

RECLAMATION

Managing Water in the West

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

Meridian Farms Water Company Integrated Regional Water Management Program – Groundwater Production Element Project



**U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
Sacramento, California**

**Reclamation District 70
1138 4th Street
Meridian, CA 95957**

September 2011

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

The mission of the Meridian Farms Water Company is to meet the current and future needs of our shareholders, while providing a reliable supply of water at the lowest cost possible.

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Acronyms and Abbreviations

$\mu\text{g}/\text{m}^3$	microgram per cubic meter
AB	Assembly Bill
AB 32	Global Warming Solutions Act of 2006
ACID	Anderson-Cottonwood Irrigation District
ac-ft	acre-feet
ac-ft/yr	acre-feet per year
APE	area of potential effects
basin	Sacramento Valley Groundwater Basin
bgs	below ground surface
BMP	best management practice
CAA	Clean Air Act
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CFR	<i>Code of Federal Regulations</i>
CH_4	methane
CEQA	California Environmental Quality Act
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Company	Meridian Farms Water Company
District	Reclamation District 70
DOC	California Department of Conservation
DWR	California Department of Water Resources
EA	Environmental Assessment
EDD	California Employment Development Department
EPA	U.S. Environmental Protection Agency
FRAQMD	Feather River Air Quality Management District

GCID	Glenn-Colusa Irrigation District
GHG	greenhouse gas
gpm	gallons per minute
HFC	hydrofluorocarbon
IRWMP	Integrated Regional Water Management Program
IS	Initial Study
ITA	Indian Trust Asset
lb/day	pounds per day
MFWC	Meridian Farms Water Company
N ₂ O	nitrous oxide
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NO _x	nitrogen oxide
PFC	perfluorocarbon
PM _{2.5}	particulate matter 2.5 micrometers or less in aerodynamic diameter
PM ₁₀	particulate matter 10 micrometers or less in aerodynamic diameter
project	MFWC Groundwater Production Element Project
RD	Reclamation District
Reclamation	Bureau of Reclamation
ROG	reactive organic gas
SACFEM	Sacramento Valley Finite-Element Groundwater Model
SF ₆	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO ₂	sulphur dioxide
SVGB	Sacramento Valley Groundwater Basin
SWPPP	stormwater pollution prevention plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

SECTION 1

Introduction/Purpose and Need

This Environmental Assessment (EA)/Initial Study (IS) was jointly prepared by the Bureau of Reclamation (Reclamation) and Reclamation District (RD) 70 (or District) to satisfy the requirements of both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). RD 70 is acting as the CEQA lead given that Meridian Farms Water Company (MFWC, or the Company) is a private entity.

1.1 Background

The MFWC Groundwater Production Element Project (project) includes the installation of one groundwater well to supplement existing MFWC surface and groundwater supplies. The project is supported by both the state and federal grant funding. State funding is made available through California Proposition 50 Integrated Regional Water Management funds administered by the California Department of Water Resources (DWR) whereby Northern California Water Association is the grantee. The grant provides \$9.5 million to support the implementation of 11 projects throughout the Sacramento Valley. Federal funding is also being provided for seven other RDs to support their projects. Although the projects funded by this grant are generally similar, each project has independent utility and would be implemented by each grantee to supplement its current surface water supplies in both normal and dry years, as deemed appropriate by each project proponent. Any future uses of facilities to be constructed using Proposition 50 grant funds other than for supplementing a given district's water supply sources (for example, a water transfer) would need to be addressed once such actions are fully defined and in compliance with both NEPA and CEQA as required.

The MFWC service area is located on the east side of the Sacramento River, surrounding the community of Meridian and directly southwest of the Sutter Buttes (see Figure 1-1; figures are located at the end of the section in which they are first referenced). MFWC was formed in 1926 and its service area encompasses approximately 10,000 acres and serves 73 landowners. MFWC diverts water from the Sacramento River during the irrigation season in accordance with the terms of a water rights settlement contract with Reclamation. MFWC renewed its contract with Reclamation in 2005, which authorizes the continued delivery of 8,860 acre-feet (ac-ft) of water annually. Of that total, 7,110 ac-ft are provided as base supply¹, and 1,750 ac-ft are provided as Central Valley project water². In a critical water year³, the base supply and project water can be reduced by up to 25 percent.

