and agricultural buffer policies.
- Policy LU-A.18 The County shall encourage land improvement programs to increase soil productivity in areas containing lesser quality agricultural soils.
- Policy LU-A.19 The County shall encourage landowners to participate in programs that reduce soil erosion and increase soil productivity. To this end, the County shall promote coordination between the Natural Resources Conservation Service, Resource Conservation Districts, UC Cooperative Extension, and other agencies and organizations.
- Policy LU-A.20 The County shall adopt and support policies and programs that seek to protect and enhance surface water and groundwater resources critical to agriculture.

Fresno County Zoning Ordinance

Section 816 “AE” Exclusive Agricultural District

Most of the land within the project area is zoned AE20 – Exclusive Agricultural, with the exception of Raisin City, which is zoned A-1. The AE District is an exclusive district for agriculture and uses which are necessary and integral parts of the agricultural system. The district is intended to protect the agricultural community from encroachment of nonagricultural uses. The AE designation is accompanied by an acreage designation, which establishes the minimum lot size within the district. Acreage designations range from 5 acres to 640 acres.

Section 847 “A-1” Agricultural District

The A-1 Agricultural District provides for the development of those unincorporated lands and properties in Fresno County that are not included in other district classifications. A small portion of the study area, including the lands in and around Raisin City, is zoned as “A-1” land.

Kings Subbasin Water Authority (KBWA)

The KBWA is a coalition of water agencies, cities, counties, and environmental interests in the Kings River Basin to deal with the most pressing local water issues, namely groundwater depletion, supply reliability, and quality. KBWA has developed an Integrated Regional Water Management Plan that “defines problems and issues; regional goals and objectives; water management strategies; and projects to

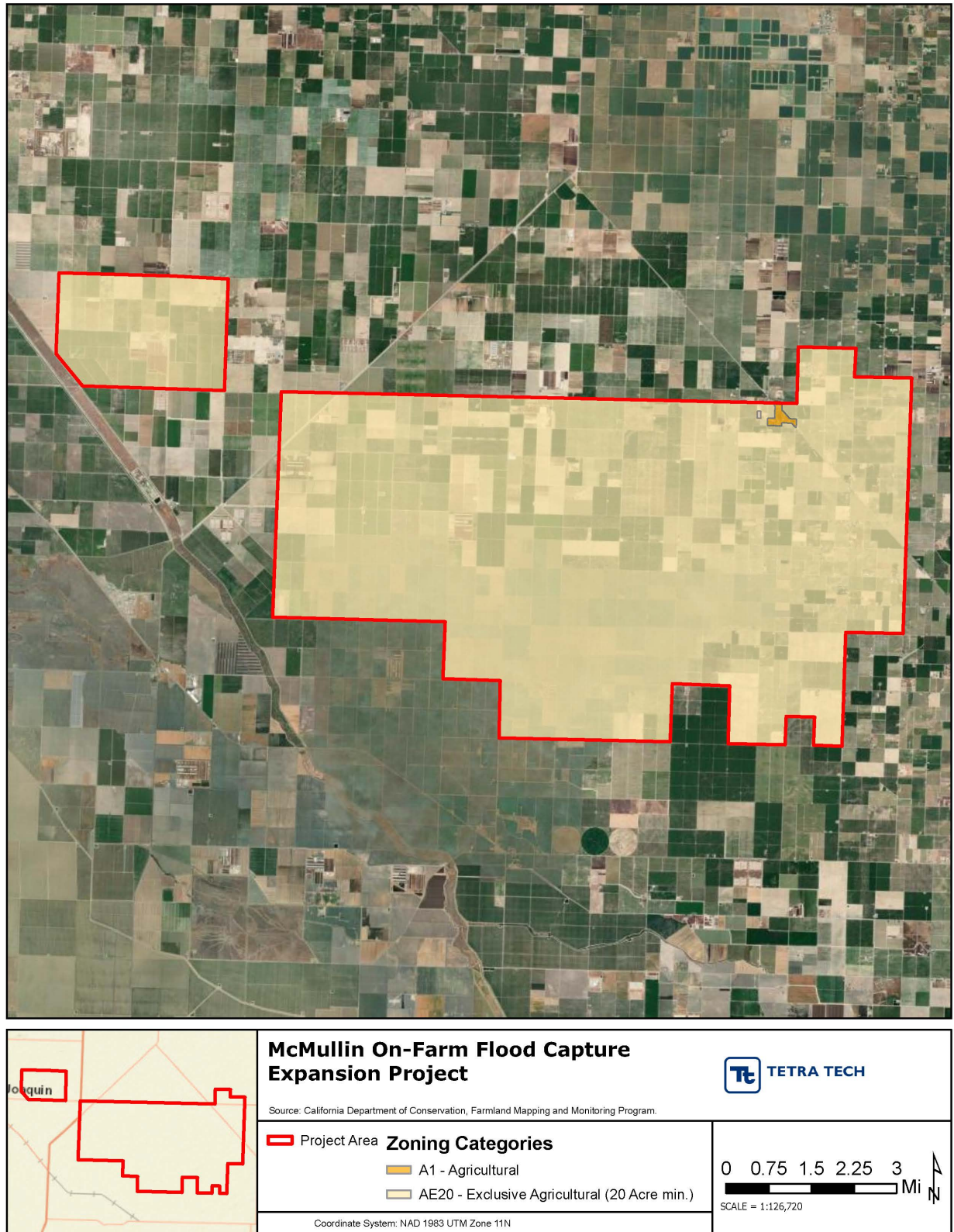


Figure 6.11.1. Zoning in the Project Area

enhance the beneficial uses of water for the Kings Subbasin Region.” The plan was updated in 2018 (King Basin Water Authority 2018).

The Plan includes the following applicable goals and policies:

- RG1 – Halt the Current Overdraft and Provide for Sustainable Management of Surface and Groundwater.
- RG4 – Provide additional flood protection

6.11.3 Potential Impacts

USE a): Would the project would physically divide an established community (No Impact)

The project area is predominantly agricultural, other than the small community of Raisin City, which is located in the northeast corner of the study area. Raisin City would not be divided in any manner by the proposed project, and there are no other communities in the project area. No communities would be divided and no impact would occur.

USE b): Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? (No Impact)

The project area is located in an unincorporated area mainly designated and zoned for exclusive agricultural use. The conveyance features, including pump stations, canals, and laterals, will support agricultural uses of the area by improving groundwater conditions, and are consistent with Fresno County General Plan and zoning designations. The proposed project would be consistent with KBWA goals related to providing additional flood protection through storage, as well as recharging the aquifer through floodwater infiltration (estimated to be 2.5 to 4.8 inches/day within the project area [Bachand et al. 2016, Bachand and Cameron 2021]). The proposed project is consistent with all applicable land use plans, policies, and regulations of agencies with jurisdiction in the project area, and there would be no impact.

6.12 MINERAL RESOURCES (MIN)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.12.1 Environmental Setting

Mineral resources in Fresno County include fossil fuels, such as oil, gas, coal, and geothermal resources; aggregate (sand and gravel); metals, including chromite, copper, gold, mercury, and tungsten, molybdenum; and other minerals used in construction or industrial applications, such as asbestos, high-grade clay, diatomite, granite, gypsum, and limestone (Fresno County, 2000b). California Geologic Energy Management Division (CalGEM) (formerly California Division of Oil, Gas and Geothermal Resources) and the Division of Mine Reclamation (DMR) are both part of the California State Department of Conservation (CDC).

The DMR provides oversight for administration of the Surface Mining and Reclamation Act (SMARA), which is in place to ensure continued accessibility of important, recognized surface mineral resources. DMR also prioritizes the return of mined lands to usable and safe condition. The website provides information about abandoned mines, SMARA mines, laws and regulations, and forms, maps, workshops, and publications. A webmap showing the locations of active mines and information submitted annually by mine operators related to annual reporting requirements indicates that there are no active mines in the project region (DMR 2021).

WellSTAR is an electronic database where information about oil, gas, and geothermal well tracking, production, permitting, incidents, and reporting is contained. It is maintained and accessed through the CDC's CalGEM (CalGEM 2021a). Well Finder is CalGEM's online mapping application that is publicly accessible. Well Finder provides information about the type of well, whether or not it is in operation, suspended, idle, or plugged, dates of operation, the location of the well, and its name, well number, and API number.

There are eight active oil and gas wells within the project area (CalGEM 2021b). There are six active oil and gas wells in the western expansion area. In the eastern expansion area, there is one active oil and gas well and one water disposal well. There are 30 idle oil and gas wells and 4 cancelled wells. All other wells located within the project area have been plugged. Idle oil and gas wells are those that have been inactive for two years or more but have not been permanently sealed (CalGEM 2021c). Plugged wells are those that have been permanently sealed with cement.

Four of the active wells are operated by California Resources Production Corporation and two are operated by The Termo Company (CalGEM 2021b).

6.12.2 Regulatory Setting

Federal

No federal regulations pertaining to minerals apply to the proposed project.

State

Surface Mining and Reclamation Act (SMARA of 1975)

SMARA requires the State Geologist to classify Mineral Resource Zones (MRZs) for use in land use planning decisions to ensure continued accessibility of important, recognized surface mineral resources. SMARA is intended to provide local agencies with the information necessary regarding the location and importance of surface mineral resources. Under SMARA, state agencies guide and regulate city and county enforcement of SMARA, but the local land use jurisdictions are the lead agencies for mineral resource issues.

Mineral resources are classified into MRZs by the State Geologist according to their significance to ensure continued accessibility of important, recognized mineral resources. MRZs are defined as follows (Fresno County 2000a):

- MRZ-1: No significant mineral deposits are present or little likelihood exists for their presence.
- MRZ-2: Significant mineral deposits have been identified, or a high likelihood exists for their presence.
- MRZ-3: Mineral deposits exist, but their significance cannot be evaluated from available data.
- MRZ-4: Inadequate information for assignment to any other MRZ.

MRZ-2 zones are the most important because they are areas of known and valuable mineral resources. The CDC's Division of Geology produced a mineral land classification (MLC) document which classifies areas into MRZs. The CDC's MLC document states that MRZ-1 areas are reclaimed ponds, landfill, or depleted gravel, typically within the floodplains of the Kings and San Joaquin rivers (DMG 1988). MRZ-3 areas are near the Sierra Nevada Mountains and the alluvial deposits of the San Joaquin valley where more information regarding the quality or grade of material could reclassify it as MRZ-1 or MRZ-2 (DMG 1988). There are no MRZ-4 areas in the Fresno region.

The Fresno region MLC was defined as Aggregate Materials. Aggregate Materials are currently the most common and important resource in the region; however, there are no known or documented sources within the project area (DMG 1988). The only MRZ-2 zones in the Fresno area are located along the San Joaquin and Kings Rivers, east of the project area (Fresno 2000b). The project area is classified as MRZ-1 and MRZ-3. There are no MRZ-2 zones of known, important mineral resources in the project area (Fresno County 2000b, CDCb 2021, DMG 1988).

Local

The following are Fresno County policies regarding mineral resources (Fresno County 2000b):

- Policy OS-C.2 The County shall not permit land uses incompatible with mineral resource recovery within areas designated as Mineral Resource Zone 2 (MRZ-2).
- Policy OS-C.3 The County shall require that the operation and reclamation of surface mines be consistent with the State Surface Mining and Reclamation Act (SMARA) and special zoning ordinance provisions.

- Policy OS-C.9 The County shall require that any proposed changes in land use within areas designated MRZ-2 along the San Joaquin and Kings Rivers comply with the provisions of SMARA.
- Policy OS-C.10 The County shall not permit land uses that threaten the future availability of mineral resource or preclude future extraction of those resources.
- Policy OS-C.11 The County shall undertake a comprehensive, watershed-based planning effort to assess future extraction of the aggregate resources and recreation uses along the Kings River as a part of an update of the Kings River Regional Plan. Such a planning effort would help to facilitate use of the resource while protecting other Kings River watershed resources and functions, including floodplain areas.

6.12.3 Potential Impacts

MIN a): Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? (No Impact)

The only MRZ-2 zones in the Fresno area are located along the San Joaquin and Kings Rivers, east of the project area (Fresno County 2000b). While the Fresno region is known for important aggregate materials and mines are in the region, there are no MRZ-2 zones of known mineral resources in the project area. The project area is classified as MRZ-1 or MRZ-3 with no known usable mineral resources (Fresno County 2000a, CDCb 2021, DMG 1988).

CalGEM maintains records and maps of oil, gas, and geothermal resources, wells, and oil fields. The CalGEM Well Finder Online Mapping Application was used to search the project area for known or active oil, gas, or geothermal resources (CalGEM 2021b). There are eight total active wells in the proposed project region, seven of which are oil and gas wells and one is a water disposal well. Current construction plans are not within an active well field. In the event that project construction does encounter a known active well field, state and local regulations require the project to alter its construction plan to accommodate existing and known future well infrastructure and operations so as not to impede access to subsurface mineral resources.

Based on the available information, implementation of the project would not result in a loss of known mineral resources.

MIN b): Would the project result in the loss of availability of locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? (No Impact)

The Fresno County General Plan (Fresno County 2000a and Fresno County 2000b) outlines requirements for mineral resource zone compliance for areas designated MRZ-2. There are no MRZ-2 zones in the project area or nearby vicinity (Fresno County 2000a, CDCb 2021). No other County plans are available that show locally important mineral resource recovery sites. Therefore, the implementation of the project would not result in a loss of available or potential mineral resource recovery activities.

6.13 NOISE (DBA)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.13.1 Environmental Setting

The proposed project area is located in an area zoned for exclusive agricultural uses and is surrounded by other agricultural lands. Noise sources in this area are associated with agricultural practices, and include heavy equipment, traffic, and stationary sources, such as pumps. Typical noise levels are low, but seasonal practices such as field preparation, planting, fertilizing, and harvesting may cause temporary and substantial increases in noise.

Noise standards identify sensitive receptors, such as residences, schools, hospitals, churches, and libraries. There are no hospitals near the project area. Raisin City Elementary School is within the project boundary, but approximately three miles from active construction. Caruthers High School is approximately one mile east of the southeast corner of the proposed project boundary. Helm Elementary is approximately two miles west of the southwestern corner of the proposed project boundary. San Joaquin Elementary is approximately three miles west of the northwestern corner of the proposed project boundary. Tranquility Elementary is approximately five miles northwest of the northwestern project boundary. Fresno County Public Library Caruthers Branch is approximately one mile east of the southeast corner of the proposed project. Fresno County Public Library San Joaquin Branch Library is approximately three miles east of the southeast corner of the proposed project. The Raisin City Community Church and the Raisin City Holiness Church are within the project limit, but are approximately three miles from active construction.

6.13.2 Regulatory Setting

Federal

Federal Highway Administration (FHWA)

Title 23 Part 772 of the Federal Code of Regulations contains noise abatement criteria developed for federally funded roadway projects.

Federal Transit Administration Vibration Standards

The Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 90 VdB without experiencing structural damage. The FTA has identified the human annoyance response to vibration levels as 75 VdB.

State

There are no state noise regulations that are applicable to this project.

Local

Fresno County General Plan

Noise elements are included in local government general plans. The noise elements are planning guides to ensure that noise levels are compatible with adjacent land uses. Most jurisdictions also have noise ordinances, which serve as enforcement mechanisms for controlling noise.

The Fresno County General Plan contains nine policies related to noise, of which the following may apply to this project:

- Policy HS-G.4 So that noise mitigation may be considered in the design of new projects, the County shall require an acoustical analysis as part of the environmental review process where:
- Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels that are “generally unacceptable” or higher according to the Chart HS-1: “Land Use Compatibility for Community Noise Environments;”
 - Proposed projects are likely to produce noise levels exceeding the levels shown in the County’s Noise Control Ordinance at existing or planned noise-sensitive uses.
- Policy HS-G.6 The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.
- Policy HS-G.8 The County shall evaluate the compatibility of Proposed Projects with existing and future noise levels through a comparison to Chart HS-1, “Land Use Compatibility for Community Noise Environments” of the Fresno County General Plan.

The Fresno County Noise Control Ordinance (Fresno County Code Chapter 8.40) specifies standards for sources of excessive noise affecting residences, schools, hospitals, churches, and libraries. Sources causing exterior noise levels in sensitive areas to exceed 50 dBA daytime L50 or 45 dBA nighttime L50 are prohibited by the ordinance, and non-emergency construction activities are limited to daytime hours. Noise from air conditioning and refrigeration equipment, waste and garbage collection equipment, and electrical substations are also specifically addressed by the ordinance. The County health officer is responsible for enforcement of the ordinance. This code section also exempts noise from construction-related activity between 6:00 am and 9:00 pm weekdays and between 7:00 am and 5:00 pm on weekends.

6.13.3 Potential Impacts

DBA a) Would the project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Less Than Significant Impact)

Noise may result from use of heavy equipment during construction and from use of pumps during operations. Construction equipment likely in use will include air compressors, excavators, backhoes, scrapers, cement trucks, and dump trucks. Typical noise emission levels from these sources are shown in Table 6-16.

Table 6-16. Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level at 50 ft from Source (dBA)
Air Compressor	80
Backhoe	80
Cement Truck	90
Dump Truck	85
Excavator	85
Scraper	85
Source: FTA 2018.	

The noise levels shown above assume that the receptor is 50 feet away from the sources. Guidance from the FTA indicates that noise levels attenuate by an average of 5 decibels for every additional 50 feet of distance. Most receptors will be located at a distance of at least one mile from the construction area, a distance at which noise will have attenuated to background levels. A few residences are likely to be located within 200 feet of the construction area, a distance at which the highest noise levels would have attenuated to 65 decibels, which is considered “Conditionally Acceptable” in agricultural areas according to Fresno County noise standards. The construction contractor will implement all feasible noise control features, including intake mufflers, exhaust mufflers, and engine shrouds, which will further reduce noise levels. Furthermore, construction noise will be temporary and will cease upon completion of construction.

The Fresno County Code exempts construction-related activity between 6:00 am and 9:00 pm weekdays and between 7:00 am and 5:00 pm on weekends (Section 8.40.060C of the Fresno County Code). Since construction would occur during normal weekday hours, construction noise would fall within the exemption periods and would be consistent with Fresno County’s General Plan policies and noise standards.

Pumps used during operations of the proposed project would operate only when flows are available for capture and at elevations between 177.5 and 180.3 feet NAVD 88, depending upon operation of the James Weir and when water is leaving the recognized Kings River Service Area via the Fresno Slough channel. Farming operations in the area occasionally generate substantial noise, and such levels generally do not last more than a few hours at a given location unless a stationary piece of equipment such as a pump master (or engine) is involved. Additional noise exposure would not generally be expected as result of the additional short term pump operations associated with this project. These impacts will be occasional and temporary and will be consistent with existing noise levels; therefore, impacts will be less than significant.

DBA b) Would the project result in the generation of excessive groundborne vibration or groundborne noise levels? (Less Than Significant Impact)

Fresno County has not adopted specific policies pertaining to vibration levels. Typically, substantial groundborne vibration and noise levels occur as a result of blasting, tunneling through rock, pile driving, geotechnical exploration, and passing trains. None of these methods are proposed as part of construction or operation. Additionally, soils in the area are deep and loamy, and are not conducive to transmission of vibration or groundborne noise.

Construction of the proposed project would require the use of heavy equipment that would temporarily increase ground borne noise and ground vibration levels at properties near the work area. Groundborne vibration or groundborne noise impacts may be produced by construction equipment and by large trucks and would be limited to the construction phase of the project. Construction activity groundborne noise levels at and near the project areas would fluctuate, depending on the particular type, number, and duration of uses of various pieces of construction equipment. These impacts would be temporary. The project will not require jackhammers or pile driving equipment, which further reduces the potential for groundborne vibrations.

Construction activities are anticipated to last approximately thirteen months and would occur between the hours within the construction exemption period specified in the Fresno County General Plan. Project operations would not generate noticeable groundborne vibration or groundborne noise, nor would they exceed FTA thresholds for vibration at the nearest residences. This impact will be less than significant.

DBA c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? (No Impact)

The project area is not within two miles of any public or private airports. The San Joaquin Airport CA-32 is approximately five miles east of the project. The Du Bois Ranch Airport is approximately 5.5 miles north of the project. The project area is included in the Airport Influence Area or Land Use Compatibility Zone as identified in the Fresno County Comprehensive Airport Land Use Plan (ALUCP). The project would not expose people residing or working in the area to excessive noise levels. There would be no impact.

6.14 POPULATION AND HOUSING (POP)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.14.1 Environmental Setting

The project area is in west Fresno County, an area that is primarily rural or agricultural land. The nearest communities are Helm, located approximately 2 miles to the west and Raisin City, located in the northeast corner of the project area. The project will take place on sparsely populated, private agricultural lands with few homes and buildings. The estimated population of Raisin City, a census-designated place, grew from 231 in 2010 to 414 in 2019, an increase of nearly 80% (U.S. Census Bureau 2019). The demographics of Raisin City have also changed. In 2010, 40% of the population was under the age of 18, 48% was 19-64, and 3% was over the age of 65; whereas, in 2019, 27% of the population was under the age of 18, 57% was 19-64, and 16% was over the age of 65. Overall, the population of Fresno County has increased from 933,249 in 2010 to 1,018,437 in 2019, approximately 9% (State of California Department of Finance 2020).

6.14.2 Regulatory Setting

Federal

There are no Federal regulations or programs associated with population or housing that are applicable to the proposed project area.

State

California Housing Element law requires that all local governments (cities and counties) adequately plan to meet the housing needs of everyone in the community. This is accomplished by local governments adopting housing plan as part of their general plans. The California Department of Housing and Community Development estimates the relative share of California's project population growth that could occur in each county in the state based on Department of Finance population projections and assigns housing need. Each city and government must update their housing element on an eight-year cycle and the Department of Housing and Community Development must approve the plan.

County and Regional

The California Housing Element law is implemented in the 2016 Fresno Multi-Jurisdictional 2015-2023 Housing Element (Fresno COG 2016) for the project area. The multi-jurisdictional housing element was designed to address housing needs through a single certified housing element for all participating jurisdictions rather than a community by community approach. The document contains goals and policies associated with new housing development, affordable housing, housing and neighborhood conservation, special needs housing, fair and equal housing opportunities, and energy conservation and sustainable development.

The Fresno County General Plan (Fresno County 2000) addresses housing through zoning ordinances. The majority of the project area is zoned AE-20, or Exclusive Agriculture with a 20-acre minimum lot size with not more than 1 residence for each 5 acres. Raisin City is zoned A-1, or Agricultural District, and lot sizes must be at least 100,000 square feet.

6.14.3 Potential Impacts

POP a): Would the proposed project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? (No Impact)

Implementation of the proposed project requires the modification of existing agricultural fields and their associated infrastructure for the purpose of allowing on-farm flood capture of flood flows from Kings River. Changes to infrastructure are limited to the canals and farm fields. No new roads, utilities, homes, or developments for human use are proposed as part of this project.

During the construction phase, the daytime population of the local community may increase by up to 10 people as contractors and construction crews drawn from the region are present on site. At the completion of the project construction, this small population will no longer remain in the project area. During operations, periodic maintenance of infrastructure will likely be provided by workers from Fresno or elsewhere in the vicinity of the project area. No additional housing or facilities are needed to accommodate construction crews, either temporarily or permanently.

POP b): Would the proposed project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? (No Impact)

Lands proposed for on-farm flood capture are dedicated to agricultural uses and do not provide homes or housing. Actions proposed under the project will take place only within the agricultural lands and will not have an impact on the availability of housing.

The proposed project does not include removal of existing structures or changes to any housing developments within the area. There will be no impacts.

6.15 PUBLIC SERVICES (PUB)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.15.1 Environmental Setting

The nearest fire station is staffed by the Fresno County Fire Protection District (FCFPD) in Tranquility, California, approximately 14 miles, or a 22-minute drive, from the project area). Battalion 15, Mendota, is responsible for fire protection in the project area.

Police protection is provided by the Fresno County Sheriff's Office (FCSO) and Area 1 covers the unincorporated community of Helm and its surrounding areas. The closest staffed office is in San Joaquin, approximately 10 miles from the project area, or a 15-minute drive.

Emergency response services are provided through dialing 911. American Ambulance serves the area and provides transportation to the nearest emergency facility. Medical centers providing 24-hour emergency care include the Community Medical Centers located in Fresno, approximately 26 miles away, or a 33-minute drive. The San Joaquin Health Center, located approximately 5 miles from the project area, provides local non-emergency care.

Other nearest services are provided in the City of San Joaquin, including the Branch Library, City Hall, universities and community colleges, and senior/community centers. Elementary schools are found in Helm, San Joaquin, and Tranquility, and Raisin City and high schools are found in Tranquility and Kerman.

Applicable public service headquarters for the area include:

- Fresno County Fire Protection District, Tranquility Station 95, 25101 Morton Street, PO Box 645, Tranquility, CA 93668, (559) 698-5500
- Fresno County Sheriff's Office, Area 1, 21825 West Manning Avenue, San Joaquin, CA 93660, (559) 693-2437.
- Community Medical Center, 24-hour Emergency Care, 2823 Fresno Street, Fresno, CA 93721, (559) 459-6000
- San Joaquin Branch Library, 9781 Main Street, San Joaquin, CA 93660 (559) 693-2171.
- San Joaquin Senior Center 2191 Colorado Avenue, San Joaquin, CA 93660

6.15.2 Regulatory Setting

Federal

There are no applicable Federal regulations for public services.

State

California Fire Code

California Fire Code establishes regulations to safeguard against hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The Fire Code also establishes requirements intended to provide safety and assistance to fire fighters and emergency responders during emergency operations. The provision of the Fire Code includes regulations regarding fire-resistance rated construction, fire protection systems such as alarm and sprinkler systems, fire service features such as fire apparatus access roads, fire safety during construction and demolition, and wildland urban interface areas.

Local

Fresno County General Plan Policies

- | | |
|---------|---|
| PF-C.21 | The County shall promote the use of surface water for agricultural use to reduce groundwater table reductions. |
| PF-E.2 | The County shall encourage the agencies responsible for flood control of storm drainage to coordinate the multiple use of flood control and drainage facilities with other public agencies. |
| PF-E.12 | The County shall coordinate with the local agencies responsible for flood control or storm drainage to ensure that future drainage system discharges comply with applicable State and Federal pollutant discharge requirements. |
| PF-E.17 | The County shall encourage the local agencies responsible for flood control or storm drainage retention-recharge basins located in soil strata strongly conducive to groundwater recharge to develop and operate those basins in such a way as to facilitate year-round groundwater recharge. |
| PF-G.1 | The County shall ensure the provision of effective law enforcement services to unincorporated areas in the county. |
| PF-H.1 | The County shall work cooperatively with local fire protection districts to ensure the provision of effective fire and emergency medical services to unincorporated areas within the county. |

6.15.3 Potential Impacts

PUB a): *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services including fire protection, police protection, schools, parks, or other services. (Less Than Significant Impact)*

The proposed project is intended to create a new system of canals primarily on private property but would also include construction of canals and flood control structures passing beneath public roadways. OFR will result in the organized and regulated release of flood waters over existing agricultural land. Because water on the fields will be shallow and slow moving, failure of checks or levees will be inconvenient but pose no threat to health or safety. Instead, water diversion will allow for a reduction in flooding damages to personal and public property in the future (Bachand et al 2014). In the past, flooding has repeatedly posed a serious human safety threat in the area and this project will have beneficial impacts resulting from the reduction of potential flood safety risks to the project area.

The proposed project will not change the need for public services because it will not increase population in the area or create hazards requiring an on-going public service response. No changes in levels of school or park use are anticipated. There is a potential for construction-related accidents to require public emergency service personnel, but these are not likely to be frequent and hospital service levels would not be affected. Local vector control agencies will be involved in implementing measures to control outbreaks of mosquitoes and other pests but will be able to do so using existing capacity. Impacts would be less than significant.

Fire Protection Fire protection is provided by the FCFPD, which maintains nearby stations in Tranquility, Easton, and Caruthers. Each of these stations are located within 5 miles of the project area. The proposed project would not lead to any residential or commercial development or any changes in land use, and no additional services would be required from the FCFPD. There would be no impacts associated with fire protection.

Police Protection The proposed project area is within the jurisdiction of the FCSO, which provides service to unincorporated parts of Fresno County. The proposed project would not lead to any residential or commercial development or any changes in land use, and no additional services would be required from the FCSO. There would be no impacts associated with police protection.

Schools The proposed project would not result in any new residential structures or developments, nor alter existing land uses. The proposed project would not result in an increase of population that would impact existing school facility service levels nor require additional school facilities to be constructed. There would be no impact.

Parks The proposed project would not result in a population increase and would not increase the number of employees in the area. There would be no need for new or expanded parks or recreational facilities, and there would be no impact.

Other Public Facilities The proposed project would not lead to any population increases, and would not increase the need for libraries, senior care centers, community centers, or other services. The project would help to recharge groundwater supplies and lead to more reliable groundwater supplies within the project area. There would be no impacts.

6.16 RECREATION (REC)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.16.1 Environmental Setting

The area around the proposed project area is primarily rural or agricultural land. There are few recreational opportunities in the immediate vicinity. The nearest city park is within the city of San Joaquin, approximately 10 miles away by vehicle. The nearest Fresno County recreational facilities are the Huron Fishing Access on the California Aqueduct, approximately 20 miles south-southwest of the project area and Three Rocks Fishing Access, also on the California Aqueduct and approximately 20 miles west-southwest of the project area. The nearest state recreational facility is Kerman Ecological Reserve, approximately 13 miles northwest of the project area and Mendota Wildlife Area, approximately 19 miles west-northwest of the project area. The nearest recreational facilities are playgrounds at Helm Elementary School, approximately 2.5 miles south of the project area, and Raisin City Elementary School, at the northeastern edge of the project area. There is no county, state, or national parks within 10 miles of the project area (GreenInfo 2020).

6.16.2 Regulatory Setting

Federal

There are no national parks or other federally managed recreational facilities in or near the project area. Therefore, no federal laws, regulations, or codes regarding recreational resources apply to the project.

State

There are no state managed recreational facilities in or near the project area. Therefore, no state laws, regulations, or codes regarding recreational resources apply to the project.

Local

The only park or recreational facility in or near the project area is the Easton Caruthers baseball field complex in Raisin City. The Fresno County General Plan contains goals policies to enhance recreational opportunities in the county by encouraging the further development of public and private recreation lands, and requiring development to help fund additional parks and recreation facilities (Fresno County 2000).

- Goal OS-H To designate land for and promote the development and expansion of public and private recreational facilities to serve the needs of residents and visitors.

6.16.3 Potential Impacts

REC a): Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? (No Impact)

The California Protected Areas Database (CPAD) is an inventory of all land in California that is protected in fee ownership primarily for open-space use. It includes everything from small urban parks to large national parks. According to CPAD, there are no recreational areas other than baseball fields within 10 miles of the project footprint (GreenInfo Network 2020). There are no established bicycle or hiking trails passing through the project area, and no local parks (Fresno County 2000). Construction and operation of the proposed project does not include a recreational component. The proposed project is not growth-inducing and would not increase the use or deterioration of any established recreational facilities. There will not be impacts to existing recreational features as a result of the project.

REC b): Would the proposed project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? (No Impact)

Establishing OFR and constructing the associated Main Canal, lateral canals, and other infrastructure would not include recreational provisions. The project would not result in construction or expansion of recreational facilities that would attract visitors to the area. No additional visitors would be attracted to the area as a result of the proposed project, aside from workers during construction. The proposed project will have no impact on recreational resources.