¹Base supply is defined as the quantity of surface water, established in Articles 3 and 5 of the contract between Reclamation and MFWC, that may be diverted by the Contractor from the Sacramento River each month during the period April through October of each year without payment to the United States for such quantities diverted.

²Project water is defined as all surface water diverted or scheduled to be diverted by the Contractor from the Sacramento River each month during the period April through October of each year that exceeds the base supply.

³Critical year is defined as (1) the forecast full natural inflow to Shasta Lake for the current water year, as made by the United States on or before February 15 and reviewed as frequently thereafter as conditions and information warrant, is equal to or less than 3.2 million ac-ft; or (2) the total accumulated deficiencies below 4 million ac-ft, in the immediately prior water year or series of successive prior water years, each with inflows of less than 4 million ac-ft and together with the forecast deficiency for the current water year exceeding 800,000 ac-ft.

MFWC operates three pumping plants on the Sacramento River; the main pumping facility is located at River Mile 134. The Company's distribution and conveyance system consists of approximately 16 miles of main canals and 19 miles of major laterals. In addition to the contract water, MFWC has an entitlement to pump water from drains within its service boundary for water recycling. MFWC exercises this entitlement and relies heavily on drainwater for a secondary source of supplemental water, reusing an average of 15,000 ac-ft per year (ac-ft/yr). The Company currently operates up to five wells to supplement surface water supplies as needed. These wells are used in conjunction with the river pumps and drainwater recycling pump to meet irrigation needs. MFWC does not provide water service for municipal and industrial use.

1.2 Scope, Project Location, and Setting

MFWC proposes to install one new groundwater production well near an existing irrigation lateral. The MFWC proposed well would be within a 0.5-acre area in Sutter County, California, Township 15 North, Range 01 East, 121° 53' 25.22" West longitude, 39° 8' 43.38" North latitude in the U.S. Geological Survey [USGS] Meridian 7.5-minute quadrangle (see Figure 1-2).

1.3 Purpose and Need/Project Goals and Objectives

1.3.1 Purpose and Need

The purpose of the proposed project is to augment surface water supplies for MFWC by installing and operating one groundwater production well. This project was made possible through a funding partnership with the DWR (Proposition 50 Integrated Regional Water Management Program [IRWMP] Implementation funding) and the Reclamation Act of 1902 (32 Stat. 388), as amended and supplemented; and Public Law 108-361, Section 103(d)(5), Section 9504(a). Under the Sacramento Valley IRWMP Grants Program, Reclamation provides financial assistance to support activities that promote the preparation and revision of written regional water management/conservation plans, implement activities identified in written water management plans, demonstrate new or previously unknown water management technologies and practices, and promote improved understanding of good water use practices and principles. Reclamation is providing financial assistance to MFWC for the Sacramento Valley IRWMP revision and implementation.

The need for this project is to improve the flexibility and reliability of the District's water supply, particularly during dry and critically dry water years, while also helping to reduce the potential for local and regional water supply conflicts.

1.3.2 Project Goals and Objectives

The primary objective is to develop a reliable supplemental groundwater source. The project goals are as follows:

- Increase system reliability and flexibility on a local and regional basis.
- Offset reductions in Sacramento River diversions during drought years during July and August.

- Periodically reduce Sacramento River diversions.
- Increase instream Sacramento River flows, resulting in ecological benefits.

1.4 Applicable Regulatory Requirements and Required Coordination

The following federal laws, permits, licenses and policy requirements have directed, limited, or guided the NEPA and CEQA analysis and decision making process of this EA/IS (full discussions of these policies are provided in Section 4, Consultation and Coordination):

- U.S. Fish and Wildlife Service (USFWS) – Federal Endangered Species Act
- Regional Water Quality Control Board – National Pollutant Discharge Elimination System Permit
- State Historic Preservation Officer (SHPO) – Section 106 Consultation
- Sutter County – Well Installation Permit
- RD 1500 Groundwater Management Plan

1.5 Potential Environmental Issues

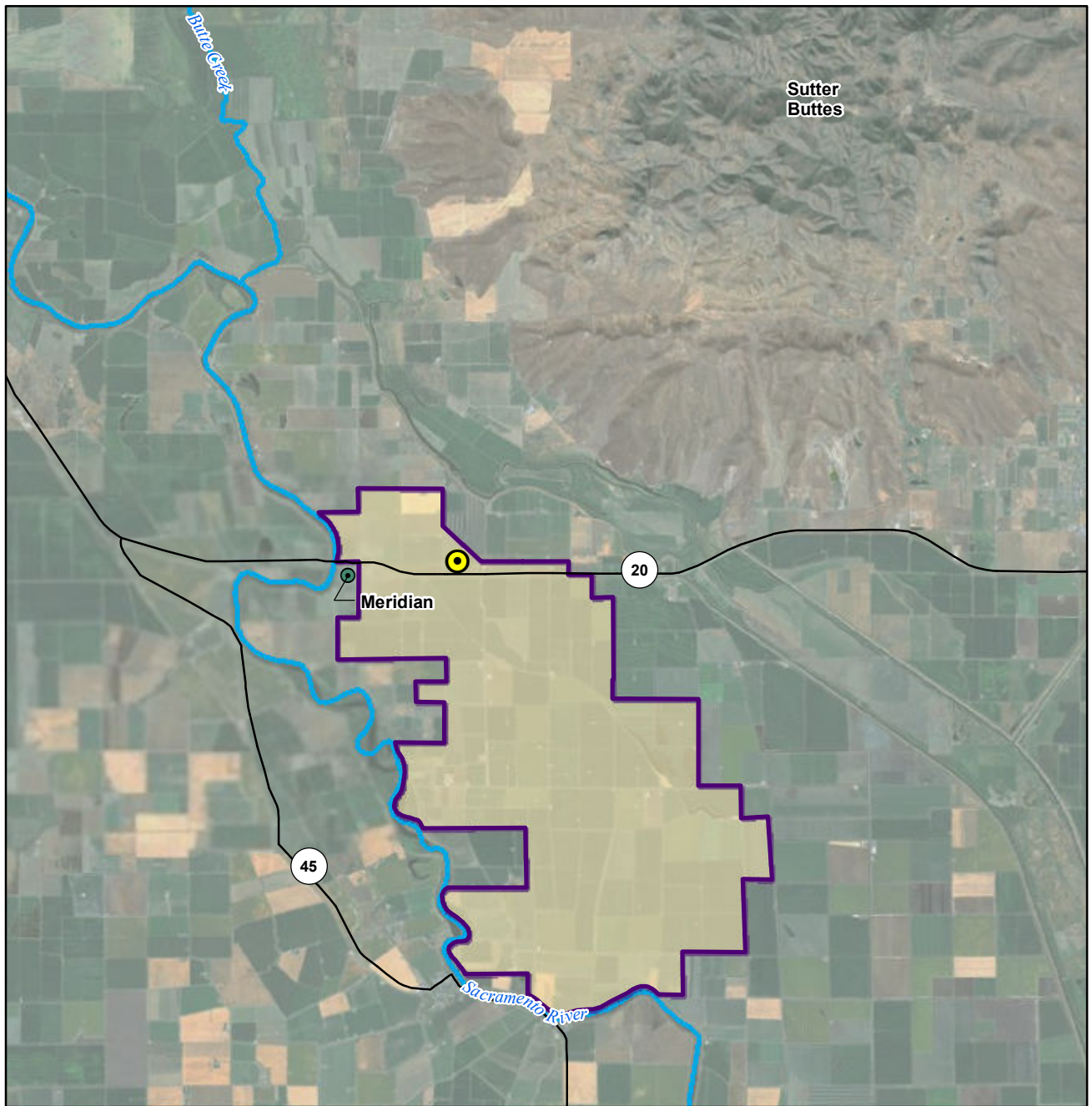
This EA/IS describes the analysis of potential impacts and cumulative effects associated with the proposed action on the following:

- Water resources
- Land use/agricultural resources
- Biological resources
- Cultural resources
- Indian Trust Assets (ITA)
- Environmental justice
- Socioeconomic resources
- Air quality
- Global climate change



The CEQA analysis provided in Section 5 relates to the environmental issues listed above and includes consideration of the following:

- Aesthetics
- Agriculture and forestry resources
- Geology and soils
- Hazards and hazardous materials
- Mineral resources
- Noise
- Population and housing
- Public services
- Recreation