6.17 TRANSPORTATION AND CIRCULATION (TRA)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6.17.1 Environmental Setting

The proposed project area is located in rural Fresno County, northeast of Helm and south of Kerman. SR 145 runs along the western edge of the eastern expansion area, where it combines with McMullin Grade Rd. and S. Madera Ave (Figure 6.17.1). SR 145 is the primary roadway that connects the proposed project area to Kerman and Fresno, via SR 180. There are several other paved, 2 lane county roads in the vicinity of the project area, most of which serve agricultural transportation needs. Fresno County's General Plan Transportation and Circulation Element establishes a goal of Level of Service "D" for roadways in the county.

The nearest airport is San Joaquin Airport CA-32, located approximately five miles east of the project area.

Fresno County's General Plan Transportation and Circulation Element identifies SR 145 as a proposed rural bikeway that will be included in the updated Regional Bikeways Plan. Fresno County's Regional Bicycle and Recreational Trails Master Plan (Fresno County 2013) identifies McMullin Grade Rd. as a Class II Planned Rural Bikeway, which would be a bike lane designated along an established street, separated from traffic by a 6-inch wide stripe.

There are no formal pedestrian facilities along area roadways and no public transit service is provided in the portions of the project area that would be affected by construction. Streets directly surrounding Raisin City, including Manning Ave., Elm St., and Nebraska St. are designated as parts of Rural Transit Routes, meaning that they are served by Fresno County Rural Transit Agency.

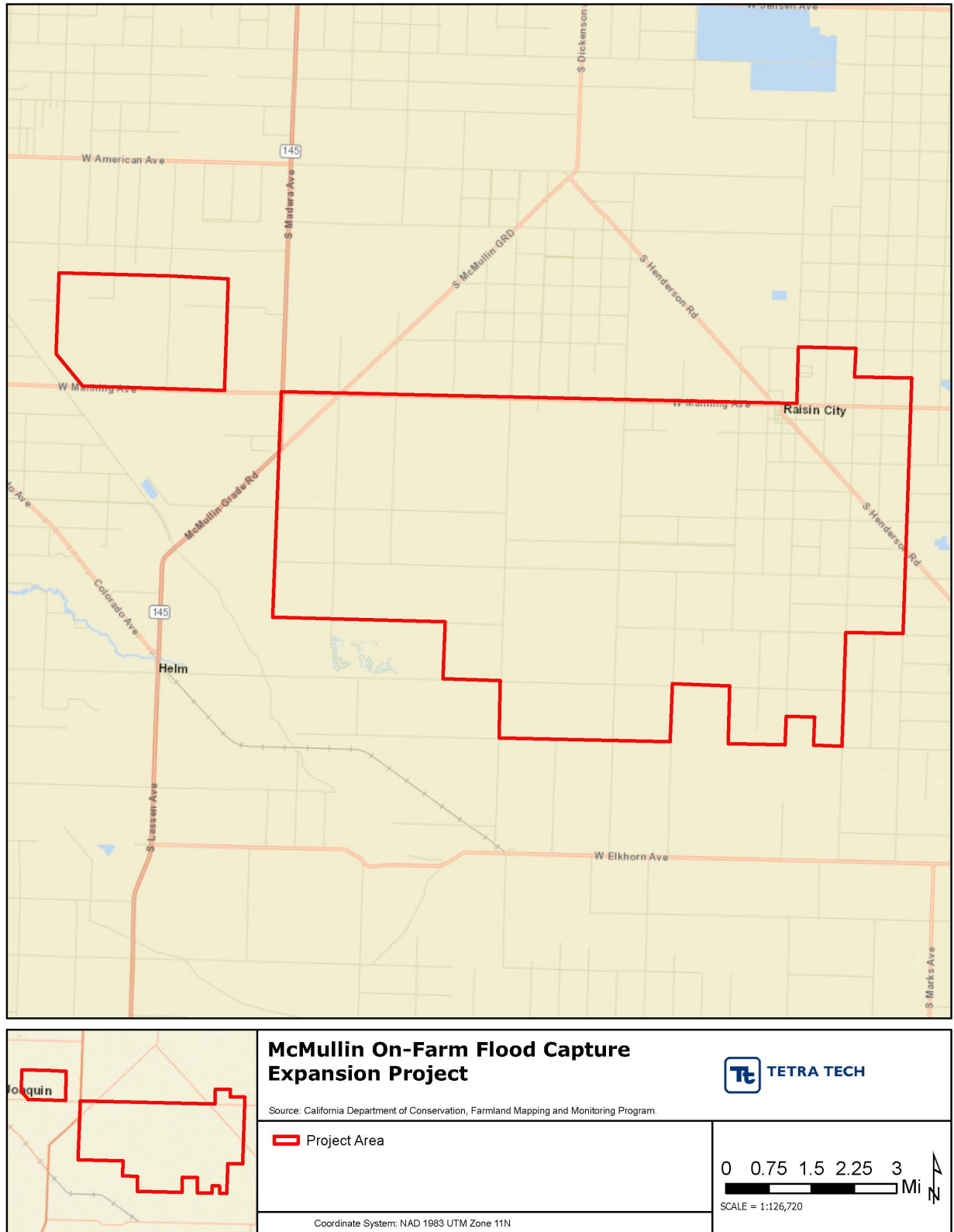


Figure 6.17.1. Transportation Features

6.17.2 Regulatory Setting

Federal

Title 23 of the U.S. Code. Federal statutes specify the procedures that the U.S. Department of Transportation must follow in setting policy regarding the placement of utility facilities within the rights-of-way of roadways that receive Federal funding. These roadways include expressways, most State highways, and certain local roads. In addition, 23 USC 116 requires State highway agencies to ensure proper maintenance of highway facilities, which implies adequate control over non-highway facilities, such as utility facilities. Finally, 23 USC 123 specifies when Federal funds can be used to pay for the costs of relocating utility facilities in connection with highway construction projects.

Title 23 of the Code of Federal Regulations. Federal Highway Administration (FHWA) regulations require that each State develop its own policy regarding the accommodation of utility facilities within the rights-of-way of such roads. After FHWA has approved a State's policy, the State can approve any proposed utility installation without referral to FHWA, unless utility installation does not conform to the policy. Federal regulations do not dictate specific levels of operation or minimum delays, however, which are primarily established by local jurisdiction.

State

California Streets and Highways Code. The California Streets and Highways Code authorizes Caltrans to control encroachment within State highway rights-of-way. Encroachments allow temporary or permanent use of a highway right-of-way by a utility, a public entity, or a private party. Caltrans controls encroachment by requiring an encroachment review and permit for any project that may affect a State roadway.

Caltrans's Right of Way and Asset Management Program is primarily responsible for acquisition and management of property required for State transportation purposes. Transportation purposes may include highways, mass transit guideways and related facilities, material sites, and any other purpose that may be necessary for Caltrans operations. The responsibilities of the Right of Way and Asset Management Program include managing Caltrans' real property for transportation purposes, reducing the costs of operations, disposing of property no longer needed, and monitoring right-of-way activities on federally assisted local facilities.

Caltrans' target level of service is at the transition between LOS C and LOS D on State highways. They acknowledge that this target may not always be possible and recommend that lead agencies consult with them concerning the appropriate LOS target. Projects should not worsen existing LOS levels if already below the target.

Local

Fresno County General Plan Policies

TR-A.1 The County shall plan and construct County-maintained streets and roads according to the County's Roadway Design Standards. Roadway design standards for County-maintained roads shall be based on the American Association of State Highway and Transportation Officials (AASHTO) standards and supplemented by California Department of Transportation (Caltrans). The County may deviate from the adopted standards in circumstances where conditions warrant special treatment of the roadway. Typical circumstances where exceptions may be warranted may include:

- a. Extraordinary construction costs due to terrain, roadside development, or unusual right-of-way needs; and
 - b. Environmental constraints that may otherwise entirely preclude road improvement.
- TR-A.2 The County shall plan and design its roadway system in a manner that strives to meet Level of Service (LOS) D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the county.
- TR-A.3 The County shall require that new or modified access to property abutting a roadway and to intersecting roads conform to access specifications in the Circulation Diagram and Standards section. Exceptions to the access standards may be permitted in the manner and form prescribed in the Fresno County Zoning and Subdivision Ordinances, provided that the designed safety and operational characteristics of the existing and planned roadway facility will not be substantially diminished.
- TR-A.19 The County may identify locations of needed future road rights-of-way, consistent with adopted functional classifications, through development and adoption of specific plan lines where appropriate. Circumstances where specific plan line development may be considered may include the following:
- a. Where major classified roadways or corridors are expected to require additional through lanes within a 20-year planning horizon;
 - b. Where the future alignment is expected to deviate from the existing alignment, or to be developed asymmetrically about the existing section or center line;
 - c. Where the adjacent properties are substantially undeveloped, so that property owners may benefit from prior knowledge of the location of rights-of-way of planned roadways before constructing improvements or developing property in a way which may ultimately conflict with identified transportation needs; and,
 - d. Expressways and associated frontage roads.
- TR-D.1 The County shall implement a system of recreational, commuter, and intercommunity bicycle routes in accordance with the Regional Bikeway Plan described in the Circulation Diagram and Standards section. The plan designates bikeways between cities and unincorporated communities, to and near major traffic generators such as recreational areas, parks of regional significance, and other major public facilities, and along recreational routes.
- TR-D.3 The County shall implement Regional Bikeways Plan routes as Class II facilities unless otherwise designated.

6.17.3 Potential Impacts

TRA a): Would the project conflict with a program, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities? (Less Than Significant Impact)

The proposed project will generate minor increases in truck and passenger vehicle traffic during the 13-month construction period. Up to 24 employee trips and up to 6 truck trips per day are anticipated during construction. Such increases are well within the capacity of the area's roadways and will not affect LOS.

There will be minor increases in traffic during operations due to occasional truck trips for refilling propane tanks and for periodic inspections and maintenance of pump stations and conveyance features. Truck trips will originate in Fresno, and inspections and maintenance trips will likely originate in Kerman, Helm, or a similar local town. The project will not result in permanent operational changes to any transportation facilities, including those for bicyclists, pedestrians, and transit riders.

There is expected to be virtually no change in the operating conditions of the roadways from what currently exists and the proposed project will not conflict with any applicable plan, ordinance, or policy

establishing measures of effectiveness for the performance of circulation systems. Due to the low number of construction and operations trips, any impact to local roadways will be less than significant.

TRA b): Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? (No Impact)

“Vehicle miles traveled” refers to the amount and distance of automobile travel attributed to a project. A maximum of 12 workers would be required during construction of the proposed project. Transportation trips for these workers would be temporary over the approximately one-year construction period and would not result in any perceivable increase in vehicle miles traveled or an increase that would exceed a County threshold of significance. There would be no new regular vehicle trips associated with the proposed project other than locally generated trips for routine inspection and maintenance. As a result, the proposed project would be consistent with CEQA Guidelines Section 15064.3 subdivision (b), and no impact would occur.

TRA c): Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses? (No Impact)

The proposed project does not include the construction or design of any permanent roadway infrastructure that would cause a safety risk to vehicle operations. The proposed project would not adversely alter the physical configuration of the existing roadway network serving the area and would not introduce unsafe design features associated with large equipment transport. In addition, the proposed project would not introduce new road uses or types of vehicles that are incompatible with existing uses of the road system. There would be no impact.

TRA d): Would the project result in inadequate emergency access? (Less Than Significant Impact with Mitigation Incorporated)

During the construction phase of the proposed project, slow-moving traffic in the area could affect emergency response times on roads in the project vicinity. Additionally, temporary traffic delays may be required to allow egress or ingress of haul trucks or construction equipment where proposed culverts cross beneath roadways. Staging areas would be located along existing roadways, either improved or unimproved, and would be readily accessible to emergency responders. An unimproved access road would be located alongside the trenches. This potential impact would be less than significant upon implementation of Mitigation Measure TR-1.

6.18 TRIBAL CULTURAL RESOURCES (TCR)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.18.1 Environmental Setting

The project area and surrounding region is within the ancestral land traditionally occupied by the Southern Valley Yokuts (see Section 6.5.1 Ethnohistoric Setting). The Yok-Utian language is divided into only two distinct subbranches: the Miwok-Costanoan and Yokuts (Golla 2007). An ethnographic review of tribal cultural resources was performed via the SSJVIC record search, NAHC SLF search, and review of available ethnographic documents. In addition, tribal coordination letters were sent out to tribes listed by the NAHC for data gathering purposes.

6.18.2 Regulatory Setting

A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource may have a significant effect on the environment (PRC 21084.2). As specified in the PRC Section 21080.31, as amended by AB 52, a lead agency is required to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. Consultations must include discussing the type of environmental

review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the tribe (PRC 21080.3.1 (a) and 20184.3(b)(a)), and Government Code 65352.4). That consultation must take place prior to the determination of whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project.

Public Resource Code (PRC) section 21074 defines tribal resources as follows:

- (a) "Tribal cultural resources" are either of the following:
- (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
 - (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
 - (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
 - (2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
- (b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- (c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 if it conforms with the criteria of subdivision (a).

14 California Code of Regulation 15120(d) Confidentiality

Section 15120(d) of the California Code of Regulations states that information and locational information regarding archaeological sites, sacred lands, or other information is confidential and is restricted from disclosure in public documents.

Also see California Health and Safety Code, Section 7052 and 7050.5 and California Public Resource Code, Section 5097 discussed in Section 6.5.2.

6.18.3 Potential Impacts

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

- a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)? (Less Than Significant with Mitigation Incorporated)***

The combined SSJVIC record search, NAHC SLF search did not identify any existing tribal historic resources within the project area. Four previously recorded prehistoric archaeological sites (potential tribal resources) were identified within the eastern project area (discussed in Section 6.5). These sites have not been evaluated for CRHR eligibility and are considered potential tribal historic resources. With Mitigation Measures CUL-1 through CUL-5 incorporated (see Section 4.3), a less than significant impact is anticipated.

- b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe? (Less Than Significant with Mitigation Incorporated)***

The SSJVIC record search identified four previously recorded prehistoric archaeological sites (as discussed above and in Section 6.5). The NAHC SLF search was negative. With Mitigation Measures CUL-1 through CUL-5 incorporated (see Section 6.5.4), a less than significant impact is anticipated.

6.19 UTILITIES AND SERVICE SYSTEMS (USS)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Require or result in the construction of new or expanded water or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6.19.1 Environmental Setting

Utilities in the project area include three Pacific Gas and Electric (PG&E) high-voltage transmission lines, one running east-west across the proposed project area just south of Manning Avenue, and a pair of lines running north-south through Raisin City (PG&E 2021a). The transmission lines are suspended on large, steel towers that are mounted on concrete platforms in farm fields. The foundations of these platforms are constructed deep in the farm fields and will not be affected by the proposed recharge construction or operations. Fresno County Service Area (CSA) 43 provides street lighting and community park maintenance to unincorporated Raisin City.

Other utilities include gas (PG&E 2021b), electrical, and fiber optic lines, which run along McMullin Grade, Floral Avenue, and smaller feeder streets; and pump stations for groundwater extraction. Drinking water is pumped from the ground throughout the proposed project area, and sewage is disposed of in septic tanks. CSA 43 also extends community water service to Raisin City. There are no designated

underground stormwater facilities in the project area other than in Raisin City, which will not be affected by the proposed project. In general, street runoff is directed into toe ditches and ultimately percolates into the ground or runs off into the James Bypass.

The proposed project would utilize the existing power grid for the additional pumps at Floral Avenue. The existing grid has sufficient capacity to power the pumps, and no new electrical transmission lines would be needed. Pumps at three additional pump stations along the Main Canal will be powered by natural gas or propane motors and will not require any installation of utilities other than a large natural gas tank that will be refilled as needed by tanker truck. There will be no additional transmission lines constructed to support them.

Surface waters that would be diverted to the recharge areas are unallocated, meaning that only flows that exceed the total of the existing water right allocations in the James Bypass would be accessed for recharge. The proposed project would enhance emergency and drought year water supplies. Therefore, there will be no need for new or revised water entitlements associated with this project.

The closest landfill to the proposed project area is Fresno County's American Avenue Disposal Site, approximately 10 miles northwest. This landfill will be utilized as it accepts any type of solid waste materials generated by the project.

6.19.2 Regulatory Setting

Federal

CWA and NPDES

The CWA established water quality standards for surface waters and the basis for regulating the discharge of pollutants into the WOTUS. Under the CWA, the EPA has implemented pollution control programs, including wastewater standards for industry and water quality standards for contaminants in surface water. It became unlawful to discharge any pollutant from a point source (a discrete conveyance, such as a pipe or man-made ditch) under the CWA unless a permit was obtained. In California, it is the responsibility of the RWQCB to preserve and enhance the quality of the state's waters through the development of water quality control plans and the issuance of waste discharge requirements which also serve as NPDES permits.

State

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (PRC, Division 30), enacted through AB 939 and modified by subsequent legislation, requires all California cities and counties to implement programs to reduce, recycle, and compost at least 50% of wastes by the year 2000, and to divert at least 75% by 2010 (PRC §41780). The State determines compliance with this mandate to divert 50% of generated waste (which includes both disposed and diverted waste) through a complex formula. This formula requires cities and counties to conduct empirical studies to establish a "base year" waste generation rate against which future diversion is measured. The actual determination of the diversion rate in subsequent years is arrived at through deduction, not direct measurement; rather than counting the amount of material recycled and composted, the County tracks the amount of material disposed of at landfills, and then subtracts the disposed amount from the base-year amount (PRC §41780.2).

Title 8, Section 1541 of the California Code of Regulations

This requires excavators to determine the approximate locations of subsurface installations, such as sewer, telephone, fuel, electric, and water lines (or any other subsurface installations that may reasonably be encountered during excavation work) prior to excavation.

California Government Code §4216 et seq.

This law requires owners and operators of underground utilities to become members of and participate in a regional notification center. Underground Service Alert Northern California (USA North) covers Northern and Central California, including Fresno County. USA North receives planned excavation reports from public and private excavators and transmits that information to all participating members who may have underground facilities at the location of excavation. The USA North members mark or stake their facility, provide information, or give clearance to dig.

Local

Fresno County General Plan Policies:

- PF-J.1 The County shall encourage the provision of adequate gas and electric, communications, and telecommunications service and facilities to serve existing and future needs.
- PF-J.2 The County shall work with local gas and electric utility companies to design and locate appropriate expansion of gas and electric systems while minimizing impacts to agriculture and minimizing noise, electromagnetic, visual, and other impacts on existing and future residents.
- PF-J.3 The County shall require all new residential development along with new urban commercial and industrial development to underground utility lines onsite.
- PF-J.4 The County shall require compliance with the Wireless Communications Guidelines for siting of communication towers in unincorporated areas of the County.

6.19.3 Potential Impacts

USS a): Would the project require or result in the construction of new or expanded water or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction of which could cause significant environmental effects? (Less than Significant Impact)

Minimal amounts of wastewater will be generated during construction through use of portable toilets by construction workers. Operations of the proposed project would not generate wastewater.

Approximately 400 square feet of new impervious surface will be constructed at each of the three pump stations along the Main Canal. The amount of runoff from this surface will be minimal and is not expected to increase flood flows or require new measures to contain stormwater runoff. Runoff from the pump station foundations in the interior of the area will be minimal and will be contained within the surrounding berms. There will be no other features that would affect stormwater drainage, and impacts will be less than significant.

Three pumps will be added to the Phase 1 Floral Pump Station. The pumps will utilize three available pump bays in the pump station. Power will be provided through the current electrical transformer system. The 15 pumps located in the three pump stations along the Main Canal will be powered either by propane or electricity. A propane tank will be installed at each pump station and will be refilled as needed by tanker truck. Distribution lines will be installed to extend electric power from PG&E's existing high-voltage lines directly to the pump stations to power the electric motors. Impacts associated with installation and use of propane tanks and electric distribution lines are limited to visual and energy resources. Impacts to visual resources will be minor because the proposed project and infrastructure are

consistent with the appearance of the surrounding landscape. Impacts associated with installation of new distribution lines and electrical energy use will also be minor as the pumps will only run for a limited period of time during flood events when other area groundwater pumps that run from the same grid are likely to be offline. Impacts associated with constructing new utility infrastructure will be less than significant.

USS b): Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? (No Impact)

The proposed project will divert flood flows that would otherwise be passed down the Kings River to the San Joaquin River, and ultimately into the San Francisco Bay Delta. These flood flows are not allocated and their use does not require new or expanded water supplies or entitlements. There will be no diversion of flows below flood stage, and if there is insufficient flow to divert to the farm fields, they will remain dry.

USS c): Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (No Impact)

Minimal amounts of wastewater will be generated during construction through normal construction processes. Any wastewater will be taken to an appropriate wastewater processing facility with adequate capacity. Operations of the proposed project would not generate wastewater and its projected demand is equal to its current demand; therefore, there would be no impacts associated with wastewater treatment requirements and there would be no need for new or expanded wastewater treatment facilities.

USS d): Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? (Less Than Significant Impact)

Construction of the project will not generate substantial amounts of solid waste, other than minor amounts of waste, such as packaging materials or scraps generated during construction. Soil excavated to construct the canal and laterals will be distributed on adjacent fields, and no soil will be removed from the site. Operation of the project will not generate solid waste. Therefore, impacts will be less than significant.

USS e): Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste? (Less Than Significant Impact)

The small amounts of solid wastes generated during construction will be disposed of in accordance with all statutes and regulations related to solid waste, and no solid waste will be generated during operations. Impacts associated with this criterion will be less than significant.

6.20 WILDFIRE (WDF)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.20.1 Environmental Setting

The proposed project area is located solely on agricultural lands in Fresno County and does not contain any moderate, high, or very high fire hazard severity zones as identified by the Office of the State Fire Marshal (CALFIRE 2007). Wildfires in Fresno County typically occur in the foothill and mountainous areas in the east and west ends of the county (Fresno County 2017).

6.20.2 Regulatory Setting

Federal

The Homeland Security Presidential Directive 5 initiated formation of the National Incident Management System, which guides all levels of government, nongovernmental organizations, and the private sector to work together to prevent, protect against, mitigate, respond, and recover from incidents, including wildfire.

Presidential Policy Directive 8 March 30, 2011, National Preparedness, is aimed at strengthening the security and resilience of the United States through systematic preparation for the threats that pose the

greatest risk to the security of the nation, including acts of terrorism, cyber-attacks, pandemics, and catastrophic natural disasters.

State

California Government Code Section 51179 states “a local agency shall designate, by ordinance, very high fire hazard severity zones in its jurisdiction within 120 days of receiving recommendations from the director pursuant to subdivisions (b) and (c) of Section 51178.” The Office of the State Fire Marshall has developed local responsibility area and state responsibility area Fire Hazard Severity Zone Maps.

County and Regional

The Fresno County Master Emergency Services Plan (Fresno County 2017) establishes a local emergency management system; completes a comprehensive emergency management plan; and specifies policies, roles, resources, and activities necessary to manage an emergency among other purposes.

The Fresno County Multi-Jurisdictional Hazard Mitigation Plan (Amec Foster Wheeler 2018) addresses hazards and risks in Fresno County. Based on the risk assessment, a hazard mitigation planning committee identified goals and objectives for reducing the county’s vulnerability to hazards. To meet identified goals and objectives, the plan recommends several mitigation actions, including actions specific to each participating jurisdiction. This plan has been formally adopted by the County and the participating jurisdictions and will be updated at minimum every five years.

6.20.3 Potential Impacts

The proposed project is not located in or near state responsibility areas or lands classified as very high fire hazard severity zones, therefor the criteria is not applicable. ***(No Impacts)***

6.21 MANDATORY FINDINGS OF SIGNIFICANCE (MFS)

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

The proposed project would not degrade the quality of the environment. While the project could have potentially significant adverse impacts on biological resources, cultural resources, geology and soils, hydrology and water quality, and hazards and hazardous materials, MAGSA will implement the mitigation measures identified in this Initial Study to reduce all potentially significant project-related impacts to a less than significant level. Therefore, the project's impacts will be less than significant, with mitigation.

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

The project's impacts would not be cumulatively considerable. Construction impacts would be temporary and mitigable, and operations impacts would be either beneficial or less than significant; therefore, any potential cumulative impacts would be less than significant. No other projects are currently proposed in the vicinity of the project that, when combined with the effects of the proposal, would result in significant impacts. The project would have beneficial impacts to groundwater levels and would reduce downstream flood risk. Additionally, with incorporation of mitigation measures, any adverse impacts from the project would be less than significant.

MFS (c): Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

As identified and described in this Initial Study, the project would have potential impacts on biological resources, cultural resources, tribal cultural resources, geology and soils, hydrology and water quality, and hazardous materials that would be mitigated from potentially significant to less than significant. The project would have less than significant impacts on aesthetics, agriculture and forest resources, air quality, greenhouse gases, noise, utilities and service systems, energy, transportation and circulation, and public services. The project would have no impact on population and housing, recreation, land use and planning, wildfire, and mineral resources. As a result, the proposed project would have no environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

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8 ACRONYMS

µg/m ³	micrograms per cubic meter
AB	Assembly Bill
ALUCP	Airport Land Use Plan
BAT	Best Available Technology
BAU	Business as Usual
BCT	Best Conventional Technology
BMP	Best Management Practice
BPS	Best Performance Standards
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAP	Control District Climate Change Action Plan
CCR	California Code of Regulations
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CDPR	California Department of Pesticide Regulation
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CGP	Construction General Permit
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COC	Constituents of Concern
CPAD	California Protected Areas Database
CRHR	California Register of Historic Places
CVFPB	Central Valley Flood Protection Board
CVRWQCB	Central Valley Regional Water Quality Control Board
cy	Cubic Yard
dB	Decibel
dBA	A-weighted Decibel
DOC	Dissolved Organic Carbon
DPM	Diesel Particulate Matter
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EC	Electrical Conductivity
EFZ	Earthquake Fault Zone
EIR	Environmental Impact Report
E.O.	Executive Order

EPA	Environmental Protection Agency
FFCP	Flood Flow Capture Plan
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GLO	General Land Office
GWPA	Groundwater Protection Area
HASP	Health and Safety Plan
HMTA	Hazardous Materials Transportation Act
HSC	Health & Safety Code (California)
HWCL	Hazardous Waste Control Law
HWMP	Hazardous Waste Management Plan
KRCD	Kings River Conservation District
KRWA	Kings River Water Association
LOS	Level of Service
LRA	Local Responsibility Area
MLD	Most Likely Descendant
MBTA	Migratory Bird Treaty Act
MMTCO ₂ e	million metric tons of carbon dioxide equivalent
MOU	Memorandum of Understanding
MRZ	Mineral Resource Zone
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NOI	Notice of Intent
NO _x	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OFFCR	On-Farm Flood Capture and Recharge
O ₃	Ozone
PAH	Polycyclic aromatic hydrocarbon
PG&E	Pacific Gas and Electric
PM _{2.5}	Particulate Matter less than 2.5 microns in diameter
PM ₁₀	Particulate Matter less than 10 microns in diameter
ppm	Parts Per Million
PRC	Public Resources Code
PUE	Pesticide Regulation Program
RCRA	Resource Conservation and Recovery Act
ROG	Reactive Organic Gases
RPS	Renewable Portfolio Standards
RWQCB	Regional Water Quality Control Board
SIP	State Implementation Plan
SJV	San Joaquin Valley
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLC	State Lands Commission
SMARA	Surface Mining and Reclamation Act
SO ₂	Sulfur Dioxide
SO _x	Oxides of Sulfur
SPRP	Spill Prevention and Response Plan

SSURGO	Soil Survey Geographic Database
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDP	Total Dissolved Phosphorus
TDS	Total Dissolved Solids
TSS	Total Suspended Sediments
tpy	Tons per Year
US	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VDE	Visible Dust Emissions
VOC	Volatile Organic Compound
WQO	Water Quality Objectives

9 REPORT PREPARERS AND CONTRIBUTORS

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ATTACHMENT A: PUBLIC SCOPING SUMMARY REPORT

MCMULLIN ON-FARM FLOOD CAPTURE EXPANSION

Draft Initial Study and Environmental Assessment

Public Involvement Appendix

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1 Introduction

1.1 Project Purpose

This Public Participation Plan (PPP) proposes a process to promote public awareness and participation in the McMullin On-Farm Flood Capture Expansion Project. The project intends to divert unallocated flood flows from the Kings River for distribution and recharge on participating farmlands, an approach termed On-Farm Recharge (OFR). Farmlands employed for OFR are thus managed for multiple uses, including farming, flood mitigation, and groundwater recharge.

Prior to constructing the proposed McMullin Expansion elements, a California Environmental Quality Act (CEQA) document will be prepared in conformance with the State Waterboard Storm Water Grant Program Proposition 1 funds, and a National Environmental Policy Act (NEPA) document will be required in conformance with the NRCS RCCP. The different funding sources are specific to different project elements, and the required environmental analyses will reflect that. The projects are related but are not synonymous. The NRCS RCCP grant award requires the preparation of a Watershed Plan – Environmental Assessment/Environmental Impact Statement (Plan-EA/EIS) and public participation activities. The McMullin Area Groundwater Sustainability Agency (MAGSA), through its contractor Tetra Tech, will prepare the required environmental analysis and documentation.

1.2 Public Involvement Goals and Objectives

The following specific objectives for public involvement are:

1. Ensure that the public, including private groups and government agencies at local, state, and federal levels are provided with information they need to understand the construction and operations of the proposed McMullin Expansion project.
2. Provide a forum for the reception and consideration of public input regarding the project. The desired input includes not only opinion, but also uncollected data.
3. Clarify the effects of the alternatives under consideration.
4. Collect publicly available data regarding the environmental, cultural, and social resources in the area that the project team may not have been aware of.
5. Receive written comments and incorporate them into the decision-making process.

2 Public and Stakeholder Meetings

2.1 Public Scoping Meeting

A Public Scoping meeting was held on June 30, 2021. The meeting was well attended with 30 participants. A presentation by the project's environmental consultants provided the participants with background on the project and the areas of study to complete the CEQA and NEPA documents (Attachment A)

Table 2.1: Attendees at Public Scoping Meeting

Name	Organization/Affiliation	Meeting(s) Attended
Annette Tenneboe	CDFW	Public Scoping Session
Ashley Goldsmith	Kings River Conservation District	Public Scoping Session
Charlotte Gallock	None stated	Public Scoping Session
Daniel Kemble	None stated	Public Scoping Session
David B.	Britz Inc.	Public Scoping Session
David Belt	Foster Farms	Public Scoping Session
David Merritt	Kings River Conservation District	Public Scoping Session
D Cederquist	None stated	Public Scoping Session
G. Patrick O'Dowd	Salton Sea	Public Scoping Session
Gerald Kinnunen	None stated	Public Scoping Session
Gere Gunlund	None stated	Public Scoping Session
Greg Berg	None stated	Public Scoping Session
Hylon Kaufmann	Ranch Systems	Public Scoping Session
Jeanne Harguindeguy	None stated	Public Scoping Session
Jeevan	Prubjot Farms	Public Scoping Session
Jerry Radinoff	None stated	Public Scoping Session
Jerry Rai	Rai Farming	Public Scoping Session
Jon Reiter	None stated	Public Scoping Session
JR Peelman	JPF Inc	Public Scoping Session
Kassy Chauhan	North Kings Groundwater Sustainability Agency	Public Scoping Session
Kiti Campbell	Westlands Water District	Public Scoping Session
Marianne Harguindeguy	None stated	Public Scoping Session
Marjorie A Bookout	None stated	Public Scoping Session
Matt Abercrombie	None stated	Public Scoping Session

Michael Gardner	Aqaix	Public Scoping Session
Moe Dean	None stated	Public Scoping Session
Paul Toste	Paul Toste Farms	Public Scoping Session
Ray H. Walls	None stated	Public Scoping Session
Steve Kraemer	None stated	Public Scoping Session
Yvonne Harguindeguy	None stated	Public Scoping Session

2.2 Coordination with Tribes

On July 12, 2021, letters were sent to tribes that may have an interest in the project area requesting information regarding tribal cultural resources or other resources of importance to tribes in and around the project area. No responses to these letters have been received to date.