- Transportation and traffic
- Utilities and service systems



LEGEND

-  WELL LOCATION
-  MERIDIAN FARMS WATER CO. DISTRICT BOUNDARY

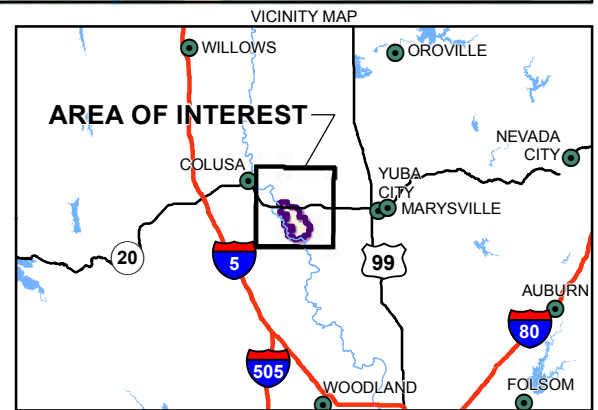
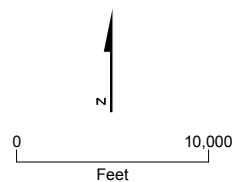
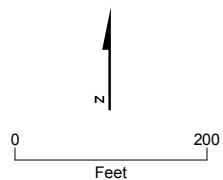


FIGURE 1-1
PROJECT LOCATION MAP
 EA/IS AND FONSI/MND FOR MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT



LEGEND

- WELL LOCATION
- PROPOSED POWER POLE
- EXISTING POWER POLE
- ACCESS ROUTE
- PRIVATE ACCESS ROUTE
- PROPOSED CONVEYANCE LINE
- PROPOSED POWER LINE
- PROJECT AREA



VICINITY MAP

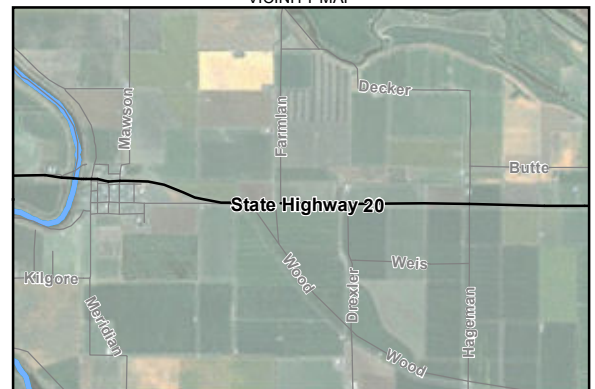


FIGURE 1-2
PROPOSED WELL LOCATION
 EA/IS AND FONSI/MND FOR MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT

SECTION 2

No Action Alternative and Proposed Action

This EA/IS considers two possible actions: the no action alternative and the proposed action. The no action alternative reflects both future conditions without the proposed action and serves as a basis of comparison for evaluating potential effects on the natural and human environment.

2.1 No Action Alternative

The no action alternative assumes that MFWC would continue to implement its current water management program. MFWC would continue to operate under the provisions of its contract with Reclamation and would face cutbacks of up to 25 percent of its base and project water supply during critical water years. As water shortages occur, MFWC anticipates that groundwater pumping would increase, as has been typical in drought years/periods, both within the MFWC service area and in adjacent areas to meet future water demands. Additionally, groundwater monitoring programs within and around the Sutter Subbasin would continue. MFWC anticipates that, during periods of drought, groundwater pumping would increase both within its service area and in adjacent areas to meet future water demands.

2.2 Proposed Action/Proposed Project

2.2.1 Project Location

MFWC proposes to install one new groundwater production well near an existing irrigation lateral within its service area. The MFWC proposed well would be within a 0.5-acre area in Sutter County, California (Township 15 North, Range 01 East, 121° 53' 25.22" West longitude, 39° 8' 43.38" North latitude in the USGS Meridian 7.5-minute quadrangle), approximately 1 mile east of the town of Meridian, north of State Highway 20, adjacent to a concrete-lined canal. Figure 1-1 shows the general location of the proposed well.