2.3 Meetings with Agencies

MAGSA has met with numerous agencies during planning for this project. Attendees at those meetings are identified in Table 2.2.

Table 2.2: Attendees at Meeting with Agencies

Name	Organization/Affiliation
Steve Haze	Sierra RCD
Johnnie Siliznoff	NRCS
Robert Gould	Tulare Basin Watershed Partnership Network and Ag Innovations
Deanna Jackson	Tri-County Water Authority
Bobby Kamansky	Southern Sierra IRWM Group
John Brodie	San Luis and Delta Mendota Water Authority
Safeeq Khan	University of California, Merced
Jeff Powers	Sequoia Riverlands Trust
Jeevan Singh, Nadav Ichaki	Mid-Valley Water District
Matt Angell	Madera-Chowchilla RCD, Region 9 CARCD Chair
David Valadao	US Congress
Soua Lee	Kings River Conservation District

Gere Gunland	Raisin City Water District
Kassy Chauhan	North Kings GSA
Manny Amorelli	James Irrigation District

3 Public Notices

3.1 Types of Public Notices

3.1.1 News Ads

A news ad promoting the public scoping meeting was published on June 23 in the Kerman News, a newspaper of general circulation, in the City of Kerman and Fresno County. (Attachment B)

3.1.2 Press Release

A press release was distributed to the media on June 21 to promote attendance at the scoping session. (Attachment C)

Table 3.1: Media List

Media List
KMJ 580 AM (News Talk Radio)
KMJ 105.9 FM (News Talk Radio)
Fresno Bee Newspaper
KVPR 89.3 FM (Public Radio)
Kerman News Newspaper
Fresno Radio Bilingue (Bilingual Radio)
The Business Journal Newspaper
Vida En El Valle (Bilingual Newspaper)
Fresno County Farm Bureau (e-newsletter)

3.1.3 Postings

3.1.3.1 Communities

Flyers were posted on June 22 in local stores, public buildings and other gathering places announcing the public scoping meeting. (Attachment D)

Table 3.2: Flyer Posting Locations

Flyer Topic	Location(s)
OFR Public Scoping Session	Kerman, Community Center
OFR Public Scoping Session	Kerman, Chamber of Commerce
OFR Public Scoping Session	Kerman, City Hall
OFR Public Scoping Session	Kerman, MAGSA Office
OFR Public Scoping Session	Kerman, Starbucks
OFR Public Scoping Session	Kerman, Tony's Market
OFR Public Scoping Session	Kerman, Library
OFR Public Scoping Session	Raisin City, Raisin City School
OFR Public Scoping Session	Raisin City, Bee's Market

3.1.3.2 Webpage

A webpage was developed to promote the scoping session webinar, share registration details, and provide information about how to submit public comments. (Attachment E). Following the webinar, the presentation slides and recording were also posted on the MAGSA website.

Table 3.3: Webpage Views

WEBPAGE VIEWS		
MONTH	Page Views	Webpage
May	14	OFR Public Scoping Webinar Event Page
June	88	OFR Project Page
June	73	OFR Public Scoping Webinar Event Page
July	44	OFR Project Page
TOTAL VIEWS:	219	

3.2 Summary of Main Topics in Public Notices

The main topics for the public notices were a description of the project, date of public scoping meeting, and methods for providing comments.

4 Public Correspondence

4.1 Types of Correspondence

4.1.1 Letters

Letters were sent in the mail to a targeted list of 57 local, regional, State, and Federal agencies (see Attachment F for agency mailing list). The letter copy noticed the agencies of the project, the public scoping meeting, and ways to comment through the 30-day public scoping period (Attachment G). Details to join the public scoping meeting via Zoom were included in the letter.

4.1.2 Online

4.1.2.1 E-Updates

Email updates were sent to interested persons and media outlets to promote the public scoping session webinar. A follow-up email was sent out the day after the webinar sharing the presentation slides, webinar recording, and details on how public comments could be submitted.

Table 4.1: E-Updates

Date	Email Topic	# of recipients	Open Rate	Click-thru Rate
6/17/21	OFR Public Scoping Meeting Webinar	306	38%	18%
6/21/21	OFR Public Scoping Meeting Webinar: PRESS RELEASE	10	29%	0%
6/24/21	Public Scoping Meeting Next Wednesday:	310	36%	14%
6/28/21	Learn More About the McMullin On-Farm Flood Capture Expansion Project	312	33%	13%
6/30/21	TODAY @ 6 PM: OFR Public Scoping Meeting Webinar	316	36%	23%
7/6/21	OFR Public Scoping Meeting Webinar Recording	316	35%	22%

4.1.2.2 Social Media

Table 4.2: Social Media Posts

OFR Public Scoping Session Social Media Posts			
Date	Agency	Content	Platform
6/18	MAGSA	Graphic	LinkedIn
6/18	MAGSA	Graphic	Twitter
6/21	MAGSA	Flyer	LinkedIn
6/21	MAGSA	Flyer	Twitter
6/23	MAGSA	Graphic	Twitter
6/23	MAGSA	Graphic	LinkedIn
6/29	MAGSA	Graphic	Twitter
6/30	MAGSA	Graphic	Twitter
7/9	MAGSA	Webinar Recording (48 views as of 8/3)	YouTube
7/9	MAGSA	Link to Webinar Recording	Twitter
7/9	MAGSA	Link to Webinar Recording	LinkedIn

4.1.3 Newsletter

A newsletter was mailed to landowners in the project area and more broadly, all 836 landowners in the McMullin Area Groundwater Sustainability Agency with information on the project, the public scoping session and ways to engage with the process including how to comment and the public scoping session webinar details (Attachment H).

4.2 Summary of Main Topics of Correspondence

A diverse suite of communications tools were used to engage the public in the McMullin On-Farm Flood Capture Expansion Project public scoping session. A combination of direct mail, community flyering, online communications including website, email, and social media, newspaper and press releases, effectively promoted the public scoping session for the project and informed the public on how to comment on the project during the comment session. Additionally, correspondence effectively ensured two-way communication with the public, as comments and questions were fielded via a specific email address and during the public scoping session webinar on June 30th.

5 Summary of Public Comments

Two public comments were received prior to the beginning of the public scoping session comment period on June 30, 2021 (Attachment I). The comments are recorded in the comment summary table in Attachment J. An additional 15 questions were received during the public scoping session webinar on June 30, 2021. Questions are recorded in the comment summary in Attachment J. Although comments could also be submitted via mail or in person at the MAGSA office, none were received.

Attachment A: Public Meeting Presentation

Attachment B: News Ad

Attachment C: News Releases

Attachment D: Flyer

Attachment E: Webpage

Attachment F: Agency Mailing List

Attachment G: Agency Letter

Attachment H: Landowner Newsletter

Attachment I: Email Public Comments

Attachment J: Public Comment Summary Table

Attachment A: Public Meeting Presentation

MAGSA

MCMULLIN ON-FARM FLOOD CAPTURE EXPANSION PROJECT

Scoping Meeting
June 30, 2021



Attachment B: News Ad



PUBLIC NOTICE

The McMullin Area Groundwater Sustainability Agency announces a Virtual Public Meeting regarding the Proposed McMullin On-Farm Flood Capture Expansion Project
Wednesday June 30, 2021 at 6:00 pm
www.mcmullinarea.org/OFR

The McMullin On-Farm Flood Capture Expansion Project (McMullin Expansion) is envisioned to divert flood flows from the Kings River when they are available for distribution and groundwater recharge on participating farmlands, using an approach termed On-Farm Recharge (OFR). Farmlands employed for OFR are managed for multiple uses including farming and groundwater recharge. Phase 1 of this project was constructed in 2018 and the Proposed McMullin Expansion will increase the diversion and OFR capacity. Funding from the Prop 1 Stormwater Grant Program has been secured from the State Water Resources Control Board as well as the Small Watershed Program administered by the U.S. Department of Agriculture Natural Resources Conservation Service. This project will be discussed in more detail during a virtual public meeting to be held on June 30, 2021.

There will be several opportunities for the public to be involved in the environmental review of the McMullin Expansion. A draft California Environmental Quality Act (CEQA) document is expected to be available for public review and comment during the Fall of 2021. A draft National Environmental Policy Assessment (NEPA) document is expected to be available for public review and comment during the Winter of 2021-22. Please go to the website located at www.mcmullinarea.org/OFR for details on how to join the Zoom meeting and additional project updates as they become available.

Attachment C: News Releases



News Release

June 21, 2021

For more information contact:
Cristel Tufenkjian, MAGSA Outreach Coordinator (559) 960-7037

McMullin On-Farm Flood Capture Expansion Project: Public Scoping Meeting Webinar

MCMULLIN ON-FARM FLOOD CAPTURE EXPANSION PROJECT

PUBLIC SCOPING MEETING WEBINAR

JUNE 30, 2021 | 6 PM - 7:30 PM | ZOOM WEBINAR

DETAILS AT [MCMULLINAREA.ORG/EVENTS/OFR](https://mcmullinarea.org/events/ofr)



Spanish Translation Available // Traducción al Español Disponible

The McMullin Area Groundwater Sustainability Agency (MAGSA) has been awarded a \$10 million grant by the State Water Resources Control Board through the Prop 1 Stormwater Grant Program to expand the existing McMullin On-Farm Recharge Project located near Helm in Fresno County. The infrastructure development resulting from this project will further develop on-farm recharge with landowners increasing groundwater recharge capacity.

The Project is identified in MAGSA's Groundwater Sustainability Plan and is a key element in a vision developed by MAGSA to achieve groundwater sustainability under the Sustainable Groundwater Management Act through innovative approaches in groundwater banking and crediting.

Learn more about the McMullin On-Farm Flood Capture Expansion project at a Public Scoping Meeting Webinar on June 30 at 6 P.M.

Members of the public may provide comments on the proposed project. MAGSA, through its contractor Tetra Tech, are preparing the required environmental analysis and documentation.

[Register for the Public Scoping Meeting Here](#)

Learn more about the Project, register for the Public Scoping Meeting Webinar, and find Zoom webinar details [HERE](#).

Spanish Translation Available // Traducción al Español Disponible

Click [HERE](#) to download the Public Scoping Meeting flyer. Please forward this email with anyone you think may be interested in attending!

Share this email:



MAGSA | [McMullinArea.org](https://mcmullinarea.org) | [contact us](#) | 559-515-3339

Attachment D: Flyer



PUBLIC NOTICE

MCMULLIN ON-FARM FLOOD CAPTURE EXPANSION PROJECT

PUBLIC SCOPING MEETING

save the date

June 30, 2021 @ 6:00–7:30 PM

Virtual Public Meeting

Spanish Translation Available // Traducción al Español Disponible

www.mcmullinarea.org/OFR



About the Project

The McMullin On-Farm Flood Capture Expansion Project (McMullin Expansion) is envisioned to **divert flood flows from the Kings River when they are available for distribution and groundwater recharge on participating farmlands, using an approach termed On-Farm Recharge (OFR).**

Farmlands employed for OFR are managed for multiple uses including farming and groundwater recharge. Phase 1 of this project was constructed in 2018 and the proposed McMullin Expansion will increase the diversion and OFR capacity. Funding from the Prop 1 Stormwater Grant Program has been secured from the State Water Resources Control Board as well as the Small Watershed Program administered by the U.S. Department of Agriculture Natural Resources Conservation Service.

This project will be discussed in more detail during a virtual public meeting to be held on June 30, 2021.

Share Your Comments

There will be several opportunities for the public to be involved in the environmental review of the McMullin Expansion Project. A draft California Environmental Quality Act (CEQA) document is expected to be available for public review and comment during the Fall of 2021. A draft National Environmental Policy Assessment (NEPA) document is expected to be available for public review and comment during the Winter of 2021-22.

Please visit www.mcmullinarea.org/OFR for details on how to join the Public Scoping Meeting and additional project updates as they become available, and call MAGSA's office at (559) 515-3339 with any questions.

Attachment E: Webpage



McMullin On-Farm Flood Capture Expansion Project

The McMullin Area Groundwater Sustainability Agency (MAGSA) has been awarded a \$10 million grant by the State Water Resources Control Board through the Prop 1 Stormwater Grant Program to expand the existing McMullin On-Farm Recharge Project located near Helm in Fresno County. The Project is identified in MAGSA's Groundwater Sustainability Plan and is a key element in a vision developed by MAGSA to achieve groundwater sustainability under the Sustainable Groundwater Management Act through innovative approaches in groundwater banking and crediting.

The infrastructure development resulting from this project will:



Further develop On-Farm Recharge with landowners

Increasing groundwater recharge capacity



More than double the diversion rate of Kings River flood waters

Reducing flood risk during wet years



More than double the total acreage enlisted for groundwater recharge

A key strategy for achieving sustainability

READ MORE ABOUT THE MCMULLIN ON-FARM FLOOD CAPTURE EXPANSION PROJECT



MAGSA awarded \$10 million grant to expand innovative On-Farm Recharge project

February 17, 2021

Public Scoping Meeting

For zoom details for the public scoping meeting [click here](#).

The McMullin On-Farm Flood Capture Expansion project will be described in more detail at a public scoping meeting on **June 30 at 6 pm on Zoom**. Members of the public may provide comments on the proposed project. MAGSA, through its contractor Tetra Tech, are preparing the required environmental analysis and documentation.

There will be several opportunities for the public to be involved in the environmental review and construction of these projects. A draft California Environmental Quality Assessment (CEQA) document is expected to be available for public review and comment during the Fall of 2021. A draft National Environmental Policy Assessment (NEPA) document is expected to be available for public review and comment during the Winter of 2021-22.

The McMullin Expansion Project represent a large-scale project for improved and more integrated groundwater and surface waters.

How to Provide Comments

During the 30-day public scoping period, which begins June 30 and ends July 30, there will be several ways the public can provide comments. Email comments to comments@mcmullinarea.org, hand deliver or mail to MAGSA's office at 275 S. Madera Avenue, Suite 301, Kerman, CA 93630. Comments will also be accepted at the June 30 webinar.



UPCOMING EVENTS

There are no events



DOCUMENTS

McMullin On-Farm Flood Capture Expansion – Public Scoping Webinar 6/30/21 Presentation Slides

July 2, 2021 **1 attachment**

OFR Public Meeting Flyer

June 17, 2021 **1 attachment**

MORE DOCUMENTS

ABOUT MAGSA

McMullin Area GSA is a California Joint Powers Authority to implement the Sustainable Groundwater Management Act in the northwestern part of the Kings Subbasin.

CONTACT US

Mailing Address

275 S. Madera Avenue, Suite 301
Kerman, California 93630

Phone: (559) 515-3339



SB 272 Compliance

State Controller's Government Compensation



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Attachment F: Agency Mailing List

MAILING LIST

Agencies and Organizations	Contact	Address	City, State ZIP
Aliso WD Groundwater Sustainability Agency	Roy Catani, President	13991 Ave. 7	Madera, CA 93637
Alta Irrigation District	Chad Wegley, General Manager	289 North L Street	Dinuba, CA 93618
California Energy Commission		1516 Ninth Street, Ms-29	Sacramento, CA 95814-5512
California Native American Heritage Commission		915 Capitol Mall, Room 364	Sacramento, CA 95814
California Public Utilities Commission		505 Van Ness Avenue	San Francisco, CA 94102
Central Valley Flood Protection Board		3310 El Camino, Room LI40	Sacramento, CA 95821
City Of Kerman, Planning Department		850 S. Madera Avenue	Kerman, CA 93630
City Of Mendota, Planning And Community Development		643 Quince Street	Mendota, CA 93640
City Of San Joaquin		21900 W Colorado Avenue	San Joaquin, CA 93660
Consolidated Irrigation District	Phil Desatoff, General Manager	2255 Chandler St	Selma, CA 93662
Consolidated Mosquito Abatement District		P.O. Box 278	Selma, CA 93662
County Of Fresno Fire Protection District		25101 W Morton Ave	Tranquillity, CA 93668
County of Fresno GSA – Delta Mendota Management Area B	Bernard Jimenez, Deputy Director of Planning	2220 Tulare St. 6 th Floor	Fresno, CA 93721
County of Fresno GSA – Delta Mendota Management Area A	Bernard Jimenez, Deputy Director of Planning	2220 Tulare St. 6 th Floor	Fresno, CA 93721
County of Fresno Planning Department	Bernard Jimenez, Deputy Director of Planning	2220 Tulare St. 6 th Floor	Fresno, CA 93721
Department Of Conservation, Division Of Land Resource Protection		801 K Street	Sacramento, CA 95814
Department of Water Resources, South Central Region	Mike McGinnis		
Farmers WD Groundwater Sustainability Agency	Jim Stilwell, President	4460 W. Shaw Avenue, #219	Fresno, CA 93722
Fresno Council Of Governments	Tony Boren, Executive Director	2035 Tulare St Ste 201	Fresno CA 93721
Fresno Irrigation District	Bill Stretch, General Manager	2907 S. Maple Ave	Fresno, CA 93725
Fresno Metropolitan Flood Control District	Peter Sanchez, Interim General Manager	5469 E. Olive Avenue	Fresno, CA 93727
Gravelly Ford WD Groundwater Sustainability Agency	Don Roberts, General Manager	18811 Road 27	Madera, CA 93638
Golden Plains Unified School District	Martin Macias, Superintendent	22000 Nevada Street	San Joaquin, CA 93660
James Irrigation District	Manny Amorelli	8749 9th Street	San Joaquin, CA 93660
James Groundwater Sustainability Agency	Manny Amorelli	8749 9th Street	San Joaquin, CA 93660
Kings River Conservation District	David Merritt	4886 E. Jensen Avenue	Fresno, CA 93725
Kings River Water Association	Steve Haugen, Watermaster	4888 E. Jensen Avenue	Fresno, CA 93725
Laguna Irrigation District	Scott Sills, General Manager	5065 19 ½ Ave	Riverdale, CA 93656

MAILING LIST (CONTINUED)

Agencies and Organizations	Contact	Address	City, State ZIP
North Fork Kings Groundwater Sustainability Agency	Charlotte Gallock	4886 E. Jensen Ave.	Fresno, CA 93725
North Kings Groundwater Sustainability Agency	c/o Fresno Irrigation District	2907 S. Maple Ave	Fresno, CA 93725
Pacific Gas & Electric, Land Services Department		650 "O" Street, Third Floor	Fresno, CA 93760
San Joaquin Unified Valley Air Pollution Control District		1990 E. Gettysburg Avenue	Fresno, CA 93726
Southern San Joaquin Valley Archaeological Info Center	Celeste Thompson	9001 Stockdale Ave.	Bakersfield, CA 93311-1099
State of California Caltrans	Deputy Director Of Planning & Dev. Services	1352 W. Olive Ave.	Fresno, CA 93778-2616
State of California Department of Fish & Wildlife	Lisa Gymer, Environmental Scientist	1130 E. Shaw Avenue	Fresno, CA 93710
State of California Department of Forestry And Fire Protection, Fresno-Kings Unit	Bill Johnson And Norman Cook	210 S. Academy Ave.	Sanger, CA 93657-9306
State of California Department of Conservation		801 "K" Street - M/S 13-71	Sacramento, CA 95814-3514
State of California Environmental Protection Agency, Department of ToxicSubstances Control		1515 Tollhouse Road	Clovis, CA 93612
State of California Highway Patrol	Resent on June 29	1380 E. Fortune Ave.	Fresno, CA 93725-1958
State of California Reclamation Board		1416 Ninth Street - Room 455-6	Sacramento, CA 95814
State of California Regional Water Quality Control Board, Region 5		1685 E. Street	Fresno, CA 93706-2020
State Office of Historic Preservation, Department of Parks & Recreation	Ms. Lucinda Woodward	P.O. Box 942896	Sacramento, CA 94296-0001
Tranquillity Irrigation District	Danny Wade, General Manager	Box 487	Tranquillity, CA 93668
Tranquillity Resource Conservation District	Matt Hurley	Po Box 487	Tranquillity, CA 93668-0487
United States Department of Agriculture, Natural Resources ConservationService		4625 W. Jennifer, Suite 125	Fresno, CA 93722
United States Department of Army Corps of Engineers	Resent on June 29	-1325 J St.	Sacramento, CA 95814
United States Department of The Interior, Fish & Wildlife Services - Endangered Species Div.		2800 Cottage Way, #W-2606	Sacramento, CA 95825-1888
United States Environmental Protection Agency Region 9		75 Hawthorne Street (Wtr-9)	San Francisco, CA 94105
United States Fish And Wildlife Service, San Joaquin Valley Division	Justin Sloan	1130 E. Shaw Avenue, Suite 206	Fresno, CA 93710
Westlands Water District		32650 W Adams Avenue	Tranquillity, CA 93668

Attachment G: Agency Letter



McMullin Area
Groundwater Sustainability Agency
275 S. Madera Avenue, Suite 301
Kerman, CA 93630
559-515-3339

NOTICE OF A PUBLIC SCOPING MEETING FOR
MCMULLIN ON-FARM FLOOD CAPTURE EXPANSION PROJECT

TO: Responsible and Trustee Agencies, other interested agencies, and members of the public

FROM: McMullin Area Groundwater Sustainability Agency
275 S. Madera Ave., Suite 301
Kerman, CA 93630

SUBJECT: Notice of a Public Scoping Meeting for the McMullin On-Farm Flood Capture Expansion Project

Date: June 30, 2021

Project Title: McMullin On-Farm Flood Capture Expansion Project

Project Summary:

The McMullin On-Farm Flood Capture and Recharge Projects (McMullin Projects) are located in Fresno County and the Kings groundwater Subbasin, northeast of Helm, south of Kerman and southwest of Fresno. The McMullin Projects are also located within the McMullin Area Groundwater Sustainability Area (MAGSA) boundary. The McMullin Projects are intended to divert available flood water and stormwater flows from the Kings River that are ordinarily intended to be released downstream of the James Weir. These diverted waters will be used for direct groundwater recharge or for distribution to participating farmlands for in-lieu recharge or for direct groundwater recharge; an approach termed On-Farm Recharge (OFR). Diversion occurs on the southern end of the James Bypass (or Fresno Slough), just upstream of the James Weir.

Phase 1 was completed earlier this year. This second phase, the McMullin Expansion, is currently under design. Upon completion, the McMullin Projects will have increased the Kings River diversion capacity from 150 CFS to 450 CFS and extended the agricultural region for implementing OFR by an additional 40,400 acres. The McMullin Expansion will consist of two areas: north of phase 1 and east of phase 1. The 3,700-acre northern area is bounded roughly by Manning Avenue and the Phase 1 boundary (south), South Lake Avenue (west), West Adams Avenue (north), and Siskiyou Avenue (east). A 36,700-acre eastern area is bounded roughly by Raisin City Water District's (RCWD) jurisdictional boundary (south and east), South Madera Avenue and the Phase 1 boundary (west), Manning Avenue (north), and South Brawley Avenue (east).

Funding for the McMullin Expansion has been secured from a blending of sources including the United States Department of Agriculture, Natural Resources Conservation Service (NRCS) (funding from both the Regional Conservation Partnership Program and the Environmental Quality Incentives Program), the State of California (State Water Resources Control Board Stormwater Grant), MAGSA and participating landowner contributions. The Grant money from the State of California requires project compliance with the California Environmental Quality Act (CEQA) while the funds from the NRCS require project compliance with the National Environmental Policy Act (NEPA). Both CEQA and NEPA require an agency to consider environmental consequences of a proposed project, inform the public, and allow for public participation in the process. Compliance with CEQA will include the preparation of an Initial Study and

BOARD OF DIRECTORS

Seat 1, Brian Pacheco • Seat 2, Don Cameron • Seat 3, Gagan Batth • Seat 4, Jeevan Singh • Seat 5, Matt Abercrombie

OFFICERS

Jeevan Singh, Chair Matthew Hurley, Secretary

Mitigated Negative Declaration. Compliance with NEPA will include the preparation of a Watershed Plan – Environmental Assessment and Finding of No Significant Impact.

There will be a virtual public meeting on June 30, 2021 from 6:00-7:30 pm to provide an overview of the McMullin Expansion, describe the purpose and need for the project, identify opportunities for public participation throughout the process, and solicit comments. Meeting details are below. This will also start a 30-day public scoping period during which time MAGSA will collect comments on the proposed project.

Please send your written comments to:

McMullin Area Groundwater Sustainability Agency
275 S. Madera Ave.
Kerman, CA 93630
Attn: Matt Hurley, General Manager

Comments can also be hand delivered to the address above.

Email comments to: comments@mcmullinarea.org

Please reference the McMullin Expansion. Please include your name, address, and phone number and/or email address so that we may contact you for clarification, if necessary.

Online Public Scoping Meeting:

Both the CEQA and NEPA processes encourage comments and questions from the public throughout the planning process. Oral and/or written comments also may be presented at the Public Scoping Meeting. The Public Scoping Meeting will be held online on:

Date: Wednesday, June 30, 2021

Time: 6:00 p.m. – 7:30 p.m.

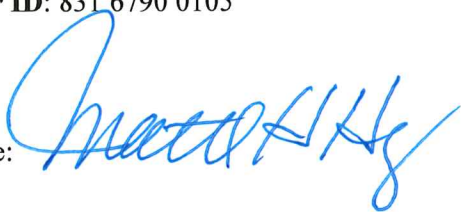
Zoom Link: <https://us06web.zoom.us/j/83167900105>

One tap mobile: US: +17207072699,,83167900105#

Telephone: US: +1 720 707 2699

Webinar ID: 831 6790 0105

Signature:



Date: June 17, 2021

Attachment H: Landowner Newsletter

Upcoming Events

Public Scoping Webinar On-Farm McMullin Expansion

June 30, 2021 at 6:00 - 7:30 PM

via Zoom

Details www.mcmullinarea.org/OFR

On-Farm Recharge Workshop

July 22, 2021

11:30 AM - 1:00 PM

Sign-up to MAGSA's Interested Persons list at www.mcmullinarea.org to receive updates on the webinar

SIGN UP TO RECEIVE EMAIL UPDATES: WWW.MCMULLINAREA.ORG

Follow us on Twitter @McMullinAreaGSA

On-Farm Recharge Educational Workshop

An educational workshop to learn about a recent on-farm recharge study on pecans and the latest information about on-farm recharge related to other nut crops is being hosted by MAGSA. On-Farm Recharge (OFR) offers a flexible approach in which captured floodwater is applied to farmland to recharge aquifers.

The workshop will include a discussion by Bachand & Associates on their recent on-farm recharge study on pecans. UC Davis Associate Professor Helen Dahlke will also present on issues related to OFR on almonds. A grower panel will share their experiences with practicing OFR on their fields.

This online workshop is scheduled for July 22 from 11:30 a.m. - 1:00 p.m. A workshop notice will be sent out in early July to MAGSA's Interested Persons e-mail distribution list and also posted on the website. **To receive details on how to attend this workshop, sign up for MAGSA's Interested Person's list at www.mcmullinarea.org.**



SIGN UP FOR LOCAL GROUNDWATER EMAIL UPDATES

Sign up to the McMullin Area GSA Interested Persons e-mail distribution list to receive meeting notices and groundwater updates. Go to www.mcmullinarea.org to join the list.

McMullin Area GSA
275 S. Madera Avenue, Suite 301
Kerman, California 93630

CHANGE SERVICE REQUESTED



On-Farm Recharge Education Workshop

Thursday, July 22, 2021

11:30 AM - 1:00 PM

Join us online!

Sign up for email updates for more information on how to attend at www.mcmullinarea.org



MCMULLIN AREA GROUNDWATER SUSTAINABILITY AGENCY LATEST UPDATES FOR LANDOWNERS

Summer 2021

McMullin On-Farm Flood Capture Expansion Project

The McMullin Area Groundwater Sustainability Agency (MAGSA) has been awarded a \$10 million grant by the State Water Resources Control Board through the Prop 1 Stormwater Grant Program to expand the existing McMullin On-Farm Recharge Project located near Helm in Fresno County. The Project is identified in MAGSA's Groundwater Sustainability Plan and is a key element in a vision developed by MAGSA to achieve groundwater sustainability under the Sustainable Groundwater Management Act through innovative approaches in groundwater banking and crediting.

These projects are envisioned to divert flood flows from the Kings River when they are available for distribution and recharge on participating farmlands, using an approach termed On-Farm Recharge (OFR). Farmlands employed for OFR are managed for multiple uses: farming, flood mitigation and recharge. Phase 1 was constructed in 2012-2018 and diverts 150 cubic feet per second (cfs) of flood and storm flows at the James Bypass onto approximately 5,000 acres of private farmland.

Phase 2 is currently under design and when constructed will increase the diversion and recharge capacity from 150 cfs to 450 cfs and increase the potential farmland acreage for receiving flood and storm flows for OFR by about 15,000 acres. This doubles the Kings River diversion rate and the total acreage.



Public Scoping Session & Webinar June 30

The McMullin On-Farm Flood Capture Expansion project will be described in more detail at a public scoping meeting on June 30 from 6:00-7:30 p.m. on Zoom. **Please go to the following link www.mcmullinarea.org/OFR for details on how to join the zoom meeting and additional project updates as they become available.**

During the 30-day public scoping period, there will be several ways the public can provide comments. Email comments to comments@mcmullinarea.org, hand deliver or mail to MAGSA's office at 275 S. Madera Avenue, Suite 301, Kerman, CA 93630. Comments will also be accepted at the June 30 webinar.

Phase 2 utilizes agreements between various public agencies and will be operated in partnership with Raisin City Water District, which will provide matching funds through a U.S. Department of Agriculture, Natural Resource Conservation Service Regional Conservation Partnership Program grant award. Phase 2 will rely upon and promote regional collaboration in managing water resources and facilitate the setting of regional priorities and increased self-reliance. Combined, the projects will deliver \$22 million in benefits to the area and contribute substantially to the solutions required to offset the overdraft of the last century in MAGSA and the Kings Subbasin. This would certainly be a model for State and Federal cooperation.

The projects represent a large-scale demonstration project of OFR for improved and more integrated groundwater and surface

waters. The projects are the type envisioned by the California Department of Water Resource's FloodMAR approach, in which OFR projects are a key component in changing statewide management that ranges from local and regional water projects to re-operation of the state and federal reservoirs for an integrated surface water and groundwater storage system that can accommodate California's variable water supply under the changing climate.

MAGSA, through its contractor Tetra Tech, are preparing the required environmental analysis and documentation. A draft California Environmental Quality Assessment document is expected to be available for public review during the Fall of 2021. A draft National Environmental Policy Assessment document is expected to be available for public review during the Winter of 2021-22.

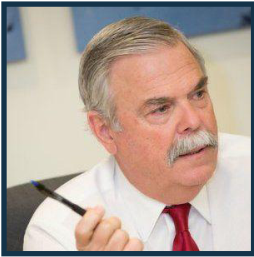
Aquaterra Water Bank, Innovative Sustainability Project

MAGSA is in the preliminary phases of developing a groundwater bank, the Aquaterra Water Bank, to improve MAGSA's groundwater sustainability for landowners and increase the water supply reliability for the region. The water supply project includes the development of key infrastructure across the service area to increase groundwater recharge capacity, and the cre-

ation of new canal alignments that connect with water sources and conveyance existing outside of MAGSA's boundaries.

Aquaterra Water Bank Operations

Between two rivers and with connections to the State Water Project and Central Valley Project infrastructure,



**General Manager
Matt Hurley**

In January, MAGSA held a vision event to lay out the roadmap for 2021 and beyond as we work toward

our goal for the first phase of reaching groundwater sustainability; a manageable 10% reduction of groundwater overdraft by 2025. I stated during the event that 2021 is going to be a busy year as we move forward fast and smart in making progress toward sustainability. Under the Board's solid direction, we are doing just that.

MAGSA's strategy to achieve a 10% reduction in groundwater overdraft is a combination of activities:

1. Build a more robust data gathering system to allow growers to accurately assess and defend their water use while allowing MAGSA to more accurately track sustainability progress.
2. Implement "low-hanging fruit" management actions, like irrigation conservation practices where growers can choose to fine-tune water use efficiency. Growers in MAGSA are already employing these practices, but we need all our landowners to contribute in order to succeed.
3. Prioritize feasible, cost-effective water supply projects identified in the Groundwater Sustainability Plan for further design and funding consideration. We are working that Plan, and so far, the Plan is working!

Four projects that are front and center in 2021 are the McMullin On-Farm Flood Capture Expansion, the Aquaterra Water Bank, the completion of a water market study, and development of an upcoming meter incentive program. All four of these projects represent the first approach by the Board to deal with our overdraft; namely additional water use efficiencies and resource management.

The current dry year only underscores the notion that now is the time to put into place the best, most modern infrastructure to give you, our growers, the flexibility to manage your water supply and make the best business decisions for your operations.

To have a continuing role in how groundwater sustainability is achieved in MAGSA, I highly recommend you stay engaged, stay

METER INCENTIVE PROGRAM

MAGSA is developing a meter incentive program to incentivize early placement of flow meters, pressure transducers, and remote telemetry to comply with the metering policy and accomplish reliable extraction data at the earliest possible time. **To express interest in MAGSA's meter incentive go to www.mcmullinarea.org/2021vision.**

informed, stay in touch and stay nimble and flexible. The landscape for MAGSA landowners is ever-changing. MAGSA growers are only just beginning to take sustainability into their own hands to secure a thriving future.

My door is always open, and I look forward to continuing the conversation.

Groundwater Conditions

The MAGSA together with the six other Groundwater Sustainability Agencies (GSAs) in the Kings Subbasin submitted the second annual report to the CA Department of Water Resources by the April 1, 2021 deadline. MAGSA took every opportunity in Water Year 2020 (Sept. 2019 – Oct. 2020) to begin work on projects that will lead to a sustainable groundwater supply for its landowners and for the region, leveraging grant funds to begin implementing key projects in its Groundwater Sustainability Plan. Although the report indicates dryer conditions put a strain on groundwater supplies across the Kings Subbasin, the ongoing efforts of MAGSA and the collective work of the Kings Subbasin GSAs will ultimately lead to long-term sustainability.

The annual report provides an overview of groundwater conditions in the region including groundwater extraction, surface water supply used for groundwater recharge, total water use, change in groundwater storage, and a description of progress made toward implementing the Groundwater Sustainability Plan since the last annual report.

Here are highlights from the Kings Subbasin's 2020 Water Year:

Water years 2017-2019 were overall wetter than average but were preceded by an extremely dry period. Overall, the last five years result in near average conditions, but they include an extreme dry and an extreme wet year.

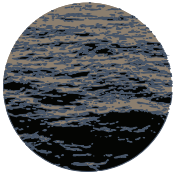
Water use for Water Year 2020 consisted of 1,353,000 acre-feet of groundwater and 958,000 of surface water. Total water use for Water Year 2020 equaled 2,311,000 acre-feet, with 2,011,000 acre-feet of the total used for agricultural purposes and 300,000 for urban use.

The Kings Subbasin saw improvements in groundwater storage in the 2019 water year with an increase of 210,000 acre feet. However, 2020 experienced a reduction of 550,000 acre feet in storage, illustrating the importance of continuing to coordinate with the Kings Subbasin GSAs and engage with MAGSA landowners to implement innovative projects that will lead to a sustainable and resilient, groundwater supply for the region.

The Sustainable Groundwater Management Act (SGMA) requires GSAs to submit annual reports to the Department of Water Resources on April 1 of every year. **The full annual report can be found at www.mcmullinarea.org/reports.**



Aquaterra, continued



AQUATERRA
WATER BANK

the Aquaterra Water Bank is strategically located for diverse users. The location's natural conditions include suitable recharge soils, ample available groundwater storage volume, and groundwater quality that ideally suit the project for water capture and storage.

MAGSA's Aquaterra Water Bank will schedule delivery and recharge of water by its customers, external water agencies, for deposit in the water bank in wetter years.

Accounting will quantify the amount that is being stored. In drier years, MAGSA will work with its customers to schedule extraction and return water based on the water agencies' share of stored water.

Water stored in the Aquaterra Water Bank belongs to the water agencies who pay for a portion of storage in the bank. Any extractions from the aquifer exported outside of MAGSA is water supply that belongs to those agencies and does not threaten the existing groundwater supply of MAGSA landowners. In addition, a percentage of the agencies' stored water will be left as "leave-behind" in MAGSA's groundwater supply for the benefit of MAGSA landowners.

Successful groundwater banking requires adequate data collection, monitoring and modeling. MAGSA plans to contract its groundwater bank accounting to experienced industry experts to ensure the highest accuracy that protects the groundwater supply belonging to MAGSA landowners. Ongoing accounting will be maintained through year-to-year reporting on local groundwater conditions and the amount of water deposited (recharged), withdrawn (pumped) or exchanged to other users.

It is anticipated that the Aquaterra Water Bank will begin operations in the second half of 2023.

Key Facilities

Key facilities of the Aquaterra Water Bank include pumping stations, canals, recharge sites, and extraction wells. The water bank project proposes the expansion and development of conveyance infrastructure for the movement of water across MAGSA's surface area. This directly benefits MAGSA landowners, allowing them to take surface water supplies when available to reduce groundwater dependence.



Construction Costs

The Aquaterra Water Bank construction costs and ongoing operations and maintenance will be covered by water agencies that are paying for storage space in the bank. In addition to the \$18 million in grants already received to offset project construction costs, MAGSA will continue to apply for grants to assist in the development of additional conveyance infrastructure to serve landowners.

Water banks are a win-win surface and groundwater management tool. Aquaterra is an innovative project that will help to secure a viable future for

farming in the MAGSA area. By storing surface water in the aquifer until needed, the Aquaterra Water Bank improves water supply flexibility for water agencies throughout the State while benefitting MAGSA landowners with a "leave-behind" water requirement that creates a groundwater surplus and helps sustain MAGSA's groundwater aquifer. **More info at www.aquaterra.mcmullinarea.org.**

How a Water Bank Works

Groundwater banking is similar to financial banking. There are deposits and withdrawals and each transaction is accurately accounted. A water bank essentially uses the empty space in aquifers for customers to "deposit" water, storing the water during wet periods and withdrawing it for use during dry years. There are two basic methods for putting water into water bank storage:

- **direct recharge:** adding surface water supplies either by using recharge ponds to percolate water into the aquifer or
- **in-lieu agreements:** surface supplies are provided to users to be used in lieu of groundwater pumping, and the amount of water that otherwise would have been pumped becomes the banked water.

The groundwater that is stored is then later recovered from the aquifer when needed through extraction wells.

Attachment I: Email Public Comments

California Department of Transportation

DISTRICT 6 OFFICE

1352 WEST OLIVE AVENUE | P.O. BOX 12616 | FRESNO, CA 93778-2616
(559) 981-1041 | FAX (559) 488-4195 | TTY 711

www.dot.ca.gov



June 24, 2021

FRE-180-51.05

McMullin On-Farm Flood Capture Expansion
Preliminary Review

SENT VIA EMAIL

Matt Hurley, General Manager
McMullin Area Groundwater Sustainability Agency
275 S. Madera Avenue, Suite 301
Kerman, CA 93630

Dear Mr. Hurley:

Thank you for the opportunity to review the Notice of a public scoping meeting for McMullin on-farm flood capture expansion project. The McMullin Projects are intended to divert available flood water and stormwater flows from the Kings River that are ordinarily intended to be released downstream of the James Weir. These diverted waters will be used for direct groundwater recharge or for distribution to participating farmlands for in-lieu recharge or for direct groundwater recharge. The McMullin On-Farm Flood Capture and Recharge Projects (McMullin Projects) are located in Fresno County and the Kings groundwater Sub basin, northeast of Helm, south of Kennan and southwest of Fresno. The McMullin Projects are also located within the McMullin Area Groundwater Sustainability Area (MA GSA) boundary.

Phase 1 was completed earlier this year. This second phase, the McMullin Expansion, is currently under design. Upon completion, the McMullin Projects will have increased the Kings River diversion capacity from 150 CFS to 450 CFS and extended the agricultural region for implementing OFR by an additional 40,400 acres. The McMullin Expansion will consist of two areas: North of phase 1 and east of phase 1.

Caltrans provides the following comments consistent with the State's smart mobility goals that support a vibrant economy and sustainable communities:

1. Should construction traffic impact the State Highway System, then a traffic management plan (TMP) should be considered.
2. An encroachment permit must be obtained for all proposed activities for placement of encroachments within, under or over the State highway rights-of-way. Activity and work planned in the State right-of-way shall be performed to State standards and specifications, at no cost to the State. Engineering plans,

calculations, specifications, and reports (documents) shall be stamped and signed by a licensed Engineer or Architect. Engineering documents for encroachment permit activity and work in the State right-of-way may be submitted using English Units. The Permit Department and the Environmental Planning Branch will review and approve the activity and work in the State right-of-way before an encroachment permit is issued. The Streets and Highways Code Section 670 provides Caltrans discretionary approval authority for projects that encroach on the State Highway System. Encroachment permits will be issued in accordance with Streets and Highway Codes, Section 671.5, "Time Limitations." Encroachment permits do not run with the land. A change of ownership requires a new permit application. Only the legal property owner or his/her authorized agent can pursue obtaining an encroachment permit.

3. Prior to an encroachment permit application submittal, the project proponent is required to schedule a "Pre-Submittal" meeting with District 6 Encroachment Permit Office. To schedule this meeting, please call the Caltrans Encroachment Permit Office - District 6: 1352 W. Olive, Fresno, CA 93778, **at (559) 488-4058**.

Please review the permit application - require document checklist at:

<https://forms.dot.ca.gov/v2Forms/servlet/FormRenderer?frmid=TR0402&distpath=M AOTO&brapath=PERM>.

Please also review the permit application - processing checklist at:

<https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/tr-0416-applicable-review-process-checklist.pdf>.

If you have any other questions, please call or email Edgar Hernandez at (559) 981-7436 or edgar.hernandez@dot.ca.gov.

Sincerely,



David Padilla, Branch Chief
Transportation Planning – North

From: [Michael Gardner](#)
To: [MAGSA](#)
Subject: Re: Question re: MAGSA Capture Expansion
Date: Monday, June 28, 2021 1:31:14 PM

Hi Matthew, thanks for the prompt response.

Makes sense.

We are running a webinar series on financing NBS, and last week's session covered MAR, is why I'm asking. Sarge Green was a panelist (guessing you know Sarge. We were in Valley Ventures 5 cohort at Fresno State WET Center, is how we know Sarge.

Accurately modeling recharge inflow and monitoring elevation is tricky as you know too well, I'm impressed with with MAGSA's been doing to build the foundational capabilities for that! Not easy.

- mike

On Mon, Jun 28, 2021 at 11:02 AM MAGSA <comments@mcmullinarea.org> wrote:

Thank you for your question Mike!

It is MAGSA's intention to fund 100% of the costs associated with the capital improvements, including compensation to landowners for loss of crop and right of way (ideally, easements, but fee transfer possible, if requested), and to enter into individual agreements with landowners related to the use of the landowners lands for recharge and in-lieu recharge, if they are interested. Some on-farm improvements associated with preparation of the individual landowner water control improvements, will come by way of EQIP loans from NRCS.

Again, thanks for your inquiry!

MHH

Matthew H. Hurley

General Manager

McMullin Area Groundwater Sustainability Agency

275 S. Madera Avenue, Suite 301

Kerman, CA 93630

www.mcmullinarea.org

559-515-3339 (office) 408-892-8854 (cell)

From: Michael Gardner [mailto:mike@aqaix.com]

Sent: Monday, June 28, 2021 10:28 AM

To: comments@mcmullinarea.org

Subject: Question re: MAGSA Capture Expansion

Hi, I don't have a comment, but rather a question,

What are the financing arrangements and covenants with private landowners, for any infrastructure investment (berming, etc.) necessary for the expansion? Will MAGSA provide the funding to landowners as loans, or will MAGSA directly fund the investments, with some sort of operations agreement with the landowners?

Thanks in advance for any insights,

- mike gardner

Attachment J: Public Comment Summary Table

Commenter Name	Submittal	Date	Comment	Response
Mike Gardner	Email	6/28/2021	I don't have a comment, but rather a question, What are the financing arrangements and covenants with private landowners, for any infrastructure investment (berming, etc.) necessary for the expansion? Will MAGSA provide the funding to landowners as loans, or will MAGSA directly fund the investments, with some sort of operations agreement with the landowners?	It is MAGSA's intention to fund 100% of the costs associated with the capital improvements, including compensation to landowners for loss of crop and right of way (ideally, easements, but fee transfer possible, if requested), and to enter into individual agreements with landowners related to the use of the landowners lands for recharge and in-lieu recharge, if they are interested.
California Department of Transportation, District 6 Office	Email	6/24/2021	Should construction traffic impact the State Highway System, then a traffic management plan (TMP) should be considered.	Comment noted. The circumstances under which a TMP would be needed, and an outline of the contents of a TMP, are included in the draft NEPA and CEQA documents.
			An encroachment permit must be obtained for all proposed activities for placement of encroachments within, under or over the State highway rights-of-way. Activity and work planned in the State right-of-way shall be performed to State standards and specifications, at no cost to the State. Engineering plans, calculations, specifications, and reports (documents) shall be stamped and signed by a licensed Engineer or Architect. Engineering documents for encroachment permit activity and work in the State right-of-way may be submitted using English Units. The Permit Department and the Environmental Planning Branch will review and approve the activity and work in the State right-of-way before an encroachment permit is issued. The Streets and Highways Code Section 670 provides Caltrans discretionary approval authority for projects that encroach on the State Highway System. Encroachment	Thank you for your comment. MAGSA will obtain an encroachment permit prior to commencing any work that may affect State highway rights of way. This item is addressed in Section 6.17 of the CEQA IS.
			Prior to an encroachment permit application submittal, the project proponent is required to schedule a "Pre-Submittal" meeting with District 6 Encroachment Permit Office. To schedule this meeting, please call the Caltrans Encroachment Permit Office - District 6: 1352 W. Olive, Fresno, CA 93778, at (559) 488-4058.	Comment noted. MAGSA will schedule a pre-submittal meeting with Caltrans prior to submitting an application for an encroachment permit.
Anonymous	Webinar	6/30/2021	It seems that the water will be diverted for 'on-farm' recharge only. Why not develop dedicated recharge basins off the laterals (either district/GSA-level basins or grower-level basins)?	project funded as OFR, does not preclude the use recharge basins. The advantage to OFR over basins is that they are flexible, expandable, empowers growers (MH): basins require productive ag lands to be retired or re-operated, OFR allows for max recharge capability while also allowing for full

Jerry Rai	Webinar	6/30/2021	What would the percentage of water split between the grower and the GSA?	(MH): simply put, it's too early in the process to know. This is part of the negotiations that will occur during the process.
			Which potential water sources would be taken in fir the project? Any and all?	(MH): The project is designed to take water off the Kings Bypass, the presumption is that Kings River floodwater would be the source of water diverted for OFR. No tother source of water that might be categorized as floodwater.
			Could other waters be added? Aside from kings	(MH) answer is the same, for purposes of this project source water would be floodwater coming from Kings River and north Fork through the James Bypass. Facilities could be used in other ways, but for this project just
			Will the east end of the project intertie into CID or Wristen canal?	(MH): graphic shows that the canal stops short of that, it would be another 2 or 2.5 miles to reach the eastern end. This project does not anticipate connecting to either of those facilities but it could be part of future projects.
Steve Kraemer	Webinar	6/30/2021	How would the potential impact on groundwater quality be monitored?	(PB): Primarily by managing lands and managing practices. MAGSA already monitoring water quality, hydrology as part of the GSP. Conduct on appropriate soil types, appropriate past ag practices, part of BMPs that are in development and have been developed during Phase 1. (DM): as part of CEQA Initial Study, we will be developing Monitoring, Mitigation, and Reporting Plan that will list all monitoring, mitigation measures, a schedule for which they will occur, and a process for reporting. (PB): Under Phase 1, also conducted CEQA and water quality concerns came out of that. Developed Flood Flow Capture Plan and
Anonymous	Webinar	6/30/2021	What is the historic interval (in years) between flood water flows , to be captured?	(PB) historic interval is every 2-3 years on average but can have several dry years followed by a few wet years.
Anonymous	Webinar	6/30/2021	This is a highly engineered water system. How do the canal diversions relate to the natural watershed?	(PB): This is a highly engineered system, canal diversions are leveraging a lot of that engineering. This is taking advantage of what we have and leverage it to improve groundwater condition and downstream flood risk. (MH): yes, the system has also been designed knowing the topography of the land. When waters are moved into laterals we will take advantage of topography, take advantage of gravity. (DM): During Phase 1, hydraulics and hydrology study evaluated the potential for flood flows in the area. Considered topography, historic flood flows, capacity of the area to give a reliable estimate for the conditions during which flood flows would be

Daniel Kemble	Webinar	6/30/2021	Where to the flood flows from the bypass currently go?	(MH): flood flows go up the north fork, San Joaquin River and flow north to the delta. This project would reduce flood risk to Mendota and other downstream communities.
Annette Tenneboe	Webinar	6/30/2021	Would a water right be needed to divert from the James Bypass for the project?	(MH): The intention of the project is to take flood flows when they are present from the Kings River waterway. Generally speaking in the state of the CA that would require some kind of permit and that would be done with respect to senior water users. This project would take waters that would otherwise not
Anonymous	Webinar	6/30/2021	Does the expansion area contain soil types suitable to high infiltration rates?	(DM) during planning for this project MAGSA developed a map showing soil permeability, particularly in areas to the east. (MH): Identified areas at the terminus of extended canal that has best areas for infiltration (PB): have done studies for utilizing OFR for some of these soils, studies shown that on good soils you can get 10-12"/day. We would target these
Anonymous	Webinar	6/30/2021	Clogging of soils is often a concern. What was the experience in phase 1 of keeping the farm soils efficient in infiltrating the flood waters?	(PB) you can expect to get infiltration for 1-3 months. Phase 1 showed that you could maintain similar rates beyond the first week when soil profile wetted and pores filled. After that it leveled out and they were able to maintain rates for 20-30 days at a time. That's the longest period of time they had. Important to note that farming practices that can help keep soils permeable, break up confining
Anonymous	Webinar	6/30/2021	When will it rain again ? :)	(MH) When the time is right
Anonymous	Webinar	6/30/2021	Are cropping patterns of the expansion area suitable for OFR?	(PB): They've conducted OFR on a variety incl. nut crops, tomatoes, vineyards. In short- yes. The advantage of having different crops out there is you can rotate OFR between different parcels depending what the needs of different crops are at different times.
Anonymous	Webinar	6/30/2021	When can we break ground for the project?	(MH): NEPA and CEQA analyses need to be completed, results incorporated into final designs, perhaps as early as fall of next year if all goes well.

ATTACHMENT B: AIR QUALITY TECHNICAL REPORT

MCMULLIN AREA GROUNDWATER SUSTAINABILITY AGENCY



**MCMULLIN ON-FARM FLOOD CAPTURE AND RECHARGE PROJECTS, PHASE 2
AIR QUALITY AND GREENHOUSE GAS TECHNICAL STUDY APPENDIX**

PREPARED BY:



JULY 2021

1 INTRODUCTION

1.1 PURPOSE OF REPORT

The purpose of this report is to evaluate and document the potential air quality and greenhouse gas (GHG) impacts associated with the Proposed Project. The analysis documented by this report complies with California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) requirements and serves as the technical documentation to the calculations and modeling required for the air quality and greenhouse gas section of the associated Environmental Assessment (EA) and Initial Study/Mitigated Negative Declaration.

1.2 PROJECT DESCRIPTION

The McMullin On-Farm Flood Capture and Recharge Projects (McMullin Projects) are located in Fresno County and the Kings subbasin, north of Helm, south of Kerman and east of Fresno. The McMullin Projects are found within the McMullin Area Groundwater Sustainability Area (MAGSA) region. They are intended to divert unallocated flood water and stormwater flows from the Kings River at the James Bypass for distribution and recharge on participating farmlands, an approach termed On-Farm Recharge (OFR). Diversion occurs on the northern end of the James Bypass (or Fresno Slough), just upstream of the James Weir.

The Proposed Project is the second phase of the McMullin Projects and is known as the McMullin Expansion. Upon completion, the McMullin Expansion will increase the Kings River diversion capacity from 150 cubic feet per second (cfs) to 450 cfs and extended the agricultural region for implementing OFR by an additional 40,400 acres. The McMullin Expansion will include a 3,700 acre northern area bounded roughly by:

- Manning Avenue and the Phase 1 boundary (south),
- South Lake Avenue (west),
- West Adams Avenue (north), and
- Siskiyou Avenue (east).

And a 36,77 acre eastern area bounded roughly by:

- Raisin City Water District (RCWD) jurisdictional boundary (south),
- South Madera Avenue and the Phase 1 boundary (west),
- Manning Avenue (north), and
- South Brawley Avenue (east).

For the McMullin Expansion Project, most construction machinery would be used onsite. Most building and construction materials would be imported from Fresno, which is approximately 20 miles away, with some materials coming from other sources. Building and construction materials will include concrete, structural steel, and wood (for framing). Rip rap may be selected for canal hardening as appropriate.

1.3.1 Construction Features, Main Conveyance System

A Main Canal will be constructed for the McMullin Expansion. Its purpose will be to convey flood and stormwater flows through the McMullin Expansion Project area to overcome grade where needed and to ensure gravity flow can be achieved from the canal either into adjoining laterals or directly onto adjacent

participating farmlands. Heavy duty machinery required for construction if presented by project element in Table 1.

Table 1: Estimated time and equipment for construction of each project element

Project Elements	Duration				Equipment utilized and number needed							Pieces of heavy equipment in operation at one time, by element	Heavy Eqpt. Weeks
	Wks	Per	# of Units within Element	Total duration (weeks)	Crane	Backhoe	Excavator	Grader	Concrete Truck	Dump truck	Loader	Bulldozer	
Main Conveyance													
Electric Pump Upgrade at Floral	4	location	1	4	1								4
Canal Lift Pump Stations	6	location	3	18	1	1	1		1				54
County Rd Box Culvert Crossings	3	location	3	9	1		1			1	1	1	18
Farm Road Pipe Culverts	3	location	10	30	1		1			1	1	1	60
Main Conveyance Canals	3	mile	11.5	35			1	1		1	1	1	138
Laterals													
Lateral Conveyance Canals	4	mile	4	16			1	1		1	1	1	64
Farm Road Pipe Culverts	3	location	6	18	1		1			1	1	1	36
Total Heavy Equipment Weeks													374

1.3.1.1 Main Canal

An approximate 11.5-mile earth-lined canal with a 450 cfs capacity will be constructed from the Phase 1 eastern terminus to Hayes Avenue as shown in Figure 1. The main conveyance canal's preliminary design estimates a 10-foot invert width for an 11-foot deep canal with 2:1 side slopes. The canal top will be a minimum of 3-ft above grade to allow a minimum water elevation of 1-ft above grade. The canal top of banks will be compacted and drivable with 14 – 16-foot wide banks. Based on these dimensions, the total cut will be 620,000 cubic yards (cy) and total fill will be 540,000 cy, allowing a balanced design such that no additional dirt will be need nor hauled off. Any excess soils will be moved from the excavation areas to on-site disposal areas, such as adjacent farmlands, with scrapers or 17-yard dump trucks.

Including the easements (conveyance and temporary) and the canal length, approximately 240 acres will be disturbed over the construction period. Construction is estimated to occur over a 330-day period. Thus, on average, about 1.5 acres will be disturbed per day during the construction of the Main Canal.

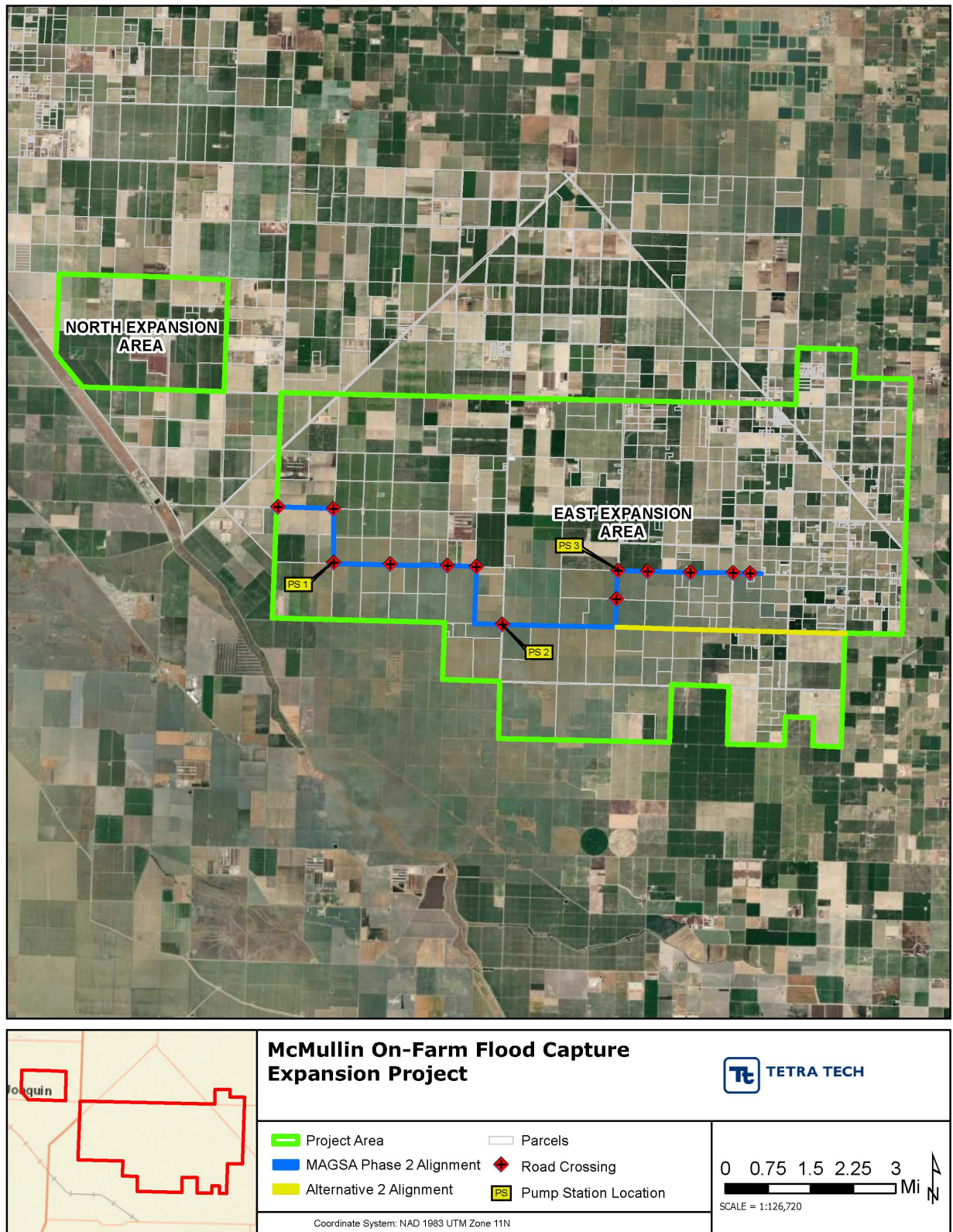


Figure 1: Project Location and Features

1.3.1.2 Electric Pump Additions to Phase 1 Floral Pump Station

Three pumps will be added to the Phase 1 Floral Pump Station, although only two will be needed to operate the McMullin Expansion Project. Power will be provided through the current electrical transformer system. The pumps shall have a capacity between 125 – 175 CFS depending upon system design opportunities and limitations.

Pumps will be operational during periods when flood waters and stormwater flows are available from and being conveyed through Phase 1 for delivery to the McMullin Expansion region. Based on historical data, the existing Phase 1 150 CFS pump will operate when flood flows are available for diversion, on an approximate 2 – 3 year frequency, operational on average for 2 – 3 months (Bachand et al, 2016).

The Floral Pump Station pumps will operate when flood flows exceed 150 cfs. The added electric pumps at the Floral Pump Station will have a combined capacity of up to 450 cfs.

Three Main Canal booster pump stations and associated pumps will be installed to overcome the estimated 46 feet of fall along the alignment from Hayes on the Project's eastern side to the Phase 1 boundary on the west. Pump station locations are shown in Figure 1. The pump stations will be located within one-quarter mile of the listed locations as dependent upon design needs, access and landowner requirements.

Pump stations will be designed for a 300 cfs capacity and 12 to 16-foot lift. Pump stations are expected to be steel framed structures and able to house five 60 cfs rated pumps, or equivalent. Each of the pump stations will include:

- Three pumps and their associated 150 hp propane engines,
- Two pumps and their associated 150 hp electric motors,
- Discharge manifolds,
- Canal gates,
- Bypass functionality to allow bi-directional flow in the canal, and
- Accessories.

1.3.1.4 County and Farm Road Undercrossings

Boxed culverts are in the preliminary design for three county road crossings across Jameson, Westlawn and Grantland. Box culverts will have a minimum design capacity of 300 cfs. Box culverts will be designed to meet County standards.

Standard pipe culverts are currently planned in the preliminary design for farm roads and placed according to farmer and landowner needs. In total, twelve farm road crossings are planned. Culverts have a preliminary design of three (3) 72" diameter pipes to accommodate a 300 CFS flow capacity with minimal head loss across the

Culvert installation and construction shall occur within the boundary of the easements defined for the Main Conveyance canal.

2 AIR QUALITY ASSESSMENT

2.1 PHYSICAL SETTING

The Proposed Project is situated within Fresno County in the San Joaquin Valley (SJV). The lands within the Proposed Project boundary and the surrounding lands are largely agricultural. The topology and meteorology of the SJV are conducive to trapping air pollutants for extended periods and the formation of photochemical smog. The SJV is bordered by the Sierra Nevada Mountains in the east (8,000 to 14,491 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 7,981 feet in elevation) and open to the Sacramento Valley and the San Francisco Bay Area to the north. The bowl-shaped topography inhibits movement of pollutants out of the valley. Low precipitation levels, cloudless days, high temperatures, and light winds during the summer in the SJV are conducive to ozone formation. Inversion layers in the atmosphere during the winter can trap emissions of directly emitted PM_{2.5} and PM_{2.5} precursors within the SJV for several days, accumulating to unhealthy levels

2.2 AIR QUALITY CONDITIONS

The San Joaquin Valley is designated as a state nonattainment area for O₃, fine particulate matter (PM_{2.5}), particulate matter (PM₁₀); and in attainment or maintenance for CO, NO₂, and SO₂. Attainment designations for the region are provided in Table 2-1.