2.2.2 Construction Activities

The proposed well would require an 80-foot by 1,000-foot construction staging area. The final footprint of the proposed well would not exceed 25 feet by 25 feet, with an estimated well depth of 250 feet. Discharge piping would be required for the proposed production well. A maximum of 30 feet of discharge piping, 12 to 14 inches in diameter, would be installed approximately 12 to 24 inches underground at the proposed production well. The piping would discharge directly into a concrete-lined canal via open-ended discharge through the canal bank. The method of construction for the discharge pipeline would be open-cut trench. The proposed well would be powered by electricity and may require a maximum 150 feet of overhead service line and one new power pole, approximately 12 inches in diameter, installed within 50 feet of the proposed well. Existing power poles are

identified on Figure 1-1. Access to the proposed well would be via existing roads, none of which would require improvements.

The following equipment is expected to be required for the proposed well installation:

- Self-propelled or trailer-mounted reverse circulation drilling rig
- Pipe trailer
- Support trailer/doghouse
- Backhoe
- Fluid containment tanks
- Concrete delivery trucks
- Geophysical logging van
- Pump setting rig
- Up to three crew-member vehicles
- Fuel delivery vehicles

2.2.3 Construction Schedule

Construction is expected to take place during November 2011. Installing the 250-foot-deep proposed well would require approximately 30 working days, 10 of which may require around-the-clock shifts during weekdays and weekends. The remaining 20 working days would require 10- to 12-hour shifts. Personnel requirements for the first 10 days of well installation would consist of two crews, each composed of one rig operator and two laborers. One construction superintendant would oversee both crews. Well development and testing would likely require one operator, two laborers, and one construction superintendant working one 12-hour maximum shift per day. Drill cuttings and fluids would be disposed of onsite at a location previously agreed to by both MFWC and the property owner.

Engineering construction management and contractor personnel would be required to install discharge piping, in addition to onsite manufacturer representatives. Construction of the aboveground facilities, including the discharge piping, would take up to 10 working days and would require two operators, two laborers, and one construction superintendant. Total personnel for well installation would not likely exceed 12 people on any given day. On an average day, five people would be onsite.

2.2.4 Project Operations

The proposed production well would have a target capacity of 3,500 gallons per minute (gpm) and would likely require a 100- to 150-horsepower pump motor. The proposed well would operate up to 24 hours per day during the irrigation season (April through October).

2.3 Environmental Commitments Incorporated into the Proposed Action/Proposed Project

Several environmental commitments associated with the siting and operation of the proposed well have been incorporated into this proposed action.

2.3.1 Well-siting Criteria

The proposed well and related facilities generally would be located within previously disturbed areas that are currently used for agricultural purposes. Proposed well locations were surveyed to identify any potential historical or sensitive biological resources (species and habitat). The survey data for the selected well location were used to confirm compliance with state and federal laws concerned with the treatment of historical and biological resources. The following measures have been incorporated into the project design to minimize potential impacts on these resources:

- Groundwater – Monitoring and remedial action plans would be implemented.
- Surface water – The contractor would be required to develop and implement a stormwater pollution prevention plan (SWPPP) to reduce the potential for any offsite discharge.
- Land use – Proposed locations of the well were selected through cooperation and coordination with willing landowners.
- Biological resources – Preconstruction siting surveys were performed on April 18, 2011, to plan for avoidance or minimization of potential impacts on sensitive habitat and species.
- Cultural resources – Preconstruction siting surveys were performed on April 26, 2011, to plan for avoidance or minimization of potential impacts on cultural resources. A cultural resources investigation was conducted, and the results are summarized in the cultural resources section (Section 3.4) of this document. The cultural resources investigation report is a confidential report on file with Reclamation, and is available upon request.
- Air quality – The proposed well would be electrically powered. Construction exhaust emissions would be controlled using mitigation measures established by the Feather River Air Quality Management District (FRAQMD) (see Appendix A).

2.3.2 Specific Actions to Minimize Potential Impacts on Groundwater Resources

The level of pumping associated with the proposed project is not anticipated to adversely affect local users. Promptly addressing potential impacts through open communication with local groundwater users would result in mitigation of impacts. Upon notification of a potential adverse impact, MFWC would (within 2 business days) contact the affected party and obtain available information as to the nature and extent of the potential impact. After contacting the affected party and receiving relevant information regarding the potential impact, MFWC would evaluate whether an impact had actually occurred, and whether the impact appears related to operation of the proposed well. MFWC would then take one of the following actions:

- If MFWC and affected party mutually conclude that the reported adverse impact resulted from implementing the proposed action, MFWC would mitigate the impact in a mutually agreeable manner, possibly including a temporary reduction in groundwater pumping.