Table 2-1: Attainment Status for San Joaquin Valley

Pollutant	Averaging	CAAQS		NAAQS	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 Hour	0.070 ppm	Nonattainment	0.070 ppm	Nonattainment/ Extreme
	1 Hour	0.090 ppm	Nonattainment/ Severe	Revoked	n/a
Carbon Monoxide	8 Hour	9.0 ppm	Attainment/Unclassified	9.0 ppm	Attainment/Unclassified
	1 Hour	20 ppm		35 ppm	
Nitrogen Dioxide	1 Hour	0.18 ppm	Attainment	100 ppb	Attainment/Unclassified
	AAM	0.030 ppm		53 ppb	
Sulfur Dioxide	24 Hour	0.04 ppm	Attainment	n/a	Attainment/Unclassified
	3 Hour	n/a		0.5 ppb	
	1 hour	0.25 ppm		75 ppm	
Particulate Matter (PM ₁₀)	AAM	20 µg/m ³	Nonattainment	n/a	Attainment*
	24 Hour	50 µg/m ³		150 µg/m ³	
Fine Particulate Matter (PM _{2.5})	AAM	12 µg/m ³	Nonattainment	12 µg/m ³	Nonattainment
	24 Hour	n/a		35 µg/m ³	
Lead (Particulate)	Rolling three-	n/a	n/a	0.15 µg/m ³	No Designation/Classification

Pollutant	Averaging	CAAQS		NAAQS	
		Concentration	Attainment Status	Concentration	Attainment Status
	month period,				
Lead (Particulate)	30 Day Average	1.5 µg/m ³	Attainment	n/a	n/a
Hydrogen Sulfide	1 Hour	0.03 ppm	Unclassified	n/a	n/a
Sulfates	24 Hour	25 µg/m ³	Attainment	n/a	n/a
Visibility Reducing Particles	8 Hour	**	Unclassified	n/a	n/a
Vinyl Chloride	24 Hour	0.010 ppm (26 µg/m ³)	Attainment	n/a	n/a
Source: San Joaquin Valley Air Pollution Control District. 2015. Micrograms per cubic meter (µg/m ³), parts per million (ppm), annual arithmetic mean (AAM). ** Statewide Visibility Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.					

2.3 POTENTIAL IMPACTS

2.3.1 Construction

Construction emissions were estimated using the Road Construction Emissions Model, Version 9.0.0 (SMAQMD 2018.) This model estimates tailpipe emissions from construction equipment, soil hauling, employee commutes and materials delivery as well as fugitive dust resulting from soil disturbance. The model provides default values for many of the parameters needed to estimate emissions. The default values are based on project characteristics provided by the user, such as project length and area. The user can override the default values for those parameters for which project specific information is available.

Project Characterization

As detailed in the project description, the project was modeled to begin construction in 2022 and last for 13 months; the modeled project length was 11.5 miles with a total project area of 240 acres; water trucks will be used to control fugitive dust.

The Project Type was modeled as New Road Construction to take advantage of the default vehicle trip data not provided for the Other Linear Project Type.

The maximum area disturbed per day was estimated based on the equipment utilization provided in Table 1 with the methodology outlined in Calculation Details for CalEEMod (CACOA 2021.) For each element, the number of pieces of equipment in use at one time was used to calculate the average number of hours per day each individual piece of equipment will operate. The hours were then summed over all the

elements for each individual piece of equipment. The maximum area disturbed per day was the calculated using the equipment-specific grading rates, shown in Table 2-2, as determined by building estimator references.

Table 2-2. Grading Rates

Equipment Type	Acres/8hr-day
Crawler Tractors	0.5
Graders	0.5
Rubber Tired Dozers	0.5
Scrapers	1

Material hauling volumes were scaled from the Phase 1 estimates based on project length. Material hauling was spread evenly across the 12-month construction period.

Project Specific Information

Project specific information was provided for the following parameters. All other parameters used the model default values:

Construction Periods – The project was modeled as a single phase, “grading and excavation,” for a 13-month duration starting November 15, 2022.

Miles per round trip for hauling was set to 20 miles as detailed in the project description

Equipment Count and Equipment Hours per Day – For each element, the number of pieces of equipment in use at one time, as shown on Table 1-1, was used to calculate the average number of hours per day each individual piece of equipment will operate. The hours were then summed over all the elements for each individual piece of equipment. Equipment counts and hours were set to represent the total hours calculated for each equipment type. In addition to the equipment listed in the project description (Table 1-1,) the default value for signal boards was also included in the model.

The Road Construction Emission Model file is provided in Appendix A.

2.3.2 Operation

Operational emissions of criteria pollutants are limited to combustion by-products associated with the propane engines powering the pumps to be installed at three pump stations. Operational emissions were estimated using engine specific CARB certification values (CARB 2020.) and summarized on Table 2-5.

Emissions were calculated according to the following equation.

$$E = \text{EmFac} * P * (1/\text{Eff}) * C1 * C2 * T$$

Where:

E = Emissions (Tons/yr)

EmFac = Emission Factor (g/hp-Hr)

P = Engine Power (hp) = 900

Eff = Pump Plant efficiency (Unitless) = 0.75

C1 = Conversion factor for g to pounds = 1/453.6

C2 = Conversion factor for lb to tons = 1/2000

T = Time engines operate annually (Hr) = 720

The pump engines were conservatively assumed to operate continuously for three months every third year. Estimates are based on engine power for 6 pumps at 150 hp each, for a total power of 900 hp. Emission factors are shown on Table 2-5.

2.3.3 Greenhouse Gases

Greenhouse gas (GHG) emissions attributable to the project include tailpipe emissions associated with construction related activities as well as combustion emission from engine powered pumps and electric power consumption from electric pumps associated with the operation of the proposed project.

GHG emissions resulting from construction activities were estimated using the Road Construction Emission Model (Appendix A.)

GHG emissions associated with the combustion of propane at the three pump stations was estimated using GHG emission factors from the USEPA's Mandatory Reporting of Greenhouse Gases as incorporated into the California Air Resource Board (CARB) Mandatory Reporting of Greenhouse Gases program (CARB 2018.) Emissions estimation was limited to CO₂, the only GHG for which an emission factor is provided.

Emissions of carbon dioxide associated with propane combustion were calculated according to the following equation.

$$E = \text{EmFac} * P * (1/\text{Eff}) * C1 * T * C2 * C3$$

Where:

E = Emissions (kg/yr)

EmFac = Emission Factor (kg/mmBTU) = 61.46

P = Engine Power (hp) = 900

Eff = Engine efficiency (Unitless)

C1 = Conversion factor for hp to Btu/Hr = 2,545.6

T = Time engines operate annually (Hr) = 720

C2 = Conversion factor for BTU to mmBTU = 1/1,000,000 = 0.0000001

C3 = Conversion from kg to MT = 0.001

Emissions of carbon dioxide equivalent associated with electrical power consumption were estimated using electric power generation emission factors from CalEEMod (CACOA 2021) for Pacific Gas and Electric Company.

Emissions of carbon dioxide equivalent associated with electrical power consumption of the electric motors were calculated according to the following equation:

$$E = \text{EmFac} * P * (1/\text{Eff}) * C1 * C2 * T$$

Where:

E = Emissions (MT/yr)

EmFac = Emission Factor (lb./MWh) = 206

P = Engine Power (hp) = 1,800

Eff = Engine efficiency (Unitless) = 0.90

C1 = Conversion factor for hp to MW = .000746

T = Time engines operate annually (Hr) = 720

C2 = Conversion from lb to MT = .000454

Table 2-6 summarizes the GHG analysis, which shows that the Proposed Project would result IN 2,624 MT/year of CO₂e emissions during construction, 87 MT/year of CO₂e emissions amortized over 30 years. Project operations ae estimated to result in 709 MT/year of CO₂e emissions. Total estimated project related emissions are 796 MT/year of CO₂e emissions.

2.3.4 District Significance Thresholds

The District's CEQA guidance established numerical thresholds for emissions of criteria pollutants associated with the construction and operation of a proposed project (SJVAPCD 2015.) The estimated emissions associated with the construction and operation of the Proposed Project are compared to District thresholds in Tables 2-4 and Table 2-5 respectively. Data in tables 2-4 and 2-5 demonstrate that emission levels are below District significance thresholds.

The District has not proposed numerical thresholds for GHG emissions. District guidance states "Projects achieving at least a 29% GHG emission reduction compared to BAU, consistent with GHG emission reduction targets established in ARB's AB 32 Scoping Plan, would be determined to have a less than significant individual and cumulative impact for GHG" (SJVAPCD 2009)

The estimated GHG emissions associated with the operation of the proposed project are substantially reduced from BAU because a majority of the power provided to service the pumps will be electric as opposed to fossil fuel. Emissions associated with BAU were estimated assuming that all pumps are powered by natural gas. Estimated emissions were calculated as described above for propane engines, however the emission factor for natural gas is 53.03 kg CO₂/mm Btu, the total horsepower is 3,900.

A comparison of estimated project emissions to BAU is shown on Table 2-7. As shown on Table 2-7, the Proposed Project meets the District's threshold of significance of 29% reduction from BAU, therefore the project would have a less than significant individual and cumulative impact on the environment.

Table 2-4. Construction Emissions

Emissions Component	Criteria Pollutant Emissions (Tons per Year (tpy))					
	ROG	NO _x	PM ₁₀	PM _{2.5}	SO _x	CO
Estimated Construction Emissions ¹	0.6	5.0	3.1	0.8	0.01	4.5
District Threshold ²	10	10	15	15	27	100
Above Threshold?	No	No	No	No	No	No
¹ Road Construction Emission Model, Appendix A						
² SJVAPCD 2015.						

Table 2-5. Operation Emissions

Emissions Component	Criteria Pollutant Emissions (tpy)					
	ROG	NO _x	PM ₁₀ ¹	PM ₁₀ ¹	SO _x ²	CO
Emission Factor (g/hp-Hour)	0.05	0.02	0.002	0.002	ND	5.8
Estimated Operational Emissions	0.05	0.02	0.002	0.002	ND	5.6
District Threshold ²	10	10	15	15	27	100
Above Threshold?	No	No	No	No	No	No
¹ PM10 and PM10 emission factor and estimated emissions based on Total PM emission factor						
² SOx certification value not provided. SOx from LPG considered insignificant. Not estimated here						
³ SJVAPCD 2015						

Table 2-6. GHG Emissions from Construction and Operation.

Activity	CO2e (MT/year)
Construction	2,624
Construction (Amortized over 30 years)	87
Operation Propane	608
Operation Electric Power	100
Operation Total	709
Total Project Emissions	796
¹ Road Construction Emission Model, Appendix A	
² 1 MT = 2,205 lbs	


Table 2-7. GHG Emissions Compared to BAU.

	CO2e (MT)
Proposed Project (Operation)	709
BAU	1,224
% Reduction	42%
Target (% reduction)	29%
Meets Target?	YES

3 REFERENCES

- Council for Environmental Quality (CEQ). 2016. Final Guidance on Considerations of Greenhouse Gas Emissions and the Effects of Climate Change. Available at www.whitehouse.gov/sites/whitehouse.gov/files/documents/nepa_final_ghg_guidance.pdf. Accessed December 2016.
- California Air Pollution Control Officers Association (CAPCOA). 2021. California Emission Estimator Model, Appendix A Calculation Details, October 2017 Available at <http://www.caleemod.com> Accessed June 2021.
- San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Final Staff Report, addressing Greenhouse Gas Emissions Impacts Under the California Environmental Quality Act, December, 2009.
- San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guidance for Assessing and Mitigating Air Quality Impacts, March 2015.
- Sacramento Metropolitan Air Quality Management District 2018 Road Construction Emission Model, Version 9.0.0, April 2018. Available at <http://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools> Accessed June 2021
- South Coast Air Quality Management District. December 2014. Combustion Default Emission Factors. Available at <http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/combustion-emission-factors-2014.pdf>. Accessed June 2021
- California Air Resources Board (CARB 2020). EXECUTIVE ORDER A-344- New On-Road Heavy-Duty Motor Vehicles, December, 2020.
- California Air Resources Board (CARB), 2018. Mandatory Reporting of Greenhouse gases. Available at https://ww3.arb.ca.gov/cc/reporting/ghg-rep/regulation/subpart_c_rule_part98.pdf
- Bachand P, Roy S, Stern N, Choperena J, Cameron D, Horwath W. 2016. On-farm flood capture could reduce groundwater overdraft in Kings River Basin. Calif Agr 70(4):200-207. <https://doi.org/10.3733/ca.2016a0018>

Appendix A: Proposed Action Road Construction Emission Model Output Files

Road Construction Emissions Model Data Entry Worksheet		Version 9.0.0			
Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.		To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.			
Input Type					
Project Name	McMULLIN				
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)			
Project Type	1	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction			
Project Construction Time	12.00	months			
Working Days per Month	22.00	days (assume 22 if unknown)			
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)			
Project Length	12.30	miles			
Total Project Area	240.00	acres			
Maximum Area Disturbed/Day	2.19	acres			
Water Trucks Used?	1	1. Yes 2. No			
Material Hauling Quantity Input					
Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)	
Soil	Grubbing/Land Clearing				
	Grading/Excavation	17.00	2936.625	0.00	
	Drainage/Utilities/Sub-Grade				
	Paving				
Asphalt	Grubbing/Land Clearing				
	Grading/Excavation				
	Drainage/Utilities/Sub-Grade				
	Paving				
Mitigation Options					
On-road Fleet Emissions Mitigation					
Off-road Equipment Emissions Mitigation					
Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard					

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	1.20		1/1/2022
Grading/Excavation	12.00	4.80	11/15/2022	1/1/2022
Drainage/Utilities/Sub-Grade	0.00	4.20		1/1/2023
Paving	0.00	1.80		1/1/2023
Totals (Months)		12	Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used.	

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT				
User Input										
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00					
Miles/round trip: Grading/Excavation	20.00	30.00		173	3460.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00					
Miles/round trip: Paving		30.00		0	0.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.03	0.41	2.99	0.11	0.05	0.02	1,719.22	0.00	0.27	1,799.79
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.23	3.10	24.51	0.85	0.37	0.12	13,114.22	0.01	2.06	13,728.78
Tons per const. Period - Grading/Excavation	0.03	0.41	3.24	0.11	0.05	0.02	1,731.08	0.00	0.27	1,812.20
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.03	0.41	3.24	0.11	0.05	0.02	1,731.08	0.00	0.27	1,812.20

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing			30.00		0	0.00					
Miles/round trip: Grading/Excavation			30.00		0	0.00					
Miles/round trip: Drainage/Utilities/Sub-Grade			30.00		0	0.00					
Miles/round trip: Paving			30.00		0	0.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.03	0.41	2.99	0.11	0.05	0.02	1,719.22	0.00	0.27	1,799.79
Draining/Utilities/Sub-Grade (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)		0.00	0.00	4.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions		User Override of Worker									
User Input		Commute Default Values		Default Values							
Miles/ one-way trip			20		Calculated		Calculated				
One-way trips/day			2		Daily Trips		Daily VMT				
No. of employees: Grubbing/Land Clearing			34		68		1,360.00				
No. of employees: Grading/Excavation			47		94		1,880.00				
No. of employees: Drainage/Utilities/Sub-Grade			44		88		1,760.00				
No. of employees: Paving			40		80		1,600.00				
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.02	0.92	0.07	0.05	0.02	0.00	319.05	0.00	0.01	321.10
Draining/Utilities/Sub-Grade (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)		1.05	2.76	0.29	0.00	0.00	0.00	68.55	0.07	0.03	79.87
Draining/Utilities/Sub-Grade (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pounds per day - Grading/Excavation	0.28	4.40	0.37	0.19	0.08	0.01	1,336.58	0.03	0.03	1,347.43
Tons per const. Period - Grading/Excavation	0.04	0.58	0.05	0.03	0.01	0.00	176.43	0.00	0.00	177.86
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.04	0.58	0.05	0.03	0.01	0.00	176.43	0.00	0.00	177.86

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions										
User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT		
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00		
Grading/Excavation - Exhaust		1		5	5		8.00	40.00		
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00		
Paving		1		5	5		8.00	40.00		
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.03	0.41	2.99	0.11	0.05	0.02	1,719.22	0.00	0.27	1,799.79
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.04	0.31	0.01	0.00	0.00	151.61	0.00	0.02	158.71
Tons per const. Period - Grading/Excavation	0.00	0.00	0.04	0.00	0.00	0.00	20.01	0.00	0.00	20.95
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.04	0.00	0.00	0.00	20.01	0.00	0.00	20.95

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation		2.19	21.90	2.89	4.56	0.60
Fugitive Dust - Drainage/Utilities/Subgrade		0.00	0.00	0.00	0.00	0.00

Off-Road Equipment Emissions														
Grubbing/Land Clearing	Default		Mitigation Option		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of	Default											
	Override of Default Number of Vehicles	Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier										
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equiprn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment														
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Grubbing/Land Clearing		pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Grubbing/Land Clearing		tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation														
Grading/Excavation		Default	Mitigation Option	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Override of												
Override of Default Number of Vehicles		Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0			Model Default Tier	Cranes	0.33	1.73	3.62	0.15	0.14	0.01	523.89	0.17	529.54
0.00	1			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	3			Model Default Tier	Excavators	0.33	5.70	2.76	0.13	0.12	0.01	875.17	0.28	884.60
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Graders	0.34	1.48	4.14	0.13	0.12	0.01	560.80	0.18	566.84
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Model Default Tier	Off-Highway Trucks	0.70	4.53	4.98	0.18	0.17	0.02	1,759.69	0.57	1,778.63
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equiprn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Model Default Tier	Rubber Tired Dozers	0.97	4.35	10.09	0.46	0.42	0.01	1,137.13	0.37	1,149.38
0.00	1			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25			Model Default Tier	Signal Boards	1.43	7.53	8.99	0.35	0.35	0.02	1,232.84	0.13	1,239.11
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Tractors/Loaders/Backhoes	0.27	3.91	2.72	0.14	0.12	0			

0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			pounds per day	4.37	29.23	37.29	1.54	1.45	0.07	6,617.21	1.87	0.06	6,681.47	
			tons per phase	0.58	3.86	4.92	0.20	0.19	0.01	873.47	0.25	0.01	881.95	

Drainage/Utilities/Subgrade		Default Number of Vehicles	Mitigation Option Override of	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles		Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		1		Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1		Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1		Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipmn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipmn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1		Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1		Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		25		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment		If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving		Default Number of Vehicles	Mitigation Option Override of	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles		Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipmn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipmn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1		Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1		Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		3		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		25		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment															
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Number of Vehicles		Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
0.00		N/A	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	pounds per day			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	tons per phase			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) ==>					0.58	3.86	4.92	0.20	0.19	0.01	873.47	0.25	0.01	881.95	

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	7.50	8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158	7.00	8
Forklifts		89		8
Generator Sets		84		8
Graders		187	7.00	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	5.50	8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247	5.50	8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	7.00	8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Welcome to the Road Construction Emissions Model, Version 9.0.0

User Instructions

This spreadsheet system contains the following individual worksheets:

- 1 This worksheet of User Instructions
- 2 Updates
- 3 Emission Estimates
- 4 Data Entry
- 5 Non-default Off-road Equipment
- 6 EMFAC2017
- 7 On-road Mitigation EF
- 8 OFFROAD Convert
- 9 Off-road Tier 4 EF
- 10 OFFROAD HP & LF
- 11 OFFROAD EF
- 12 x-ref



The Emission Estimates worksheet calculates a project's emissions in pounds per day (and tons) by project phase and tons over the entire construction period.

The worksheet can be used to estimate emissions for both vehicle exhaust and fugitive dust. The methodology used to estimate fugitive dust emissions is a simplified methodology involving estimates of the maximum area (acreage) of land disturbed daily. Detailed fugitive dust emission estimates associated with individual materials handling operations and/or activity/vehicle types cannot be conducted with this version of the model.

The Emission Estimates worksheet cannot be modified directly, it is a protected worksheet. It can only be modified indirectly by entering information for the project in selected areas of the Data Entry worksheet.

The last seven of these worksheets - EMFAC2017, On-road Mitigation EF, OFFROAD Convert, Off-road Tier 4 EF, OFFROAD HP & LP, OFFROAD EF and x-ref - cannot be modified by the user. They are protected worksheets.

Even though all or portions of several worksheets are protected, the individual formulas used in the calculations can be seen by the user.

The Data Entry worksheet includes several areas that can be modified by the user.

User instructions in the Data Entry worksheet are highlighted in red.

On the Data Entry worksheet, the user has two options for entering project data: required data and optional data. Required data is entered in the data input section (yellow cells). That required data is then used by the worksheet to calculate default values for the project.

The user can override the default values (blue cells) calculated for a project and is encouraged to do so if project specific information is available. Due to the difficulty in developing reliable default values for road construction projects, the user is encouraged to enter as much site specific information as is available for the project being analyzed.

The Data Entry Worksheet also includes a button that allows the user to clear previously entered data. This button is found just at the top of and to the right of the data entry portion of the worksheet.

When projects are discontinuous, the user must make adjustments to the spreadsheet manually, since the program cannot be setup to anticipate unexpected project delays.

#VALUE! <- This error message may occur during use of the spreadsheets. This occurs whenever the user enters a non numeric value, including a space character, into a cell that is used to calculate a numeric value. Consequently, to erase values entered into the spreadsheets, use the delete key instead of the space bar!

Note: Information in this worksheet is based on conversations with knowledgeable individuals at the Sacramento Metropolitan Air Quality Management District, the California Department of Transportation, the California Air Resources Board, the U.S. EPA, and private industry involved in road construction. Also, the 26th edition of Walker's Building Estimator's Reference Book (1999) was used in the development of this spreadsheet. This spreadsheet was prepared by Jones & Stokes, TIAX LLC and Ramboll Environ with the financial support and direction of the Sacramento Metropolitan Air Quality Management District.



<http://www.airquality.org>

Karen Huss



<http://www.ramboll.com/>

John Grant

Road Construction Emissions Model, Version 9.0.0

Updates Log

Changes from previous version of Road Construction Emissions Model

(Version 8.1.0 to 9.0.0) (updated by SMAQMD 04/22/18 with assistance from Ramboll)

- 1) Project length changed to include calendar years 2014 through 2040.
- 2) On-road vehicle emission factors have been updated to EMFAC2017 version 1.0.2.
- 3) Off-road emission rates updated to include calendar years 2014 through 2040.
- 4) Average Offroad HP by Equipment Type updated to be consistent with CalEEMod (version 2016.3.2)
- 5) Modified 'Data Entry' tab to calculate NOx start emissions from heavy duty trucks in "soil hauling", "asphalt hauling" and "water truck" section

(Version 7.1.5 to 8.1.0) (updated by SMAQMD 05/09/16 with assistance from Ramboll ENVIRON US Corporation)

- 1) Project length changed to include calendar years 2014 through 2025.
- 2) Added a new project type: Type 4: Other Linear Project Type. Note that there are no default vehicle or equipment activities available for the Project Type 4.
- 3) Emissions estimates were extended to include SOx, CH4, N2O and CO2e.
- 4) Updated off-road equipment emission factors and default average horsepower by equipment type to be consistent with CalEEMod (version 2013.2.2).
- 5) On-road vehicle emission factors have been updated to EMFAC2014.
- 6) Revised pollutant order for consistency throughout the calculator.
- 7) Added flexibility for users to specify a non-default number of working days per month.
- 8) Modified soil hauling import and export quantity and haul truck capacity data requests to allow users to specify soil hauling activity by phase.
- 9) Soil hauling emissions are now estimated separately for each construction phase.
- 10) Added a new feature to allow users to provide asphalt hauling quantities by phase in the "Data Entry" tab.
- 11) New component added where the user can specify construction start date and duration by phase.
- 12) The maximum daily emissions calculation was modified to sum emissions from overlapping construction phases.
- 13) Water truck activity can be specified and emissions estimated for the paving phase.
- 14) Mitigation options were added for on-road vehicles and off-road equipment. Emissions calculations include the effects of mitigations if a mitigation option is selected by the user.
- 15) Model allows user to estimate emissions from non-default off-road equipment for all phases and for all project types. Non-default off-road equipment specification must be included by equipment type for horsepower, number of equipment, load factor, hours of operation and emission factors in the "Non-default Off-road Equipment" tab.
- 16) New table of total project emissions with units of tons/phase was added in the "Emission Estimates" tab.
- 17) Removed table of daily emissions in metric units from the "Emission Estimates" tab.
- 18) Removed unnecessary data from all tabs.

(Version 7.1.4 to 7.1.5) (updated by SMAQMD 12/11/13 with assistance from ENVIRON Corporation)

- 1) Grubbing and Land Clearing Phase calculation of active months in 2007, 2017, 2019 fixed.
- 2) Soil Hauling Emissions calculation to select override if it exists for round trips/day.
- 3) Worker Commute Emissions calculation of starting and hot soak emissions; drainage phase PM₁₀ emission rate.
- 4) Water Truck Emissions calculation to select number of months for Grubbing and Land Clearing Phase; maximum acreage/day after 2025.

(Version 6.3.2 to Version 7.1.0, 7.1.1, 7.1.2, 7.1.3 & 7.1.4) (updated by SMAQMD 8/2/13)

- 1) EMFAC2011 emission factors added (previous EMFAC versions dropped).
- 2) OFFROAD2011 emission factors added (and fixed error).
- 3) OFFROAD2007 for categories not in OFFROAD2011 (and fixed error)
- 4) Project length changed to include calendar years 2009 through 2025.
- 5) Average Offroad HP by Equipment Type calculation updated and corrected
- 6) Load Factor Adjustment deactivated (default load factors already incorporated in ARB's calculation of emission factors)
- 7) Crawler Tractor equipment added to model
- 8) Air Compressors ROG & Default Excavators calculation on Data Entry sheet corrected.
- 9) Default equipment list updated
- 10) Corrections to Worker Commute Emissions calculations

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> McMULLIN																																																									
Project Phases (Pounds)		ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)																																										
Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00																																										
Grading/Excavation		4.89	36.77	62.49	24.49	2.59	21.90	6.46	1.90	4.56	0.21	21,219.62	1.91	2.18	21,916.39																																										
Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00																																										
Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00																																										
Maximum (pounds/day)		4.89	36.77	62.49	24.49	2.59	21.90	6.46	1.90	4.56	0.21	21,219.62	1.91	2.18	21,916.39																																										
Total (tons/construction project)		0.65	4.85	8.25	3.23	0.34	2.89	0.85	0.25	0.60	0.03	2,800.99	0.25	0.29	2,892.96																																										
<div>Notes: Project Start Year -> 2022 Project Length (months) -> 12 Total Project Area (acres) -> 240 Maximum Area Disturbed/Day (acres) -> 2 Water Truck Used? -> Yes</div> <table><tr><th colspan="2"></th><th colspan="2">Total Material Imported/Exported Volume (yd³/day)</th><th colspan="4">Daily VMT (miles/day)</th></tr><tr><th>Phase</th><th>Soil</th><th>Asphalt</th><th>Soil Hauling</th><th>Asphalt Hauling</th><th>Worker Commute</th><th>Water Truck</th></tr><tr><td>Grubbing/Land Clearing</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1,360</td><td>40</td></tr><tr><td>Grading/Excavation</td><td>2,937</td><td>0</td><td>3,460</td><td>0</td><td>1,880</td><td>40</td></tr><tr><td>Drainage/Utilities/Sub-Grade</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1,760</td><td>40</td></tr><tr><td>Paving</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1,600</td><td>40</td></tr></table>																	Total Material Imported/Exported Volume (yd³/day)		Daily VMT (miles/day)				Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck	Grubbing/Land Clearing	0	0	0	0	1,360	40	Grading/Excavation	2,937	0	3,460	0	1,880	40	Drainage/Utilities/Sub-Grade	0	0	0	0	1,760	40	Paving	0	0	0	0	1,600	40
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Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)		ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)																																										
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The CO2e emissions are reported as metric tons per phase.																																																									

Basic Conversions		Factor	Value	Units	Source
		1 pound equals	453.592	grams	
		1 MT equals	1.102	tons	
		Total # of days in a week	7	days	
		1 kg equals	1,000	grams	
		1 Year equals	365	days	
		1 ton equals	2,000	pounds	
		Global Warming Potential of CH4	25	N/A	http://www.arb.ca.gov/cc/inventory/background/gwp.htm
		Global Warming Potential of N2O	298	N/A	http://www.arb.ca.gov/cc/inventory/background/gwp.htm

**ATTACHMENT C: BIOLOGICAL RESOURCES RECONNAISSANCE
REPORT**

MAGSA McMullin On-Farm Flood Capture Expansion

***Draft* Biological Survey Report**

June 2021



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1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

A reconnaissance level biological survey (survey) was conducted May 4–5, 2021 by Tetra Tech biologists within the boundaries of the McMullin Area Groundwater Sustainability Agency (MAGSA) McMullin On-Farm Flood Capture Expansion Project (Project) to identify the biological resources present and potential habitats within the Project area boundary and immediate vicinity.

The purpose of this report is to document the biological resources identified through a literature review and field survey, evaluate the potential for special status or sensitive species and habitats to occur and thus potentially be affected by Project implementation, and recommend mitigation measures to offset or avoid potential impacts to biological resources. Due to the Project's location coinciding with the ranges of several federal and state listed and special status plant and wildlife species, this report evaluates the potential for such species to occur based on the observed habitat conditions. This report will be used to support the Project's California Environmental Quality Act (CEQA) review.

1.2 PROJECT LOCATION AND ENVIRONMENTAL SETTING

The Project area is located in rural Fresno County, approximately 16 miles southwest of Fresno, California (Figure 1-1, Table 1-1). Lands within the Project area are flat to gently sloping and largely dominated by row crop, orchard, vineyard, poultry, and dairy cattle agricultural uses; though, some lands are fallowed, disked, and/or generally vacant plots. The Fresno Slough Bypass, west-southwest and adjacent to the northwest portion of the project area, provides some riparian, wetland, and annual grassland habitat. Settlements with home sites and associated outbuildings and storage areas are interspersed throughout the agricultural lands within the Project area.

Table 1-1. Public Land Survey System and USGS 7.5-min. Quadrangle Attributes of the Project Area

Township	Range	Sections	Quadrangles
15S	15E	25-36	Helm, Raisin
	17E	14-16, 21-23	Jameson, Kerman, Helm
	19E	22-23, 26-35	Raisin, Caruthers
16S	18E	1-6, 8-12, 13-15, 23-24	Helm, Raisin
	19E	2-11, 15-18, 19, 21-22	Raisin, Caruthers

The Project area climate is characterized by semi-arid (Mediterranean) conditions typical of the central California San Joaquin Valley, including hot, dry summers and cool, moist winters. Mean annual average temperature is 65.2 degrees Fahrenheit and mean annual precipitation is 10.9 inches based on recorded data at Fresno Yosemite International Airport, 1990-2020 (AgACIS 2021).

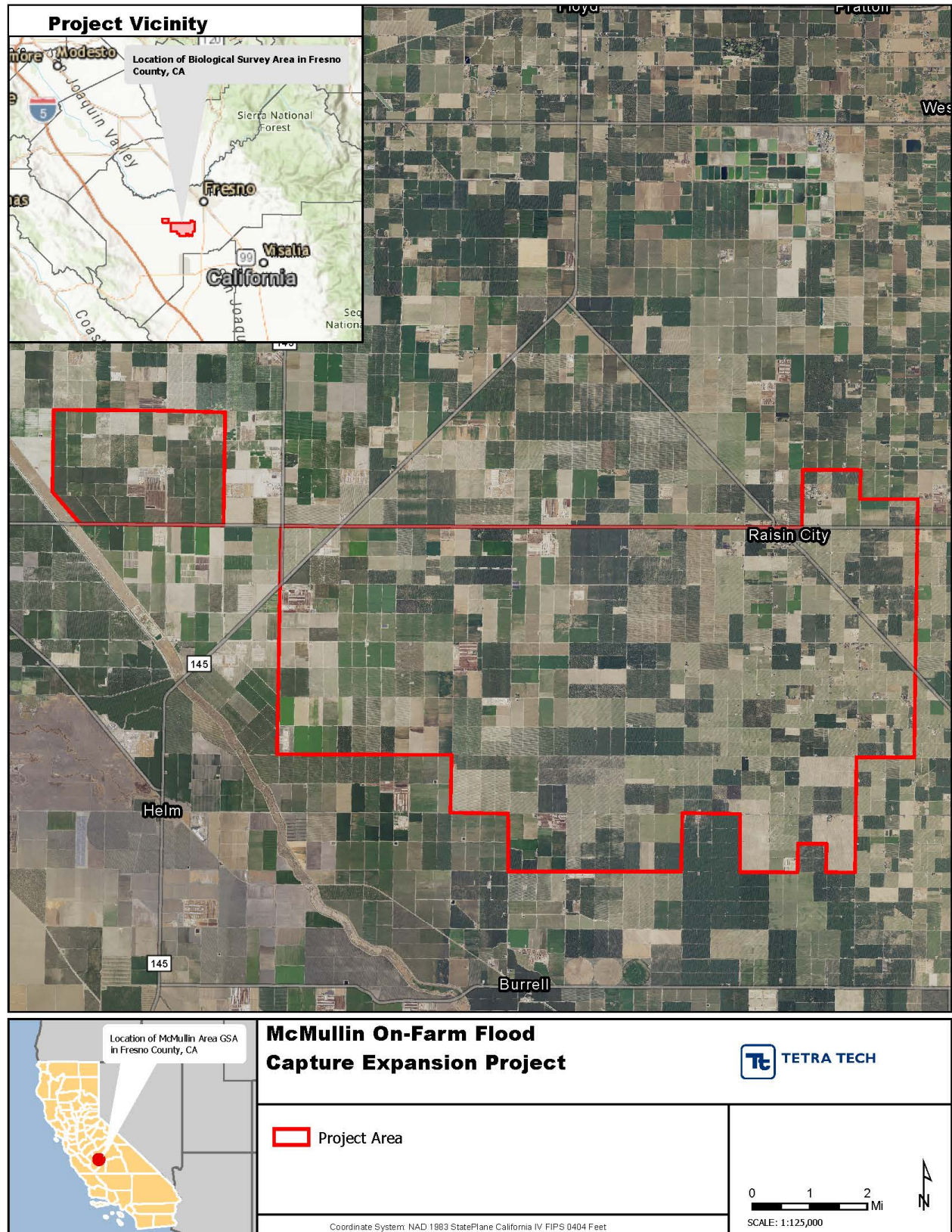


Figure 1-1. McMullin Expansion Project Area and Vicinity

1.3 PROJECT DESCRIPTION

MAGSA proposes to construct and operate the Project for flood capture and recharge on up to 41,247 acres encompassed in two separate established Project boundaries within the greater overall MAGSA boundary. The Project includes the Primary Expansion Area located east from the Phase 1 Terranova Ranch project (approximately 37,500 acres) and the North Expansion Area (approximately 3,800 acres). These lands support annual and perennial row and field crops and poultry and dairy cattle production facilities. Recharge through the on-farm recharge program will occur on a subset of these fields after a selection process, and fields will remain in agriculture to ensure the recharge program remains consistent with planting, fallowing, and harvesting needs of the landowners.

On-Farm Recharge (OFR) practices will be implemented on participating private farmlands. Practices will include both structural practices, representing changes, upgrades, or installation of permanent or temporary infrastructure, or non-structural, representing implementation of management practices. A Flood Flow Capture Plan (Bachand, Cameron, and Merritt, 2021; Bachand and Cameron, 2021) has been developed under Phase 1 to provide guidance to farmers and landowners in implementing OFR. Funding for the Project will be provided through the following:

- A 2018 NRCS Regional Conservation Partnership Program grant awarded to Raisin City Water District.
- A 2021 award through the California State Water Board Proposition 1 Storm Water Grant Program.
- Matching funds provided by MAGSA and its partners.

1.3.1 Easements

150-foot wide conveyance easements will be obtained from each participating landowner for moving Kings River flood waters from the Phase 1 project terminus into the main conveyance canal for later diversion onto farmlands through either direct diversion into landowner irrigation systems or through diverting into open channel laterals. Temporary construction easements, 40 feet wide, will also be implemented for this project along the main conveyance canal system. Similar easements will be required for laterals.

1.3.2 Main Conveyance System

The main conveyance system will be a Project construction element and will consist of the following:

- An approximate 12.3-mile conveyance canal (18' invert width, 9' depth, 2H:1V side slopes) with a 450 cubic feet per second (CFS) capacity will be constructed from the current Phase 1 eastern terminus to Hayes Avenue
- Two electric pump additions to the Phase 1 Floral pump station with power provided via the existing electrical distribution system and a design capacity between 125 to 175 CFS dependent upon system design opportunities and constraints
- Four main canal booster pump stations and associated pumps will be installed to overcome the estimated 46' of fall along the alignment from Hayes on the Project's eastern side to the Phase 1 boundary on the west
- Road (culvert) crossings for the main conveyance canal at each county road crossing or in

areas deemed necessary to maintain farm viability of participating landowners and partners.

Based on the main conveyance canal dimensions, about 500,000 cubic yards (CY) will be excavated and about 600,000 CY will be filled, allowing for a balanced cut/fill design. Thus, no soil will be exported from the Project site. Any excess soil will be moved with scrapers or dump trucks from the excavation areas to Project (on-site) disposal areas, such as adjacent farmlands.

Pump stations will be designed for a 450 CFS capacity and 13 to 15 feet of lift. Pump stations will be constructed as steel framed structures able to house six 60 CFS rated pumps. Each pump station will include the following or a functionally equivalent design and configuration:

- Five pumps and their associated natural gas or propane motors
- Discharge manifolds
- Canal gates
- Bypass functionality to allow bi-directional canal flow
- Pump accessories

Based on the preliminary design, culverts used in the road crossings will consist of three 72" diameter pipes to accommodate a 450 CFS flow capacity with minimal head loss across the culvert. Culvert road crossing will be constructed at the following locations:

- W. Floral and across S. Goldenrod
- Diagonally across the intersection of W. Floral and Howard
- Across W. Nebraska ½ mile west of S. Jameson
- Midway between W. Mountain View and W. Nebraska
- Across W. Nebraska midway between S. Westlawn across S. Jameson
- Diagonally across W. Nebraska midway between S. Jameson and Westlawn Avenues
- Diagonally across W. Nebraska and S. Westlawn
- W. Nebraska across S. Chateau Fresno
- W. Nebraska across S. Grantland
- Across W. Nebraska midway between S. Grantland and S. Bryan
- ¼ mile north of W. Nebraska across S. Bryan

Culvert design may change but will maintain the same functionality and performance. Culvert installation and construction shall occur within the boundary of the easements defined for the main conveyance canal.

Up to 10 pieces of large construction and auxiliary construction equipment, including backhoes, concrete trucks, water trucks, graders, bulldozers, dump trucks, loaders, scrapers, excavators, and pumps/pump motors will be assumed to be in use at any given time for construction.

Including the easements (conveyance and temporary) and the canal length, approximately 240 acres will be disturbed over the construction period. Construction is estimated to occur over a one year period. Thus, on average, about 0.75 acre will be disturbed per day during the construction of the main conveyance canal.

1.3.3 Lateral Conveyance System

A lateral system is planned to be constructed over an expected 20-year period consistent with the Sustainable Groundwater Management Act timeframe. The lateral system will enable flood flow diversion to farmers and landowners participating in the OFR program for direct or *in lieu* recharge. Up to 4 miles of laterals will be implemented under this Project to support the increase in OFR capacity from 150–350 CFS.

The lateral system will be an additional Project construction element and will consist of the following:

- Up to four miles of lateral canals (laterals) will be required for the Project to transport flood flows and stormwater to private landowners and farmers employing OFR who are not adjacent to the main conveyance system
- Each lateral directly off the main conveyance canal will likely require a lift pump station with lift pumps, similar in design to those used in the main conveyance system except with differing design capacity (CFS), to lift flood flows into the higher elevation lateral canal system
- Road (culvert) crossings at approximately half-mile intervals

Pump stations will be designed for a capacity between 60 to 180 CFS with a maximum of three 60 CFS pumps and will utilize propane or natural gas motors, which are interchangeable between lift stations as needed.

Based on the preliminary design, culverts used in the road crossings are expected to consist of two or three 48" or 60" diameter pipes to accommodate lateral design flow capacity with minimal head loss across the culvert. Culvert design may change but will maintain the same functionality and performance. Culvert installation and construction shall occur within the boundaries of the easements.

No areas have been designated for construction staging. Prior to construction, areas will be designated for maintenance and fueling of machinery, storage of materials, and parking. Staging area use will correspond to the location of the activities that are being undertaken, and it's very likely that more than one staging area will be used, depending on the level and location of project activities. Staging areas will be used for mobilization and demobilization of construction equipment and materials, equipment fueling, maintenance, and storage, and daily parking for construction crews. Staging areas will be designated at locations which are located greater than 300 feet from any area deemed a sensitive natural area as needed.

1.3.4 Operations

Diversions for the proposed project will occur only when flows are available for capture and at elevations between 177.5 and 180.3 feet NAVD 88, depending upon operation of the James Weir and when water is leaving the recognized Kings River Service Area via the Fresno Slough channel. Flood flows and stormwater will be delivered to the Project through the established foundational Phase 1 infrastructure. Historically, flood flows have been available at the James Weir at a frequency of about 2.5 years and occur for 2–3 months.

1.3.5 Project Schedule

Main conveyance component construction is expected to commence in November 2022 and continue

through December 2023. Approximately 288 working days will be needed for excavation and construction of structural components, including forming and pouring concrete pads and installing pumps. Construction activities will generally only occur on weekdays, with project hours within 7:00 a.m. and 5:00 p.m. Weekend and evening work will be at the contractor's request and as needed to meet project milestones. No work during holidays is anticipated.

2.0 REGULATORY BACKGROUND

Decades of intensively managed agriculture has transformed the natural vegetation communities of the San Joaquin Valley. Native plant communities and sensitive habitats, such as isolated or riverine wetlands, once present in the Project area have been converted to mostly agricultural uses mentioned above.

The regulatory framework is used in determining whether a project will have a significant impact on species or other biological resources. Applicable federal, state, and local regulations that govern biological resources within the Project area are summarized below.

2.1 FEDERAL

Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have jurisdiction over species listed as threatened or endangered under the federal Endangered Species Act (ESA) of 1973, as amended, and candidate species proposed for listing. The ESA protects listed species from harm, or "take," which is broadly defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." For any project with a federal nexus (funding, permitting, or other approvals) that affects a listed species, the federal agency must consult with the USFWS and/or NMFS Fisheries under Section 7 of the ESA. Under the ESA, critical habitat may be formally designated by the USFWS or NMFS for survival and recovery of listed species. Critical habitat designations are specific areas within a geographic region that are occupied by a species and determined to be critical to its survival in accordance with the ESA.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act prohibits the destruction of nests, eggs, and/or young of all designated migratory bird species. With very limited exceptions, including non-native, human-introduced birds, all birds are included in this prohibition (85 FR 21262). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. Permits for take of non-game migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health, safety, and personal property.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668c) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter,

offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Clean Water Act

The Clean Water Act (CWA) sections 404 and 401 have provisions for protecting biological resources within the aquatic environment through identification of beneficial uses and prohibitions on fill of wetlands or other Waters of the U.S. The primary functions of the CWA in protecting biological resources, in this instance, are to ensure that any impacts to wetlands or other waters are compensated for and to provide a framework for ensuring that water quality is maintained or improved.

2.2 STATE OF CALIFORNIA

California Environmental Quality Act

CEQA Guidelines §15380 define special status plant and animal species as those species that are:

- Listed as endangered, threatened, or candidate species under the federal ESA
- Listed as endangered, threatened, or candidate species under the California Endangered Species Act (CESA)
- Listed by the California Department of Fish and Wildlife or the Department of Forestry as a species of special concern
- Listed (List 1 or 2) plant species on the California Native Plant Society's (CNPS) List 1 or 2
- Otherwise considered rare, threatened, or endangered under CEQA guidelines when the species' survival is in jeopardy due to loss or change in habitat.

In addition, plant and animal species protected by other specific federal and/or California state statutes are considered special status species.

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA), a permit from California Department of Fish and Wildlife (CDFW) is required for projects that could result in the "take" of a plant or animal 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 CESA definition of take does not include "harming" or "harassing," as the Federal ESA definition does. Therefore, the threshold for take is higher under CESA than under ESA. A State or local public agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the program area and determine whether the project would have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any proposed project that could affect a candidate species. For the potential taking of individual animals listed under CESA Fish and Game Code Sections 2080.1 and 2081 provide for issuance of an incidental take permit. CDFW will issue an incidental take permit only if: (1) the authorized take is incidental to an otherwise lawful activity; (2) the impacts of the authorized take are minimized and fully mitigated; and (3) adequate funding is provided to implement the minimization and mitigation measures.

California Fish and Game Code

Several sections of the California Fish and Game Code (CFGF) are applicable to determination of the biological resource impacts that may be associated with the Project.

Section 1580. This section declares it is the policy of the state to protect threatened or endangered native plants; wildlife; aquatic organisms or specialized habitat types; both terrestrial and non-marine aquatic, or large, heterogeneous natural gene pools for the future use of mankind through the establishment of ecological reserves.

Sections 1600-1616. Under Sections 1600-1616, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which support fish or wildlife (i.e., bed to bank). The CDFW defines a “stream” (including creeks and rivers) as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.” The CDFW has interpreted the term “streambed” to encompass all portions of the bed, banks, and channel of any stream, including intermittent and ephemeral streams, extending laterally to the upland edge of riparian vegetation. Construction and maintenance actions that may affect the streambed would be subject to creation of a Streambed Alteration Agreement under Section 1602. This agreement would include measures to protect fish, wildlife, and vegetation that may be affected during construction in the streambed.

Section 1900, et seq. The purpose of this chapter, known as the *California Native Plant Protection Act of 1977*, is to preserve, protect, and enhance endangered or rare native plants of California. Many species and subspecies of native plants are endangered because their habitats are threatened with destruction, drastic modification, or severe curtailment. Commercial exploitation, disease, and other factors also represent threats to species and subspecies of native plants. This portion of the code designates rare, threatened, and endangered plant taxa of California.

Sections 3503 and 3503.5. Section 3503 of the CFGF states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders falconiformes and strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. This statute does not provide for the issuance of any type of incidental take permit.

Section 3513. This section prohibits taking, possessing, or needlessly destroying the nest or eggs or any bird. Birds of prey are included in Section 3503.5.

Sections 3511, 4700, 5050, and 5515. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take of fully protected species.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, all waters of the U.S. that are within the borders of California are also waters of the state. The State Water Resources Control Board delegates authority to the Regional Water Quality Control Board (RWQCB), which take Section 401 water quality certification actions for activities subject to any permit issued by the USACE pursuant to Section 404 of the CWA. Under Section 401 of the CWA and the Porter-Cologne Water Quality Act, the RWQCB exercises

jurisdiction over discharges that may affect jurisdictional wetlands and those non-isolated waters associated with Traditional Navigable Waters.

2.3 FRESNO COUNTY

Fresno County General Plan

The following elements of the Fresno County General Plan apply to biological resources within the Project area (Fresno County, 2000).

- The Open Space and Conservation Element addresses preservation and protection of natural resources, open spaces preservation, commodity resources production management, cultural resources protection and enhancement, and availability of recreational opportunities
- In addition to describing land use designations, the Agriculture and Land Use Element establishes the goals, policies, and implementation procedures for Resource Lands, including Agriculture and River Influence areas. Policies are aimed at avoiding adverse impacts from development and encouraging environmentally acceptable agricultural activities

3.0 METHODS

3.1 DESKTOP REVIEW

Prior to Tetra Tech biologists conducting the field survey, a desktop review of available data pertinent to the proposed project area and vicinity was completed. Informational sources included:

- USFWS Information for Planning and Consultation (IPaC) for the project area boundary and immediate vicinity to obtain a list of federal ESA-listed species, species of concern, and the presence of critical habitats (USFWS, 2021)
- California Natural Diversity Database (CNDDDB) query of USGS 7.5-minute topographic quadrangles for the Project area center (Raisin), a 5-mile radius of the Project center, and the eight surrounding quads (Kerman, Kearney Park, Fresno South, Helm, Caruthers, Five Points, Burrell, Riverdale) for biological resources records within these areas (CDFW, 2021a; CDFW, 2021b)
- CNPS Electronic Inventory for further ecological and distributional information on plant species of concern which *may potentially occur* within the project area based on CNDDDB query results (CNPS, 2021)

Tetra Tech biologists reviewed these data to assess the potential for special status species to occur within the project area specifically, based on the regional setting, known land uses in the Project area and vicinity, and the species' habitats and/or life histories.

- USFWS National Wetlands Inventory (NWI) to identify *potential* areas with wetlands and/or other waters (USFWS, 1987)
- California Department of Water Resources (DWR) Natural Communities Commonly Associated with Groundwater dataset (Natural Communities dataset) for vegetation and wetland types commonly associated with the expression of groundwater *under natural, unmodified conditions* (Klausmeyer et al, 2018)

-
- NRCS Web Soil Survey for general characteristics of soils and areas with mapped soils containing hydric soil components (Soil Survey Staff, 2021)

A query of the NWI and Wetlands Mapper, which produces *reconnaissance level information* for the location, type, and size of potential wetlands and deepwater habitats based on vegetation, visible hydrology, and geography, depicts areas of freshwater forested/shrub and emergent wetlands and freshwater ponds within the proposed project area (Figure 4-1). Wetlands Mapper imagery used for the photo interpretation analysis in the project area (and most of Fresno County, CA) is from the 1980s (USFWS 1987). Thus, field verification was deemed necessary to verify or rule out actual wetland conditions.

California DWR's Natural Communities dataset does not represent the agency's determination of a groundwater dependent ecosystem (GDE) but is intended for use as an aid in identifying GDEs in California and includes two habitat classes associated with groundwater: (1) wetland features commonly associated with the surface expression of groundwater under natural, unmodified conditions; and (2) vegetation types commonly associated with the sub-surface presence of groundwater. The wetland features identified in this dataset align with a subset of the NWI dataset, and the vegetation features include large trees such as sequoia (*Sequoia sempervirens*) and Douglas-fir (*Pseudotsuga menziesii*) and vegetation communities, such as riparian mixed hardwoods, willows, alkaline mixed grasses, and wet meadows. The dataset is limited, and a thorough understanding of geology, groundwater elevations, hydrology, and land use of a certain area is necessary for positive identification of groundwater dependent ecosystems (Klausmeyer et al., 2018).

3.2 FIELD SURVEY

Biologists conducted the survey during the daylight hours (generally between 8 a.m. and 7 p.m.) over two days (May 4 and 5). The survey consisted of driving a vehicle along accessible paved and dirt roadways throughout the project area and stopping at points of interest gleaned from the desktop review, such as dairy cattle facilities; locations of proposed project elements, such as pump stations and road crossings; groundwater dependent habitats and associated vegetation; and locations and points where representative biological features, suitable habitat for sensitive species, or evidence of wildlife use were observed from the vehicle.

At each observation point (data points 1-35), a biologist recorded a GPS location using an EOS Arrow 100 GNSS receiver connected to an iPad running ESRI Collector software to record the observation location to submeter accuracy (Figure 3-1). Next, the biologists walked the roadway and right-of-way within approximately 100 feet of the recorded location investigating the site noting the dominant vegetation type(s) or potential nesting trees, habitat conditions, wildlife or wildlife burrows, nests, tracks, or other evidence of wildlife presence observed, and surface water or potential wetland conditions. This information was recorded in an electronic field data form. Since most of the Project area is used and managed for agricultural purposes, interiors of fields and orchards away from the roads were observed to the extent possible from accessible rights-of-way. Binoculars were used to view areas or wildlife of interest distant from the observation locations, and one or more photographs were taken at each data point to document the observed conditions (Appendix B—Survey Data Forms & Photographs).

3.3 OCCURRENCE EVALUATION

Special status plant and wildlife species were evaluated based on known regional site characteristics

and field observations to assess their potential to occur or for habitats meeting their life history requirements to occur within the Project area (Appendix A). Observed site conditions combined with the habitat requirements and known ranges of these species were evaluated to determine potential for occurrence of these species within the Project area boundaries.

4.0 RESULTS

4.1 PHYSICAL CONDITIONS

The Project area is relatively level, situated in the San Joaquin Valley between the San Joaquin River to the north, the Kings River on the south, and the Fresno Slough on the west. Ever since agriculture assumed the primary land use, natural depressions in the area's land, which were once present and supported seasonal wetlands, have been mostly removed through grading and disking to support agricultural uses. Tile drains and ditches have been used to manipulate area hydrology to suit the desired agricultural uses as necessary.

The Project area consists of actively managed orchards, vineyards, row crops, and poultry and dairy product agricultural uses. Additionally, some lands are fallowed, disked, and/or being prepared for new orchard and vineyard plantings. Crops observed included primarily tree nuts, including pistachios, almonds, and walnuts; grapes; cherries; wheat; alfalfa; tomatoes; peppers; onions; and corn amongst other rotating row crops. Most of the observed agriculture appeared to be either flood or drip irrigated.

Roads driven throughout the project area were paved, dirt, and gravel surfaces. Some road shoulders contained mostly dry, shallow (~1–1.5' deep) agricultural ditches, though; a few deeper (~4–6' deep), larger ditches were also encountered. Lift pumps transferring irrigation water into irrigation system distribution were observed at various locations adjacent to roads. In the northwest polygon of the Project area, several gas wells were observed in operation co-located with agricultural fields. In addition, a truck-mounted drilling rig was observed but was not in operation.

Soil series mapped within the Project area include Cajon, Calhi, Chino, Delhi, Dello, El Peco, Foster, Fresno, Hanford, Hesperia, Piper, Playas, Pond, Rossi, Temple, Traver, Tujunga, Waukena, and Wunjey, consisting of loamy sand, sandy loam, clay loam, silt loam, and loam textures (Soil Survey Staff 2021). Animal burrows observed revealed (dry) soils consistent with sandy soil textures. Most of mapped soils within the project area are non-hydric, or soils that under natural conditions are not saturated or inundated long enough during the growing season to support growth and reproduction of hydrophytic vegetation. Areas with soils containing hydric components would not likely exhibit characteristics of hydric soils due to the conversion of those areas to intensively managed agricultural uses. Elevations within the project area generally range from approximately 160 to 250 feet above sea level. No portion of the Project area occurs within the FEMA 100-year floodplain.

Precipitation for the month prior to the survey (April) was well below normal (0.15 inch recorded at Fresno Yosemite International Airport), and very dry soil and vegetation conditions prevailed in most of the survey area.

4.2 VEGETATION

The following vegetation communities were observed during the reconnaissance survey:

- Annual grassland
- Barren or fallow land
- Flood or drip irrigated deciduous orchard (pistachio, almond, walnut, and cherry)
- Flood or drip irrigated row and field crops (tomato, corn, peppers, wheat, and alfalfa)
- Roadside ruderal

Annual/biennial broadleaf weed species were dominant along the roadsides adjacent to and between crop/orchard/vineyard rows and adjacent to or associated with the Fresno Slough Bypass. Observed species included hairy fleabane (*Conyza bonariensis*), tumble pigweed (*Amaranthus albus*), prickly lettuce (*Lactuca serriola*), spikeweed (*Hemizonia pungens*), black mustard (*Brassica nigra*), redstem filaree (*Erodium cicutarium*), pineappleweed (*Matricaria matricarioides*), Russian thistle (*Salsola kali*), fiddleneck (*Amsinckia* spp.), and common groundsel (*Senecio vulgares*).

Though less frequently than broadleaf weeds listed above, annual and perennial grasses also occur and were observed at some roadside areas adjacent to and between crop/orchard/vineyard rows and in and adjacent to the Fresno Slough. Observed species included bermudagrass (*Cynodon dactylon*), sprangle-top (*Leptochola* spp.), rabbitfoot grass (*Polypogon monspeliensis*), Johnsongrass (*Sorghum halepense*), crabgrass (*Digitaria* spp.), ryegrass (*Lolium* spp.), brome (*Bromus* spp.), barley (*Hordeum* spp.), wild oats (*Avena* spp.), and wheat (*Triticum* spp.).

The only shrub species observed other than ornamental species planted or established in settlement areas was saltcedar (*Tamarix ramosissima*) which were single plants at two observed locations in/adjacent to the larger agricultural irrigation ditches.

Tree species, other than orchard trees, were scattered and few throughout the project area and mostly concentrated where settlements were established. Most were smaller ornamental trees adapted to the dry valley climate and planted for landscapes or windbreaks on private property. A few larger, mature deciduous and needleleaf evergreen trees were also observed in settlements.

4.3 WILDLIFE

Wildlife observed during the survey within the Project area included red-tailed hawk (*Buteo jamaicensis*), red-winged blackbird (*Agelaius phoeniceus*), American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), mourning dove (*Zenaida macroura*), western scrub jay (*Aphelocoma californica*), killdeer (*Charadrius vociferus*), barn owl (*Tyto alba*), great egret (*Ardea alba*), and the California ground squirrel (*Spermophilus beecheyi*). Lizards were observed on eucalyptus trees in Raisin City Park but would immediately use the tree bark for cover and could not be identified. Tadpoles, presumably bullfrog species, were observed in a small, ponded depression within an agricultural ditch.

Such a low diversity of wildlife species likely using the Project area is presumably due to the large-scale conversion to agriculture and development (human intervention) in an area that once supported native riparian habitats, marshes, seasonal wetlands, and perennial grasslands. Row crops, orchards, and vineyards are intensively managed and frequently disturbed, and available habitats are highly

fragmented and therefore of limited value.

4.4 SPECIAL STATUS PLANTS, WILDLIFE, AND NATURAL COMMUNITIES

Based on the desktop literature review of the USFWS and CNDDDB database queries, 7 listed or otherwise special status plant and 13 listed or otherwise special status wildlife species may occur within the Project area. Within a 5-mile radius and the surrounding eight USGS 7.5-minute topographic quadrangles of the Project area, 15 listed or otherwise special-status plant and 25 listed or otherwise special status wildlife species have the potential to occur (CDFW, 2021a; CDFW, 2021b; USFWS, 2021) (Appendix B). No federally designated critical habitat occurs within the Project area.

The initial evaluation of special-status species that were found during the literature review with a potential to occur are included in Appendix A. No special status or sensitive natural communities, or communities which are considered rare within the region and may provide habitat conditions for special status wildlife species, were identified as potentially occurring in the CNDDDB query within the Project area or the 5-mile vicinity of the Project area.

Two plant species evaluated for the Project area and vicinity have federal ESA or state ESA listing status (Appendix A). These species would not be expected to occur, have not been recorded as occurring within the Project area, and no suitable habitat for these species occurs within the Project area. No listed or otherwise special status plant species were observed within the Project area during the survey. Though some special status plant species have historically been recorded as occurring within the Project area and vicinity, no further discussion on these species is provided beyond the initial evaluation presented in Appendix A because the Project area does not provide suitable habitats for these plant species and their occurrence is not expected due to the large-scale conversion of the area's natural habitats to agricultural uses and development.

Thirteen of the wildlife species evaluated for the Project area and vicinity have federal ESA or state ESA listing or candidate status. Of these, five have the potential to be impacted by the proposed Project due to presence of potential habitat for these species (Table 4-1, Appendix A). In addition, three special-status species have the potential to be impacted by the proposed Project due to presence of potential habitat for these species (Table 4-1, Appendix A). No listed or otherwise special status wildlife species were observed within the Project area during the survey. No special status natural communities having potential to support special status wildlife species were observed within the Project area during the survey.

Table 4-1. Listed or Otherwise Special-status Wildlife Species Potentially Occurring in the Project Area

Scientific Name	Common Name	¹ Status Fed/State
Invertebrates		
<i>Bombus crotchii</i>	Crotch's bumble bee	-/CE
Reptiles		
<i>Thamnophis gigas</i>	Giant garter snake	T/T
Birds		
<i>Agelaius tricolor</i>	Tricolored blackbird	-/T, SSC
<i>Athene cunicularia</i>	Burrowing owl	-/SSC

<i>Scientific Name</i>	<i>Common Name</i>	¹ Status Fed/State
<i>Buteo swainsoni</i>	Swainson's hawk	-/T
<i>Charadrius montanus</i>	Mountain plover	-/SSC
Mammals		
<i>Taxidea taxus</i>	American badger	-/SSC
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	E/T

¹Status: Federal and State Listing Codes:

E = Federal or State-listed Endangered

T = Federal or State-listed Threatened

CE = State Candidate Endangered

SSC = California Department of Fish and Wildlife Designated Species of Special Concern

- = No Listing Status

4.5 POTENTIALLY JURISDICTIONAL WETLANDS, OTHER WATERS, AND GROUNDWATER DEPENDENT ECOSYSTEMS

Though recent aerial photography (Google Earth, August 2018) depicts only active agricultural uses, areas with wetland polygons mapped in the NWI were checked during the survey to verify the absence of wetland areas currently maintained as row and field crops, orchards, vineyards, and poultry and dairy cattle facilities.

Areas with the potential to support wetland conditions and where wetlands may develop were observed during the survey. Excavated and maintained agricultural ditches, other than those lined with concrete, have the potential to develop conditions suitable for wetlands development. Agricultural irrigation canals in the Project area likely having a relatively permanent surface water connection to CWA Traditional Navigable Waters were observed at two locations and were concrete lined. One ditch ran north–south along S. Lassen Avenue (data point 05) and the other ran southwest – northeast along S. McMullin Grade through a northwest corner of the Project area. Others were isolated, meaning they had no connection to the aforementioned canals, and likely served as tailwater collection systems for crop irrigation systems, distribution ditches, or another agricultural drainage use. Isolated ditches were, for the most part, not lined with concrete. Some of these ditches had visible evidence of hydrology (pockets of standing water or filled with water throughout) and others were saturated or dry at the soil surface. Very little actively growing vegetation was observed in the isolated agricultural ditches, but these areas may support hydrophytic vegetation. Irrigation canals are represented in the NWI as riverine, unknown perennial, unconsolidated bottom, semi-permanently flooded, excavated (R5UBFx) features (USFWS 1987). Scattered and unlined agricultural ditches may contribute some groundwater recharge benefits from irrigation water.

Dairy cattle and poultry facilities often contained one or more excavated ponds presumably used for agricultural wastewater or process water treatment purposes; some contained water, and some did not. Little to no vegetation occurred on the pond banks. These ponds were mostly represented in the NWI as palustrine, unconsolidated shore, seasonally flooded, excavated (PUSC_x) features (USFWS 1987). Additionally, the Fresno Slough (James) Bypass, an ephemeral drainage, lies just southwest of a portion of the project area, and upon further investigation, would likely contain areas exhibiting seasonal wetland conditions. No surface water was observed in this feature.