- If MFWC concludes that the reported impact is not likely to have been caused by implementing the proposed action, MFWC would provide information to the affected party that reasonably demonstrates the lack of causation between the proposed action and the reported impact.

2.3.3 Specific Actions to Minimize Potential Impacts on Surface Water Resources

Impacts on surface water resources during construction activities would be minimized through adherence to best management practices (BMP) and preventive measures as outlined in the contractor's SWPPP. The contractor would file a Notice of Intent with the State Water Resources Control Board in accordance with the General Permit for Stormwater Discharges Associated with Construction Activity. MFWC would make sure that the SWPPP is kept on the project site and that water quality standards are followed. The SWPPP would incorporate sediment and erosion controls such as silt fences and erosion control blankets. Following the completion of construction activities, disturbed areas would be stabilized. BMPs would include, but not be limited to the following:

- Activities that increase erosion potential would be restricted, to the extent practicable, to the summer and early fall to minimize potential for rainfall events to transport sediment to the adjacent surface water features. If these activities must take place during the late-fall, winter, or spring, then temporary erosion and sediment control BMPs would be placed and operational at the end of each construction day, and maintained until permanent erosion control features are in place.
- When construction is complete, stabilizers such as weed-free mulch would be applied to disturbed areas within 10 days to reduce the potential for short-term erosion. Before a rain event or when there is a greater than 50 percent possibility of rain forecast by the National Weather Service during the next 24 hours, soil stabilizers would be applied to exposed areas upon completion of the day's activities. Soils would not be left exposed during the rainy season.
- BMPs such as filter fences and catch basins would be placed below construction activities near a stock pond or other open water to intercept sediment before it reaches the waterway. These structures would be installed before any clearing or grading activities are conducted.
- Spoil sites would be located where they do not drain directly into a surface water feature. Temporary spoil sites would be protected from erosion using BMPs.
- Sediment control measures would be in place before the onset of the rainy season and would be monitored and maintained in good working condition until disturbed areas have been stabilized.
- Erosion and sediment control measures listed in permits obtained for the proposed action would be implemented.

2.3.4 Specific Actions to Minimize Potential Impacts on Land Use

The proposed well location was selected through the cooperation and coordination with willing landowners to site the well either (1) on District-owned lands in areas that would not substantially interfere with agricultural operations or require rezoning or substantial local approvals or (2) in mutually agreeable locations on private land.

2.3.5 Specific Actions to Minimize Potential Impacts on Biological Resources

During the planning and design phase for the proposed action, a qualified biologist visited the proposed location. The intent of this visit was to investigate the occurrence of native habitats, including vernal pools, wetlands, riparian habitat, and special-status species. Although the overall footprint of the proposed action would not affect habitat such that there would be direct impacts on special-status species, such species may use non-native habitats, require larger habitat buffers, or require seasonal restrictions. The following avoidance and minimization measures would protect special-status and nesting bird species that could occur near the project area:

- If construction occurs during the nesting season, preconstruction surveys should be conducted by a qualified biologist at least 14 days before construction begins to detect the presence of any nesting birds within or adjacent to the proposed well location. If construction occurs during the non-breeding season for nesting birds (September 1 through February 14), preconstruction surveys are not required.
- The survey area should include a survey buffer of 500 feet for nesting bird species. Surveys specifically for nesting Swainson's hawk should be conducted within 0.5 mile of designated disturbance areas that contain appropriate nesting habitat.
- If active Swainson's hawk nests are detected during the survey, a no-disturbance buffer zone of 0.5 mile is required. For other nesting birds, protected areas surrounding nests, the size of which is to be determined by the qualified biologist or in consultation with CDFG for certain species (such as Swainson's hawk), should be established and a nest monitoring plan developed for active nests.
- Consultation with CDFG should be conducted for any construction that would occur within 0.5 mile of an active Swainson's hawk nest to make sure that no take of Swainson's hawk occurs during project construction. Follow-up surveys or onsite monitoring could be included as part of CDFG's conditions and mitigation measures for construction within 0.5 mile of a nesting Swainson's hawk.

2.3.6 Specific Actions to Minimize Potential Impacts on Air Quality

The proposed well would be powered by electricity to eliminate air quality impacts associated with emissions from diesel generators.