No wetlands or vegetation communities indicative of potential GDEs were observed within the Project

area. Larger trees observed occasionally throughout the Project area in settlement areas have likely become well-established due to landowners' irrigation and are well-adapted to the semi-arid climate. The Fresno Slough (James) Bypass is adjacent to and *outside of* the Secondary Expansion North portion of the project area. This drainage may support or have the potential to support semi-arid riparian vegetation, such as willows, but none were observed during the survey.

5.0 POTENTIAL IMPACTS AND RECOMMENDATIONS

This section provides an analysis of the potential impacts by applying CEQA significance criteria (CEQA Guidelines, Appendix G). These are the thresholds which trigger a determination of impact significance. Impact assessment takes into consideration construction and operational impacts.

The Project would create a significant impact to biological resources, based on the specifications in the biological resources section in Appendix G of the CEQA Guidelines, if the following were to occur:

- 1) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS
- 2) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations; or by the CDFW or the USFWS
- 3) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- 4) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- 5) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- 6) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

The following discusses potential impacts associated with implementation and operation of the Project:

1) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS?

The Project area offers potential habitat for special status species, including Crotch's bumble bee, giant garter snake, tricolored blackbird, burrowing owl, Swainson's hawk, Mountain plover, American badger, and San Joaquin kit fox. The Project has the potential to disturb nesting birds. Therefore, these species may be impacted by the Project.

Mitigation: Preventative avoidance measures are recommended for San Joaquin kit fox, burrowing owl, Swainson's hawk, giant garter snake, and nesting birds and their nests to avoid potential impacts, including *incidental take* of a threatened, endangered, or otherwise protected species.

2) Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations; or by the CDFW or the USFWS?

No riparian habitat or other sensitive natural communities occur within the Project area. No riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations; or by the CDFW or the USFWS will be disturbed by the proposed Project. No impact is anticipated.

Mitigation: No mitigation measures are recommended.

3) Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No wetland disturbances are anticipated from implementation of the proposed project. Even so, areas identified by the USFWS NWI as palustrine and riverine wetlands throughout the Project area were verified during the survey to be occupied with the agricultural uses identified in this report. This confirms that many of the palustrine wetland features identified in the NWI are relic features possibly present prior to agricultural uses, and the riverine features are associated with isolated agricultural ditches. No impact is anticipated.

Mitigation: No mitigation measures are recommended.

4) Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Wildlife corridors for terrestrial species are usually habitats such as riparian areas and vegetative buffers, washes, canyons, and other generally undisturbed habitats that differ from the surrounding areas and which wildlife species use to move between their suitable habitats. The nearest wildlife corridor is the Fresno Slough Bypass located adjacent to and outside of the Project area. No impacts are anticipated from the proposed Project.

Mitigation: No mitigation measures are recommended.

5) Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Project is known not to conflict with any local policies or ordinances protecting biological resources. No impact is anticipated.

Mitigation: No mitigation measures are recommended.

6) Would the Project conflict with the provisions of an adopted Habitat Conservation Plan,

Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Project is known not to conflict with any Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impact is anticipated.

Mitigation: No mitigation measures are recommended.

6.0 SUMMARY

No suitable habitats for listed or otherwise special-status plant species or natural communities were observed within the Project area. The Project area is characterized by intensively managed agriculture, ruderal roadside weedy species, and few large trees isolated in settlement areas. No wetlands, riparian areas, or other GDEs or vegetation were observed within the Project area.

No listed or otherwise special-status or sensitive wildlife species were observed within the Project area during the survey; however, low-to-moderate quality, fragmented habitat conditions do occur and have the potential to support eight listed or otherwise special-status species, including the Crotch's bumble bee, giant garter snake, tricolored blackbird, burrowing owl, Swainson's hawk, Mountain plover, American badger, and San Joaquin kit fox.

Potential impacts to special-status species which have may use the Project area would be reduced if mitigation measures directed towards those species are implemented. Therefore, the proposed Project would have a less than significant impact on special-status species and their habitat.

7.0 REFERENCES

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APPENDIX A. SPECIAL STATUS PLANT AND WILDLIFE EVALUATION

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Table A-1. Special-Status Plants Having the Potential to Occur Within the Project Area and Vicinity

<i>Scientific Name</i> Common Name	¹ Status Fed/State/ ² CNPS	Habitat Description	Blooming Period	Survey Results
<i>Atriplex cordulata</i> var. <i>cordulata</i> Heartscale	-/-1B.2	Found in chenopod scrub, meadows and seeps, and valley and foothill grasslands in sandy, saline, or alkaline soils below ~1,800 feet in elevation.	April to October	No suitable habitat for heartscale was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this Project.
<i>Atriplex cordulata</i> var. <i>erecticaulis</i> Earlimart orache	-/-1B.2	Found in valley and foothill grassland in southern San Joaquin valley and alkaline soils between ~130 and 330 feet in elevation.	August to September	No suitable habitat for Earlimart orache was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this Project.
<i>Atriplex depressa</i> Brittlescale	-/-1B.2	Found in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools, and alkaline or clay soils below ~1,000 feet in elevation.	May to October	No suitable habitat for brittlescale was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this Project.
<i>Atriplex minuscule</i> Lesser saltscale	-/-1B.2	Found in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools, and alkaline or clay soils between ~50 and 650 feet in elevation.	May to October	No suitable habitat for lesser saltscale was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this Project.

<i>Scientific Name</i> Common Name	¹ Status Fed/State/ ² CNPS	Habitat Description	Blooming Period	Survey Results
<i>Atriplex subtilis</i> Subtle orache	-/-1B.1	Found in valley and foothill grasslands between ~130 and 330 feet in elevation.	June to October	No suitable habitat for subtle orache was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this Project.
<i>Caulanthus californicus</i> California jewelflower	E/E/1B.1	Occurs between 200 and 3,200 feet in elevation on sandy soils in chenopod scrub, pinyon and juniper woodland, and valley and foothill grasslands.	February to May	No suitable habitat for California jewelflower was observed during the survey. No occurrence is expected as no suitable habitat occurs within the Project area. No significant impacts to this species are expected to occur as a result of this project.
<i>Chloropyron palmatum</i> Palmate-bracted bird's beak	E/E/1B.1	Found in chenopod scrub and valley and foothill grasslands between ~15 and 510 feet in elevation.	May to October	No suitable habitat for palmate-bracted bird's beak was observed during the survey. No occurrence is expected as no suitable habitat occurs within the Project area. No significant impacts to this species are expected to occur as a result of this project.
<i>Delphinium recurvatum</i> Recurved larkspur	-/-1B.2	Found in chenopod scrub, cismontane woodland, and valley and foothill grasslands on alkaline soils between ~10 and 2,450 feet in elevation.	March to June	No suitable habitat for recurved larkspur was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this project.

<i>Scientific Name</i> Common Name	¹ Status Fed/State/ ² CNPS	Habitat Description	Blooming Period	Survey Results
<i>Eriastrum hooveri</i> Hoover's eriastrum	D/-/4.2	Found in chenopod scrub and valley and foothill grasslands on clayey soils between ~325 and 1,800 feet in elevation.	March to September	No suitable habitat for Hoover's eriastrum was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this project.
<i>Imperata brevifolia</i> California satintail	-/-/2B.1	Found in chaparral, Coastal scrub, Mojavean desert scrub, meadows and seeps on alkaline soils, and riparian scrub. Usually found on mesic soils below 3,950 feet in elevation.	September to May	No suitable habitat for California satintail was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this project.
<i>Lasthenia chrysanthra</i> Alkali-sink goldfields	-/-/1B.2	Found in vernal pools and wet alkali flats below 328 feet in elevation.	February to April	No suitable habitat for alkali-sink goldfields was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this project.
<i>Layia munzii</i> Munz's tidy-tips	-/-/1B.2	Found in chenopod scrub, valley and foothill grasslands on alkaline and clayey soils between 490 and 2,300 feet in elevation.	March to April	No suitable habitat for Munz's tidy-tips was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this project.
<i>Lepidium jaredii</i> ssp. <i>album</i> Panoche pepper-grass	-/-/1B.2	Found in valley and foothill grasslands and alluvial fans and washes between 605 and 900 feet in elevation.	February to June	No suitable habitat for Panoche pepper-grass was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this project.

<i>Scientific Name</i> Common Name	¹ Status Fed/State/ ² CNPS	Habitat Description	Blooming Period	Survey Results
<i>Leptosiphon serrulatus</i> Madera leptosiphon	-/-1B.2	Found in cismontane woodland and lower montane coniferous forest between 985 and 4,265 feet in elevation.	April to May	No suitable habitat for Madera leptosiphon was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this project.
<i>Puccinellia simplex</i> California alkali grass	-/-1B.2	Found in chenopod scrub, meadows and seeps, lake margins, valley and foothill grassland, vernal pools and alkaline soils below ~3,050 feet in elevation.	March to May	No suitable habitat for California alkali grass was observed during the survey. No occurrence is expected. No significant impacts to this species are expected to occur as a result of this project.

¹Status: Federal and State Listing Codes:

D = Delisted

E = Federal or State-listed Endangered

- = No Listing Status

²CNPS:

1B.1 = Plants considered rare, threatened, or endangered in California and elsewhere; seriously threatened in California.

1B.2 = Plants considered rare, threatened, or endangered in California and elsewhere; moderately threatened in California.

2B.1 = Plants considered rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California.

2B.2 = Plants considered rare, threatened, or endangered in California, but more common elsewhere; moderately threatened in California.

4.2 = Plants of limited distribution; moderately threatened in California (not considered rare).

Table A-2. Special-status Wildlife Having the Potential to Occur Within the Project Area and Vicinity

<i>Scientific Name</i> Common Name	¹ Status Fed/State	General Habitat Needs	Survey Results and Evaluation
Invertebrates			
<i>Bombus crotchii</i> Crotch's bumble bee	-/CE	Potential nesting sites include holes and crevices. Foraging occurs on the ground and in vegetation with diverse flowering species (native and non-native).	This species was not observed during the Project survey. Habitat within the Project area is disturbed frequently due to agricultural uses and is therefore likely poor.
<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	T/-	Found in small vernal pools and grassy swales or other depressional pools characterized by clear to tea-colored waters.	Neither evidence nor presence of this species was observed. Natural habitat for this species does not exist within the Project area.
<i>Desmocerus californicus dimorphus</i> Valley elderberry longhorn beetle	T/-	Central Valley riparian forest; nearly always found on or close to its host plant, elderberry (<i>Sambucus</i> species).	This species was not observed during the Project survey. Natural habitat for this species does not exist within the Project area.
<i>Efferia antiochi</i> Antioch efferian robberfly	-/-	Associated with the type locality but also known from other localities in the Central Valley south to Fresno County.	This species was not observed during the Project survey.

<i>Scientific Name</i> Common Name	¹ Status Fed/State	General Habitat Needs	Survey Results and Evaluation
<i>Lepidurus packardii</i> Vernal pool tadpole shrimp	E/-	Found in small vernal pools and grassy swales or other depressional pools characterized by clear to tea-colored waters.	Neither evidence nor presence of this species was observed. Natural habitat for this species does not exist within the Project area or immediate vicinity.
<i>Lytta molesta</i> Molestan blister beetle	-/-	Found in flowers and on foliage of various plant species inhabiting Central Valley grasslands and vernal pool habitats.	No suitable habitat for this species exists within the Project area. This species was not observed in the Project survey. Shown as possibly extirpated from the review area (CNDDDB).
<i>Metapogon hurdi</i> Hurd's metapogon robberfly	-/-	Typically associated with the Antioch dunes but also known from Fresno County.	No suitable habitat for this species exists within the Project area. This species was not observed in the Project survey. Shown as possibly extirpated from the review area (CNDDDB).

Fish

<i>Hypomesus transpacificus</i> Delta smelt	T/T	Only found in the Sacramento-San Joaquin Estuary in the interface between salt and freshwater.	No suitable habitat for this species exists within the Project area or immediate vicinity.
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Scientific Name Common Name	¹ Status Fed/State	General Habitat Needs	Survey Results and Evaluation
Amphibians			
<i>Ambystoma californiense</i> California tiger salamander	T/T	Restricted to grasslands and low foothills with pools or ponds that are necessary for breeding. Spends most of its life on land underground, using burrows made by squirrels and other burrowing mammals. Vernal pools are the natural breeding areas, but stock ponds that are allowed to go dry help take the place of vernal pools for breeding.	Neither evidence nor presence of this species was observed. Natural habitat for this species does not exist within the Project area or immediate vicinity.
<i>Rana draytonii</i> California red-legged frog	T/SSC	Found in dense, shrubby riparian vegetation associated with deep (~ 2 feet), still or slow-moving water; arroyo willow (<i>Salix lasiolepis</i>), cattail (<i>Typha</i> sp.) and bulrush (<i>Scirpus</i> sp.) habitats.	Neither evidence nor presence of this species was observed. No suitable habitat for this species exists within the Project area or immediate vicinity.
<i>Spea hammondi</i> Western spadefoot	-/SSC	In the California Central Valley, usually found in grasslands, but may be in chaparral, scrub, and oak woodlands where the soil is favorable for burrowing. Shallow ephemeral ponds are used for breeding and egg laying.	Neither evidence nor presence of this species was observed. Natural habitat for this species does not exist within the Project area or immediate vicinity.
Reptiles			
<i>Anniella pulchra</i> Northern California legless lizard	-/SSC	May inhabit a range of habitats including coastal dune, valley foothill, chaparral and coastal scrub in friable soils. They require soil moisture to shed skin.	Neither evidence nor presence of this species was observed. No suitable habitat for this species exists within the Project area or immediate vicinity.

<i>Scientific Name</i> Common Name	¹ Status Fed/State	General Habitat Needs	Survey Results and Evaluation
<i>Arizona elegans occidentalis</i> California glossy snake	-/SSC	Found in semi-arid grasslands with friable soils preferring open, sandy areas but may also use rocky areas. May nest in abandoned animal burrows.	Neither evidence nor presence of this species was observed. No suitable habitat for this species exists within the Project area or immediate vicinity.
<i>Gambelia sila</i> Blunt-nosed leopard lizard	E/E, FP	Found only in the San Joaquin Valley inhabiting sparsely vegetated plains, lower canyon slopes, on valley floors, and washes; open grassland, saltbush scrub, and alkali sink are more common habitat types.	Neither evidence nor presence of this species was observed. No suitable habitat for this species exists within the Project area or immediate vicinity.
<i>Phrynosoma blainvillii</i> coast horned lizard	-/SSC	Found in the south and central Coast Range, and inland to the Sierra foothills utilizing open areas with loose sandy soils and low vegetation, including grasslands, valley foothills, and riparian habitats. May use mammal burrows or crevices during inactivity and hibernation.	Neither evidence nor presence of this species was observed. Species is possibly extirpated from the review area (CNDDB). No suitable habitat for this species exists within the Project area.
<i>Thamnophis gigas</i> Giant garter snake	T/T	Usually found in areas of freshwater marsh, low-gradient streams, but has adapted to drainage canals and irrigation ditches, especially those associated with rice farming; highly aquatic. Historically occurred in the San Joaquin Valley from the vicinity of Sacramento southward to Buena Vista and the Tulare Lake Basin; currently known from near Chico, Butte County, to the vicinity of Burrel, Fresno County. Active from early spring to mid-fall, and vegetative cover in ditches and ponds is necessary for cover and foraging habitat. Dormant in the winter inhabiting small mammal burrows above flood elevations.	Neither evidence nor presence of this species was observed. Species is possibly extirpated from the review area (CNDDB). Agricultural drainage ditches and small mammal burrows do occur within the Project area and vicinity.

Birds

<i>Scientific Name</i> Common Name	¹ Status Fed/State	General Habitat Needs	Survey Results and Evaluation
<i>Agelaius tricolor</i> Tricolored blackbird	-/T, SSC	Found foraging in grasslands, wetlands, rice fields, croplands, and weedy uplands dominated by mustards and thistles, etc.; breeds in marshes containing heavy growth of bulrushes, cattails, and blackberries; found throughout the Central Valley.	Suitable nesting habitat does not occur within the Project area. Suitable foraging habitat does occur within the Project area. This species was not observed, but red-winged blackbirds (<i>Agelaius phoeniceus</i>), which utilize the same habitat types, were abundant in wheat fields within the Project area.
<i>Athene cunicularia</i> Burrowing owl	-/SSC	Burrowing sites occur in open, dry annual or perennial grasslands, scrub, desert, and areas with low-growing vegetation such as certain farmland. Species is dependent on mammal burrows such as those excavated by the California ground squirrel.	Suitable nesting and foraging habitat may occur within the Project area. Most potential habitat is likely poor owing to continual agricultural uses and disturbance. Neither evidence nor presence of this species was observed.
<i>Buteo swainsoni</i> Swainson's hawk	-/T	Found using riparian and sometimes large, isolated trees for nesting, and grasslands and agricultural lands are used for foraging. In California, breeds primarily in the Sacramento Valley, with occasional nesting to the south through Kern County. Central and San Joaquin Valleys are migration corridors to their wintering grounds in South America.	Neither evidence nor presence of this species was observed. Potential nesting habitat is rare within the Project area, but abundant foraging areas are present.
<i>Charadrius montanus</i> Mountain plover	-/SSC	Found on short, grassy plains, rolling grassy hills, plowed agricultural fields, and germinating grain fields where the vegetation is short and there is plenty of bare soil areas.	Neither evidence nor presence of this species was observed. Potential nesting habitat is rare within the Project area due to continual disturbance from agriculture, but abundant foraging areas are present.
Mammals			
<i>Antrozous pallidus</i> Pallid bat	-/SSC	Found in arid and semi-arid areas throughout the western Sierra Nevada at relatively low elevations in annual grasslands, shrublands, and up to mixed-coniferous forests. This species must have caves, crevices, or buildings for roosting and breeding colonies. It is most common in open, dry habitats with rocky areas for roosting.	Neither evidence nor presence of this species was observed. No suitable natural habitat for this species exists within the Project area and the Project area is likely outside of this species' range.

<i>Scientific Name</i> Common Name	¹ Status Fed/State	General Habitat Needs	Survey Results and Evaluation
<i>Dipodomys ingens</i> Giant kangaroo rat	E/E	Found on the western side of the San Joaquin Valley, including the Carrizo Plain and the Panoche Valley; grassland and shrub-land habitats with sparse vegetative cover and soils that are well-drained, fine sandy loams with gentle slopes.	Neither evidence nor presence of this species was observed. No suitable habitat for this species exists within the Project area.
<i>Dipodomys nitratoideus exilis</i> Fresno kangaroo rat	E/E	Found in alkali-sink, open grassland habitat in western Fresno County and on seasonally inundated, bare alkaline, clay-based soils also subject to seasonal inundation.	Neither evidence nor presence of this species was observed. Species is shown as extirpated from the review area (CNDDDB). No suitable habitat for this species exists within the Project area.
<i>Eumops perotis californicus</i> Western mastiff bat	-/SSC	Usually found in desert scrub to woodland and foraging in open areas. Roost in exfoliating rock slabs of vertical cliffs and rugged canyons. Live deep inside narrow crevices. Sometimes may roost with other species.	Neither evidence nor presence of this species was observed. No suitable habitat for this species exists within the Project area or immediate vicinity.
<i>Lasiurus cinereus</i> Hoary bat	-/-	Found in open habitat or habitat mosaics with access to trees. Hoary bats roost and hibernate outside in trees as opposed to inside caves.	Neither evidence nor presence of this species was observed. No suitable habitat for this species exists within the Project area or immediate vicinity.
<i>Perognathus inornatus</i> San Joaquin pocket mouse	-/-	Found in grasslands and oak savannahs at areas with friable soils.	Neither evidence nor presence of this species was observed. No suitable habitat for this species exists within the Project area.

<i>Scientific Name</i> Common Name	¹ Status Fed/State	General Habitat Needs	Survey Results and Evaluation
<i>Taxidea taxus</i> American badger	-/SSC	Found in dry, open grasslands, fields, pastures, and meadows. Open habitat with suitable burrowing conditions is necessary.	Neither evidence nor presence of this species was observed. Habitat such as fallow fields may occur, but agricultural uses limit suitable habitat for this species within the Project area and immediate vicinity.
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	E/T	Found in level valley saltbush scrub, valley sink scrub, sagebrush scrub, and in Central Valley sacaton grasslands with friable soils.	Neither evidence nor presence of this species was observed. Burrows likely excavated by ground squirrels may serve as potential dens. Use of the Project area is possible as the species may move through this large Project area. Agricultural uses and continual disturbance limit suitable habitat for this species within the Project area and immediate vicinity.

¹Status: Federal and State Listing Codes:

E = Federal or State-listed Endangered

T = Federal or State-listed Threatened

CE = State Candidate Endangered

SSC = California Department of Fish and Wildlife Designated Species of Special Concern

FP = California Department of Fish and Wildlife Designated Fully Protected

- = No Listing Status

APPENDIX B. DATABASE QUERY RESULTS

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APPENDIX C. SURVEY MAP & DATA FORMS WITH PHOTOGRAPHS

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**ATTACHMENT D: NON-CONFIDENTIAL CULTURAL RESOURCES
RECORD REPORT**



6/1/2021

Jenna Farrell
Tetra Tech, Inc.
3101 Zinfandel Drive, Bldg. B, Suite 200
Rancho Cordova, CA 95670

Re: MAGSA Recharge Project Alt 1 and Alt 2
Records Search File No.: 21-189

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Avenal Gap USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☒ GIS data

Resources within project area:	P-10-000562, 004303, 005175, 006134, 006628, 006689, 006630, 006636, 006614
Resources within 0.5 mile radius:	P-10-000552, 000556, 006617, 004680
Reports within project area:	FR-00185, 00255, 00277, 00433, 00576, 00998, 01783, 01868, 02769, 02791, 02889, 02905
Reports within 0.5 mile radius:	FR-00804, 02316, 02908

Note: Items specified on the CHRIS Data Request Form were omitted.

Resource Database Printout (list):

☒ enclosed ☐ not requested ☐ nothing listed

Resource Database Printout (details):

☐ enclosed ☒ not requested ☐ nothing listed

Resource Digital Database Records:

☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (list):

☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (details):

☐ enclosed ☒ not requested ☐ nothing listed

Report Digital Database Records:

☒ enclosed ☐ not requested ☐ nothing listed

Resource Record Copies:

☒ enclosed ☐ not requested ☐ nothing listed

Report Copies:

☒ enclosed ☐ not requested ☐ nothing listed

OHP Built Environment Resources Directory:

☒ enclosed ☐ not requested ☐ nothing listed

Archaeological Determinations of Eligibility:

☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976):

☐ enclosed ☐ not requested ☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see
<https://dot.ca.gov/programs/environmental-analysis/cultural-studies/california-historical-bridges-tunnels>

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see
<http://historicalmaps.arcgis.com/usgs/>

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see
<http://www.glorerecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1> and/or
<http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items>

Shipwreck Inventory: Not available at SSJVIC; please see
<https://www.slc.ca.gov/shipwrecks/>

Soil Survey Maps: Not available at SSJVIC; please see
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

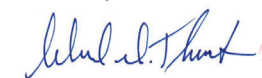
The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,



Digitally signed by Celeste M.
Thomson
Date: 2021.06.01 15:41:27 -07'00'

Celeste M. Thomson
Coordinator

Report List

SSJVIC Record Search 21-189

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00185		1975	Peak, Ann S., Gerry, Robert, Schulz, Peter D., and Riddell, Francis A.	Archaeological Assessment of Cultral Resources-Mid-Valley Canal Project in Fresno, Tulare, Merced, Madera, and Kings Counties, California	Cultural Resources Section State Department of Parks and Recreation	10-000536, 10-000537, 10-000538, 10-000539, 10-000540, 10-000541, 10-000542, 10-000543, 10-000544, 10-000545, 10-000546, 10-000547, 10-000548, 10-000549, 10-000550, 10-000551, 10-000552, 10-000553, 10-000554, 10-000555, 10-000556, 10-000557, 10-000558, 10-000559, 10-000560, 10-000561, 10-000562, 10-000563, 10-000564, 10-000565, 10-000566, 10-000567, 10-000568, 10-000569
FR-00255	Caltrans - 06-FRE-0-CR SPPL-5942 (100)	1999	Sandra S. Flint	Negative Archaeological Survey Report for the Manning Avenue Road Widening Project, Fresno County, California	Applied EarthWorks, Inc.	
FR-00277		1991	Bissonnette, Linda Dick	An Archaeological Survey of the Rank Fmaily Property for a Property Line Variance in Fresno County, California	Michael Paoli and Associates	
FR-00433		1977	Davis, Alan, Dick, Linda, and Varner, Dudley	An Archaeological Reconnaissance of the Gates Substation to the Proposed Gregg Substation 500 KV Transmission Line, Fresno and Madera Counties	California State University, Fresno	
FR-00576	Caltrans - 06-FRE-145 PM 25.1/29.1 CU 06254 EA 343110	1988	Noble, Daryl and Weigel, Larry	Negative Archaeological Survey Report for the Placement of an AC Overlay on Existing Pavement for Route 145, Fresno County, California	California Department of Transportation	
FR-00804		1988	Weaver, Richard A.	Cultural Resources Survey Lower San Joaquin River and Tributaries Channel Clearing, Fresno and Madera Counties, California	US Army Corps of Engineers	
FR-00998		1987	Wren, Donald G.	An Archaeological Reconnaissance of the Uhles Land, Kerman, California	individual consultant	
FR-01783		2000	Collet, Tom	Indian Religious Site and American Historical Site Determination for Proposed Cellular Communication Towers Various Locations	Terracon	
FR-01868		2002	Brady, Jon L. and Hobbs, Kelly J.	Architectural Inventory and Historical Evaluation of Ferrer Property, Raisin City, Fresno County, California	Community Development Division, Fresno County Planning & Resource Management Department	

Report List

SSJVIC Record Search 21-189

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-02316		2008	Pruett, Catherine Lewis	A Cultural Resources Assessment of the Fresno Slough (James) Bypass Water Regulation and Recharge Project, James Irrigation District, Western Fresno County, California	Three Girls and a Shovel	10-000556, 10-000559, 10-000560
FR-02769		2016	Asselin, Katie, Baloian, Randy, Morlet, Aubrie, Mirro, Michael, Whiteman, Jennifer, Tibbet, Josh, and Baloian, Mary	Cultural Resources Inventory and Evaluation for the Central Valley Power Connect Project, Fresno, Kings, and Madera Counties, California	Applied EarthWorks	10-003930, 10-005810, 10-006602, 10-006603, 10-006604, 10-006605, 10-006606, 10-006607, 10-006608, 10-006609, 10-006610, 10-006611, 10-006612, 10-006613, 10-006614, 10-006615, 10-006616, 10-006617, 10-006618, 10-006619, 10-006620, 10-006621, 10-006622, 10-006623, 10-006624, 10-006625, 10-006626, 10-006627, 10-006628, 10-006629, 10-006630, 10-006631, 10-006632, 10-006633, 10-006634, 10-006635, 10-006636, 10-006637, 10-006638, 10-006639, 10-006640
FR-02769A		2016	Asselin, Katie, Mirro, Michael, and Baloian, Mary Clark	Supplemental Cultural Resources Inventory for the Central Valley Power Connect Project, Madera, Fresno, and Kings Counties, California	Applied EarthWorks	
FR-02791	Caltrans - BRLS-5942(233)	2016	Baloian, Mary	Historic Property Survey Report for the Replacement of Bridges 42C0066 and 42C0067 over James Bypass on West Manning Avenue, Fresno County, California	Applied EarthWorks, Inc.	10-000556, 10-006617, 10-006632
FR-02791A		2016	Asselin, Katie	Archaeological Survey Report/Extended Phase 1 Report for the Replacement of Bridges 42C0066 and 42C0067 over James Bypass on West Manning Avenue, Fresno County, California	Applied EarthWorks, Inc.	
FR-02791B		2018	Jones, Jessica and Baloian, Mary	First Supplemental Archaeological Survey Report Replacement of Bridges 42C0066 and 42C0067 over James Bypass on West Manning Avenue, Fresno County, California	Applied EarthWorks, Inc.	
FR-02889		2017	Lloyd, Jay B.	Cultural Resource Inventory in Support of the Kings River Conservation Districe McMullin On-Farm Capture Project, Fresno County, California	Applied EarthWorks, Inc.	10-000529, 10-000532, 10-000559, 10-000560, 10-000565, 10-000566, 10-000567, 10-007057, 10-007058

Report List

SSJVIC Record Search 21-189

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-02905		2017	Peterson, Cher	Cultural Resources Records Search and Site Visit Results for AT&T Mobility, LLC Candidate CVL02076 (Burrell), West Kamm Avenue and Mountain View Avenue, Riverdale, Fresno County, California	Helix Environmental Planning	
FR-02908	OHP PRN - COE 2018 0122 002	2017	Lloyd, Jay B. and Wingate, Ernest	Cultural Resource Inventory in Support of a Section 408 Permit for the Kings River Conservation District Kings River Levee Evaluation Project, Fresno and Kings Counties, California	Applied Earth Works, Inc.	10-004703, 10-005803, 10-006617, 10-006641, 10-007041, 10-007042

Resource List

SSJVIC Record Search 21-189

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-000552	CA-FRE-000552	Resource Name - MV-PR-18	Site	Prehistoric	AP09	1975 (Gerry, Peak)	FR-00185
P-10-000556	CA-FRE-000556	Resource Name - MV-PR-22	Site	Prehistoric	AP11	1975 (Gerry, Peak); 2008 (Peggy Murphy, Catherine Pruett, Dorothy Fleagle, Three Girls and a Shovel); 2015 (K. Asselin, J. Tibbet, Applied EarthWorks, Inc.)	FR-00185, FR-02316, FR-02791
P-10-000562	CA-FRE-000562	Resource Name - MV-PR-28	Site	Prehistoric	AP02	1975 (Gerry, Peak)	FR-00185
P-10-004303		OHP PRN - 3771-0063-0000; Resource Name - Bowles; OHP Property Number - 053526; OTIS Resource Number - 455832	District	Historic	HP39	1980 (Isami Arifuku Waugh, Ethnic Minority Cultural Resources Survey)	
P-10-004680		Resource Name - CRM TECH 607-6H; Resource Name - Wristen Canal at the crossing of the Burlington Northern Santa Fe Railway	Element of district	Historic	HP20	2000 (Bai "Tom" Tang, CRM TECH)	FR-01699
P-10-005175		Resource Name - Ferrer Property	Building	Historic	HP02	2002 (Kelly Hobbs)	
P-10-006134		Resource Name - PGG-02	Site	Historic	AH04	2012 (Melinda Patrick, Patrick GIS Group, Inc.)	
P-10-006614	CA-FRE-003772H	Resource Name - AE-3043-BE-013; Resource Name - Panoche-Kearney 230 kV transmission line	Structure	Historic	HP11	2015 (Randy Baloian, Applied EarthWorks, Inc.)	FR-02769
P-10-006617	CA-FRE-003773H	Resource Name - AE-3043-BE-029; Other - James Bypass and Flood Channel; Fresno Slough Bypass; OHP Property Number - 108585; OTIS Resource Number - 501900	Structure	Historic	HP20	2015 (Randy Baloian, Applied EarthWorks, Inc.)	FR-02769, FR-02791, FR-02908
P-10-006628		Resource Name - AE-3043-BE-	Building	Historic	HP06	2015 (Jim Jenks, Applied EarthWorks, Inc.)	FR-02769
P-10-006629		Resource Name - AE-3043-BE-	Building	Historic	HP02; HP04	2015 (Jim Jenks, Applied EarthWorks, Inc.)	FR-02769
P-10-006630		Resource Name - AE-3043-BE-	Building, Structure	Historic	HP02; HP04; HP11	2015 (Jim Jenks, Applied EarthWorks)	FR-02769

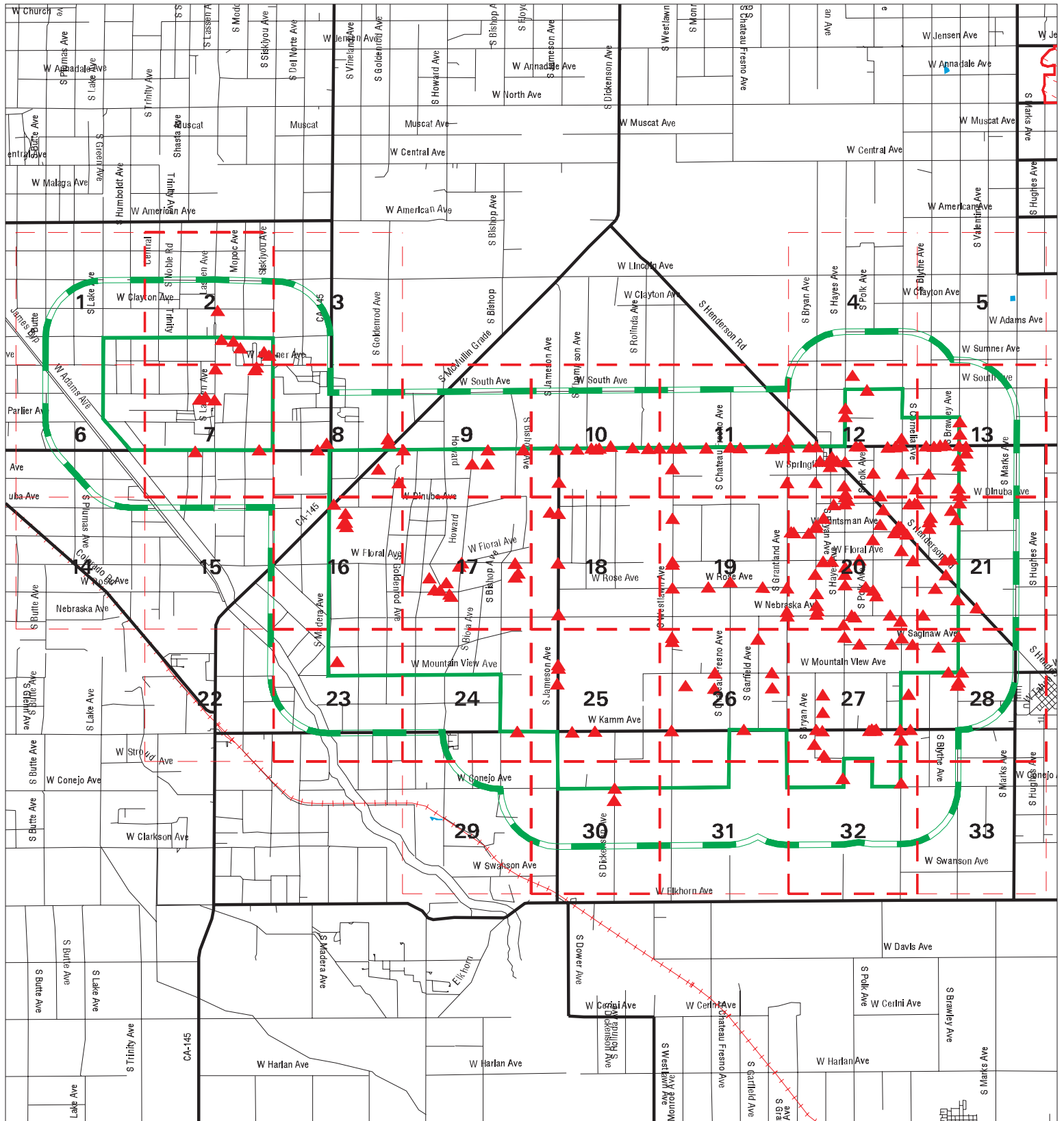
Resource List

SSJVIC Record Search 21-189

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-006636		Resource Name - AE-3043-BE-114; Other - Raisin City Dragways/Rasin City Drag Strip	Building, Structure	Historic	HP04; HP37	2015 (Randy Baloian, Applied EarthWorks)	FR-02769

**ATTACHMENT E: HAZARDOUS MATERIALS DATABASE REPORT
SUMMARY MAP**

Key Map - 6576598.2s



- ▲ Sites
- Target Property
- Search Buffer
- Focus Map - No Sites
- Focus Map - Sites
- National Priority List Sites
- Areas of Concern
- Dept. Defense Sites
- Indian Reservations BIA

0 1 2 4 Miles

SITE NAME: McMullin Expansion
 ADDRESS: McMullin Expansion
 CITY/STATE: Fresno CA
 ZIP: 93706

CLIENT: Tetra Tech
 CONTACT: David Munro
 INQUIRY #: 6576598.2s
 DATE: 07/15/21

1:50 PM

ATTACHMENT F: CUSTOMIZED SOIL RESOURCES REPORT



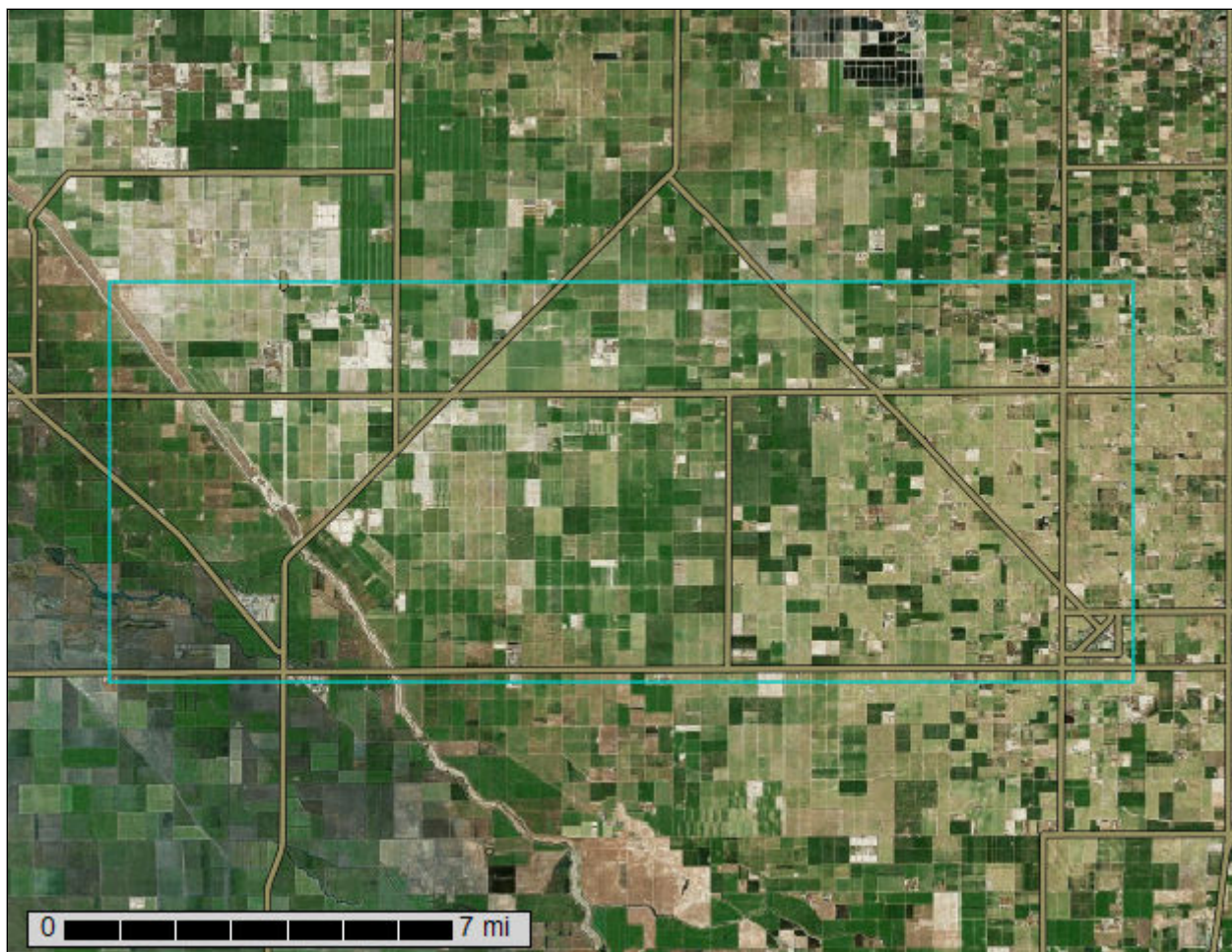
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Eastern Fresno Area, California; and Fresno County, California, Western Part



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

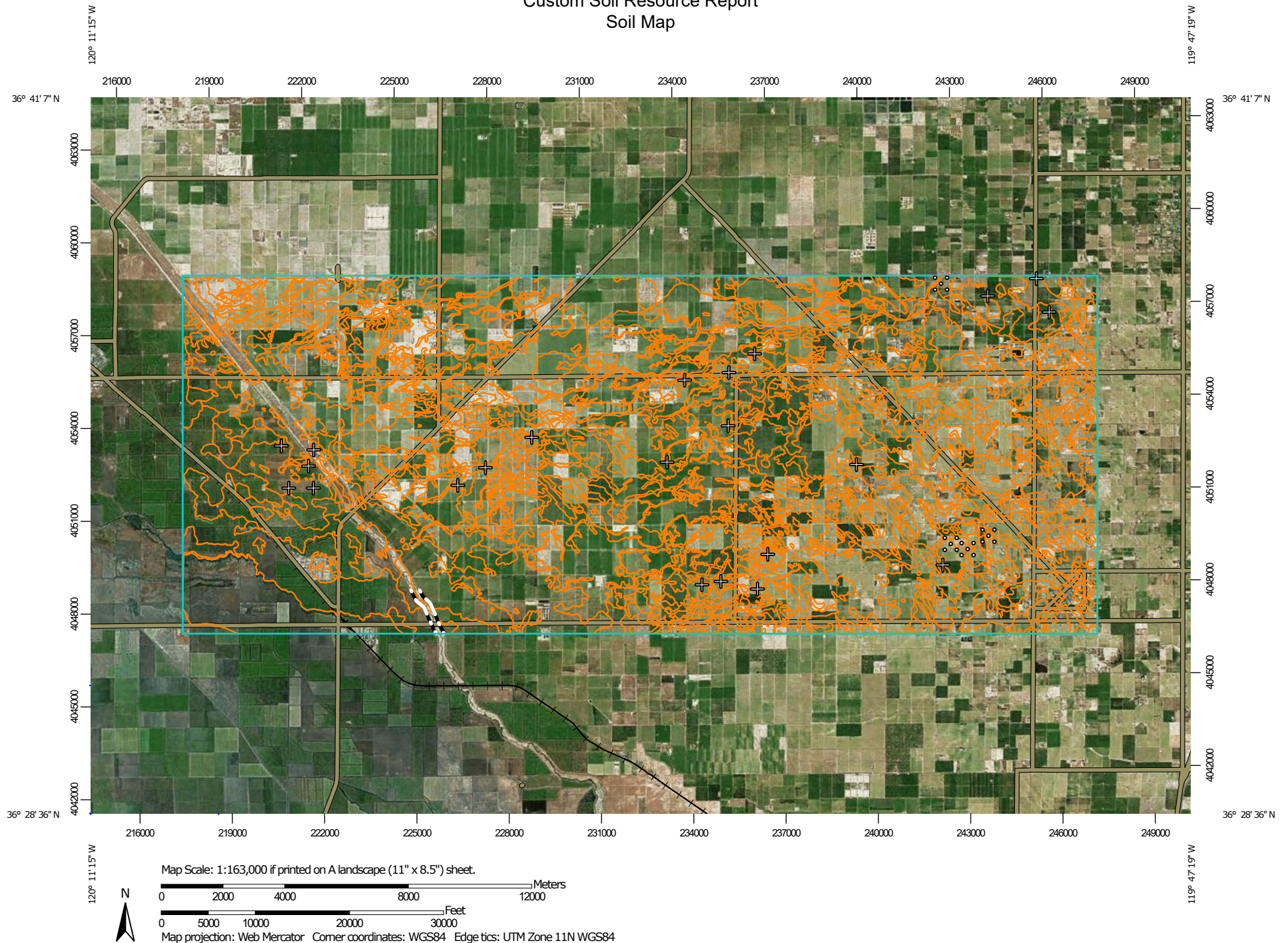
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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California

Survey Area Data: Version 13, May 29, 2020

Soil Survey Area: Fresno County, California, Western Part

Survey Area Data: Version 15, May 29, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bu	Borden loam, moderately deep, saline alkali	116.9	0.1%
Ca	Cajon loamy coarse sand	957.0	1.1%
Cb	Cajon loamy coarse sand, saline-alkali	331.9	0.4%
Cc	Cajon coarse sandy loam	204.1	0.2%
Cd	Cajon coarse sandy loam, saline alkali	158.7	0.2%
Ce	Cajon coarse sandy loam, moderately deep, saline alkali	186.0	0.2%
CfA	Calhi loamy sand, 0 to 3 percent slopes	6,582.9	7.7%
CfB	Calhi loamy sand, 3 to 9 percent slopes	876.1	1.0%
CgA	Calhi loamy sand, moderately deep, 0 to 3 percent slopes	3,207.1	3.8%
Cm	Chino sandy loam, saline-alkali	34.3	0.0%
Cn	Chino fine sandy loam	0.0	0.0%
Co	Chino fine sandy loam, saline-alkali	19.0	0.0%
Cp	Chino fine sandy loam, moderately deep, saline-alkali	240.0	0.3%
DeA	Delhi sand, 0 to 3 percent slopes, MLRA 17	728.7	0.9%
DeB	Delhi sand, 3 to 9 percent slopes	154.3	0.2%
DhA	Delhi loamy sand, 0 to 3 percent slopes, MLRA 17	4,662.1	5.5%
DhB	Delhi loamy sand, 3 to 9 percent slopes	473.6	0.6%
DIA	Delhi loamy sand, moderately deep, 0 to 3 percent slopes	369.0	0.4%
Dm	Dello loamy sand	20.3	0.0%
Ec	El Peco sandy loam	86.0	0.1%
Ed	El Peco fine sandy loam	398.0	0.5%
Ep	El Peco loam	147.6	0.2%
Fm	Foster sandy loam	118.4	0.1%
Fr	Foster loam, moderately deep, saline-alkali	19.1	0.0%
Fs	Fresno sandy loam	4,174.2	4.9%
Ft	Fresno sandy loam, shallow	542.4	0.6%
Fu	Fresno fine sandy loam	6,484.1	7.6%

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Fv	Fresno fine sandy loam, shallow	3,945.3	4.6%
Fw	Fresno clay loam	1,152.1	1.4%
Fx	Fresno-Traver complex	993.1	1.2%
Hc	Hanford sandy loam	183.9	0.2%
Hf	Hanford sandy loam, sandy substratum	6.4	0.0%
Hg	Hanford sandy loam, silty substratum	16.4	0.0%
Hk	Hanford sandy loam, hard substratum	4.2	0.0%
Hsd	Hesperia sandy loam, very deep	3,980.3	4.7%
Hse	Hesperia sandy loam, very deep, saline-sodic	1,598.1	1.9%
Hsm	Hesperia sandy loam, deep	4,310.0	5.1%
Hsn	Hesperia sandy loam, deep, saline-sodic	1,453.9	1.7%
Hsp	Hesperia sandy loam, shallow, saline-sodic	34.2	0.0%
Hsr	Hesperia fine sandy loam, very deep	2,230.5	2.6%
Hss	Hesperia fine sandy loam, very deep, saline-sodic	97.6	0.1%
Hst	Hesperia fine sandy loam, deep	2,060.1	2.4%
Hsy	Hesperia fine sandy loam, deep, saline-sodic	3,503.9	4.1%
Mf	Merced clay loam	1,865.7	2.2%
Mg	Merced clay loam, slightly saline	396.0	0.5%
Mh	Merced clay	1,075.9	1.3%
Mk	Merced clay, slightly saline	3,325.8	3.9%
MI	Merced clay, moderately saline	201.1	0.2%
Mm	Merced clay, saline-alkali	5.3	0.0%
Pe	Pachappa loam, moderately deep, saline-alkali	199.3	0.2%
PfB	Piper sandy loam, 0 to 9 percent slopes	316.2	0.4%
PgB	Piper fine sandy loam, 0 to 9 percent slopes	55.0	0.1%
PhB	Piper-Rossi complex, 0 to 9 percent slopes	407.0	0.5%
Pk	Pits	23.9	0.0%
PI	Playas	224.1	0.3%
Pr	Pond sandy loam	74.6	0.1%

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ps	Pond sandy loam, moderately deep	98.2	0.1%
Pt	Pond fine sandy loam	1,570.7	1.8%
Pu	Pond fine sandy loam, moderately deep	221.2	0.3%
Pw	Pond loam, moderately deep	793.2	0.9%
Ro	Rossi fine sandy loam	3,188.4	3.7%
Rs	Rossi clay loam	43.5	0.1%
Sa	Sandy alluvial land	89.8	0.1%
Sb	Sandy alluvial land, leveled	139.0	0.2%
Ta	Temple loam	1,746.6	2.0%
Tb	Temple loam, saline	25.4	0.0%
Tc	Temple loam, saline-alkali	16.7	0.0%
Td	Temple clay loam	1,001.2	1.2%
Te	Temple clay loam, saline	179.4	0.2%
Tg	Temple clay	114.1	0.1%
Tr	Traver sandy loam	537.5	0.6%
Ts	Traver sandy loam, moderately deep	2,397.6	2.8%
Tt	Traver fine sandy loam	1,137.5	1.3%
Tu	Traver fine sandy loam, moderately deep	3,556.8	4.2%
TzbA	Tujunga loamy sand, 0 to 3 percent slopes	30.3	0.0%
W	Water	74.9	0.1%
Wa	Waukena fine sandy loam	457.5	0.5%
We	Waukena loam	13.1	0.0%
Ws	Wunje fine sandy loam	64.5	0.1%
Wu	Wunje silt loam	16.5	0.0%
Subtotals for Soil Survey Area		82,545.2	96.9%
Totals for Area of Interest		85,202.5	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
101	Armona loam, partially drained, 0 to 1 percent slopes	75.1	0.1%
130	Gepford clay, 0 to 1 percent slopes	121.8	0.1%
282	Tachi clay, 0 to 1 percent slopes	2,397.2	2.8%
285	Tranquillity-Tranquillity, wet, complex, saline-sodic, 0 to 1 percent slopes	0.7	0.0%
Subtotals for Soil Survey Area		2,594.8	3.0%
Totals for Area of Interest		85,202.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

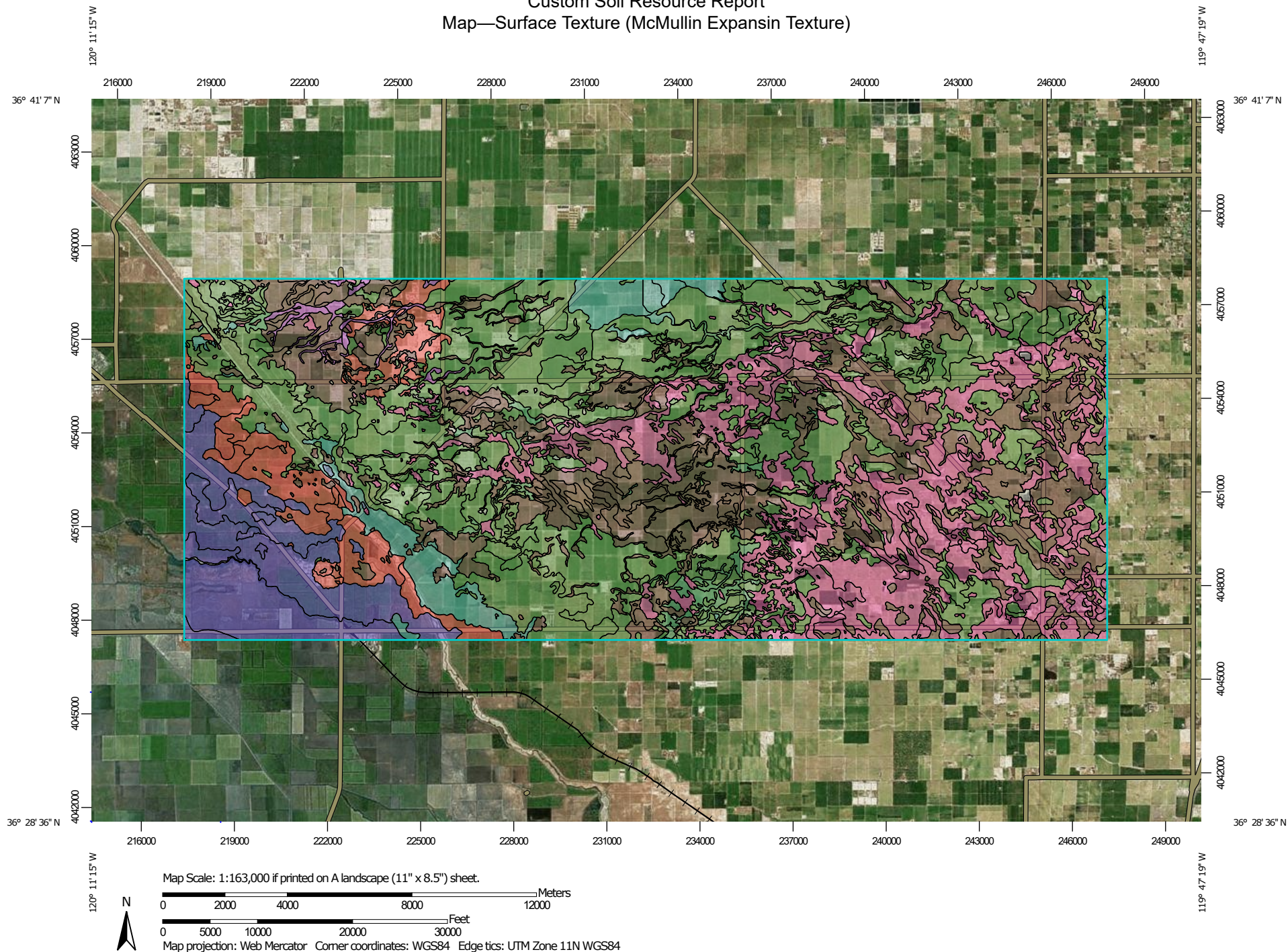
Surface Texture (McMullin Expansin Texture)

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."


Custom Soil Resource Report

Map—Surface Texture (McMullin Expansin Texture)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




Soils

Soil Rating Polygons













 Clay
 Clay loam
 Coarse sandy loam
 Fine sandy loam
 Loam
 Loamy coarse sand
 Loamy sand
 Sand
 Sandy loam
 Silt loam
 Variable
 Not rated or not available

Soil Rating Lines

 Clay
 Clay loam
 Coarse sandy loam
 Fine sandy loam
 Loam
 Loamy coarse sand
 Loamy sand
 Sand
 Sandy loam

 Silt loam
 Variable
 Not rated or not available



Soil Rating Points

 Clay
 Clay loam
 Coarse sandy loam
 Fine sandy loam
 Loam
 Loamy coarse sand
 Loamy sand
 Sand
 Sandy loam
 Silt loam
 Variable
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
 Survey Area Data: Version 13, May 29, 2020

Soil Survey Area: Fresno County, California, Western Part
 Survey Area Data: Version 15, May 29, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Surface Texture (McMullin Expansin Texture)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Bu	Borden loam, moderately deep, saline alkali	Loam	116.9	0.1%
Ca	Cajon loamy coarse sand	Loamy coarse sand	957.0	1.1%
Cb	Cajon loamy coarse sand, saline-alkali	Loamy coarse sand	331.9	0.4%
Cc	Cajon coarse sandy loam	Coarse sandy loam	204.1	0.2%
Cd	Cajon coarse sandy loam, saline alkali	Coarse sandy loam	158.7	0.2%
Ce	Cajon coarse sandy loam, moderately deep, saline alkali	Coarse sandy loam	186.0	0.2%
CfA	Calhi loamy sand, 0 to 3 percent slopes	Loamy sand	6,582.9	7.7%
CfB	Calhi loamy sand, 3 to 9 percent slopes	Loamy sand	876.1	1.0%
CgA	Calhi loamy sand, moderately deep, 0 to 3 percent slopes	Loamy sand	3,207.1	3.8%
Cm	Chino sandy loam, saline-alkali	Sandy loam	34.3	0.0%
Cn	Chino fine sandy loam	Fine sandy loam	0	0%
Co	Chino fine sandy loam, saline-alkali	Fine sandy loam	19.0	0.0%
Cp	Chino fine sandy loam, moderately deep, saline-alkali	Fine sandy loam	240.0	0.3%
DeA	Delhi sand, 0 to 3 percent slopes, MLRA 17	Sand	728.7	0.9%
DeB	Delhi sand, 3 to 9 percent slopes	Sand	154.3	0.2%
DhA	Delhi loamy sand, 0 to 3 percent slopes, MLRA 17	Loamy sand	4,662.1	5.5%
DhB	Delhi loamy sand, 3 to 9 percent slopes	Loamy sand	473.6	0.6%
DIA	Delhi loamy sand, moderately deep, 0 to 3 percent slopes	Loamy sand	369.0	0.4%
Dm	Dello loamy sand	Loamy sand	20.3	0.0%
Ec	El Peco sandy loam	Sandy loam	86.0	0.1%
Ed	El Peco fine sandy loam	Fine sandy loam	398.0	0.5%
Ep	El Peco loam	Loam	147.6	0.2%
Fm	Foster sandy loam	Sandy loam	118.4	0.1%

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Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Fr	Foster loam, moderately deep, saline-alkali	Loam	19.1	0.0%
Fs	Fresno sandy loam	Sandy loam	4,174.2	4.9%
Ft	Fresno sandy loam, shallow	Sandy loam	542.4	0.6%
Fu	Fresno fine sandy loam	Fine sandy loam	6,484.1	7.6%
Fv	Fresno fine sandy loam, shallow	Fine sandy loam	3,945.3	4.6%
Fw	Fresno clay loam	Clay loam	1,152.1	1.4%
Fx	Fresno-Traver complex	Fine sandy loam	993.1	1.2%
Hc	Hanford sandy loam	Sandy loam	183.9	0.2%
Hf	Hanford sandy loam, sandy substratum	Sandy loam	6.4	0.0%
Hg	Hanford sandy loam, silty substratum	Sandy loam	16.4	0.0%
Hk	Hanford sandy loam, hard substratum	Sandy loam	4.2	0.0%
Hsd	Hesperia sandy loam, very deep	Sandy loam	3,980.3	4.7%
Hse	Hesperia sandy loam, very deep, saline-sodic	Sandy loam	1,598.1	1.9%
Hsm	Hesperia sandy loam, deep	Sandy loam	4,310.0	5.1%
Hsn	Hesperia sandy loam, deep, saline-sodic	Sandy loam	1,453.9	1.7%
Hsp	Hesperia sandy loam, shallow, saline-sodic	Sandy loam	34.2	0.0%
Hsr	Hesperia fine sandy loam, very deep	Fine sandy loam	2,230.5	2.6%
Hss	Hesperia fine sandy loam, very deep, saline-sodic	Fine sandy loam	97.6	0.1%
Hst	Hesperia fine sandy loam, deep	Fine sandy loam	2,060.1	2.4%
Hsy	Hesperia fine sandy loam, deep, saline-sodic	Fine sandy loam	3,503.9	4.1%
Mf	Merced clay loam	Clay loam	1,865.7	2.2%
Mg	Merced clay loam, slightly saline	Clay loam	396.0	0.5%
Mh	Merced clay	Clay	1,075.9	1.3%
Mk	Merced clay, slightly saline	Clay	3,325.8	3.9%
MI	Merced clay, moderately saline	Clay	201.1	0.2%
Mm	Merced clay, saline-alkali	Clay	5.3	0.0%

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Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Pe	Pachappa loam, moderately deep, saline-alkali	Loam	199.3	0.2%
PfB	Piper sandy loam, 0 to 9 percent slopes	Sandy loam	316.2	0.4%
PgB	Piper fine sandy loam, 0 to 9 percent slopes	Fine sandy loam	55.0	0.1%
PhB	Piper-Rossi complex, 0 to 9 percent slopes	Sandy loam	407.0	0.5%
Pk	Pits	Variable	23.9	0.0%
Pl	Playas		224.1	0.3%
Pr	Pond sandy loam	Sandy loam	74.6	0.1%
Ps	Pond sandy loam, moderately deep	Sandy loam	98.2	0.1%
Pt	Pond fine sandy loam	Fine sandy loam	1,570.7	1.8%
Pu	Pond fine sandy loam, moderately deep	Fine sandy loam	221.2	0.3%
Pw	Pond loam, moderately deep	Loam	793.2	0.9%
Ro	Rossi fine sandy loam	Fine sandy loam	3,188.4	3.7%
Rs	Rossi clay loam	Clay loam	43.5	0.1%
Sa	Sandy alluvial land	Fine sandy loam	89.8	0.1%
Sb	Sandy alluvial land, leveled	Sandy loam	139.0	0.2%
Ta	Temple loam	Loam	1,746.6	2.0%
Tb	Temple loam, saline	Loam	25.4	0.0%
Tc	Temple loam, saline-alkali	Loam	16.7	0.0%
Td	Temple clay loam	Clay loam	1,001.2	1.2%
Te	Temple clay loam, saline	Clay loam	179.4	0.2%
Tg	Temple clay	Clay	114.1	0.1%
Tr	Traver sandy loam	Sandy loam	537.5	0.6%
Ts	Traver sandy loam, moderately deep	Sandy loam	2,397.6	2.8%
Tt	Traver fine sandy loam	Fine sandy loam	1,137.5	1.3%
Tu	Traver fine sandy loam, moderately deep	Fine sandy loam	3,556.8	4.2%
TzbA	Tujunga loamy sand, 0 to 3 percent slopes	Loamy sand	30.3	0.0%
W	Water		74.9	0.1%
Wa	Waukena fine sandy loam	Fine sandy loam	457.5	0.5%
We	Waukena loam	Loam	13.1	0.0%
Ws	Wunjei fine sandy loam	Fine sandy loam	64.5	0.1%
Wu	Wunjei silt loam	Silt loam	16.5	0.0%

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Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Subtotals for Soil Survey Area			82,545.2	96.9%
Totals for Area of Interest			85,202.5	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
101	Armona loam, partially drained, 0 to 1 percent slopes	Loam	75.1	0.1%
130	Gepford clay, 0 to 1 percent slopes	Clay	121.8	0.1%
282	Tachi clay, 0 to 1 percent slopes	Clay	2,397.2	2.8%
285	Tranquillity-Tranquillity, wet, complex, saline-sodic, 0 to 1 percent slopes	Clay	0.7	0.0%
Subtotals for Soil Survey Area			2,594.8	3.0%
Totals for Area of Interest			85,202.5	100.0%

Rating Options—Surface Texture (McMullin Expansin Texture)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

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