The following minimization measures would be implemented to reduce emissions from fugitive dust and exhaust generated by construction activities:

1. The FRAQMD Fugitive Dust Control Plan (see Appendix A) would be implemented.
2. Construction equipment exhaust emissions would not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40 percent opacity or Ringelmann 2.0).

3. The contractor would confirm that construction equipment is properly tuned and maintained before and for the duration of onsite equipment operation.
4. Idling time would be limited to 5 minutes for commercial diesel vehicles and off-road diesel vehicles (in accordance with 13 *California Code of Regulations* Chapter 10, Section 2485, and Chapter 9, Article 4.8, Section 2449).
5. Existing power sources such as power poles or clean fuel generators would be used rather than temporary diesel generators.
6. Portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, may require California Air Resources Board (CARB) portable equipment registration with the state or a local district permit. The owner/operator would be responsible for arranging appropriate consultations with the CARB or MFWC to learn about registration and permitting requirements before operating equipment at the project site.

SECTION 3

National Environmental Policy Act – Affected Environment and Environmental Consequences

This section of the EA/IS discusses the NEPA analysis of the potentially affected environment and the environmental consequences involved with the proposed action and the no action alternative.

3.1 Water Resources

3.1.1 Affected Environment

The Sacramento River hydrologic region is the main water supply source for much of California's urban and agricultural areas. The proposed project is located in the Sacramento Valley Groundwater Basin (SVGB or basin), which extends from the Red Bluff Arch to the Sacramento-San Joaquin Delta and includes portions of Tehama, Glenn, Colusa, Yolo, Solano, Butte, Sutter, Yuba, Placer, and Sacramento Counties (DWR, 2003a). The 4,900-square-mile SVGB is bordered to the east by the Sierra Nevada and Cascade Ranges and to the west by the Coast Range. The land surface regionally slopes south and toward the main surface water feature in the basin, which is the Sacramento River. The land surface topography is locally also affected by smaller-scale features, such as lakes and tributaries of the Sacramento River, and by a variety of constructed features and structures. Land surface elevations generally occur in the range of hundreds of feet above mean sea level, near the north end and periphery of the SVGB, to tens of feet above mean sea level near the south end and interior of the SVGB.

The SVGB has mild winters with hot, dry summers. Average annual precipitation in the basin ranges from 13 to 26 inches, with the most precipitation occurring along the eastern and northern edges of the basin. Typically, 80 to 90 percent of the basin's precipitation occurs from November to April (Bertoldi, 1991).

3.1.1.1 Hydrology

Annual runoff in the hydrologic region averages approximately 22.4 million ac-ft, which is nearly one-third of the state's total natural runoff (DWR, 2003b). The Sacramento River has three major tributaries draining the Sierra Nevada, including the Feather, Yuba, and American Rivers. Stony, Cache, and Putah Creeks are the primary western tributaries of the Sacramento River. The Sutter and Yolo Bypasses are major tributaries during periods of high streamflow. Factors affecting streamflow in the Sacramento River hydrologic region are reservoir releases, climatic cycles, stream diversions, and groundwater levels. The Sacramento River and its major tributaries flow year-round and can provide a source of recharge to the aquifer system. Many of the smaller (and some larger) western tributaries have significantly reduced streamflow (for example, less than 1 cubic foot per second) or go dry during the summer and fall, particularly during drought conditions.

3.1.1.2 Hydrogeology

The SVGB is a north- to northwestern-trending, asymmetrical trough filled with as much as 10 miles of both marine and continental rocks and sediment (Page, 1986). On the eastern side, the basin overlies basement bedrock that rises relatively gently to form the Sierra Nevada; and on the western side, the underlying basement bedrock rises more steeply to form the Coast Ranges. Overlying the basement bedrock are marine sandstone, shale, and conglomerate rocks, which generally contain brackish or saline water (DWR, 2003a). More recent continental deposits, overlying the marine sediments, contain fresh water. These continental deposits are generally 2,000 to 3,000 feet thick (Page, 1986). The depth to the base of fresh water typically ranges from 1,000 to 3,000 feet below ground surface (bgs) (Bertoldi, 1991).

The MFWC service area lies within the northwest corner of the Sutter Subbasin, which is located in the central portion of the SVGB. Groundwater in the Sutter Subbasin recharges through deep percolation of applied water and precipitation, infiltration from surface water bodies, and lateral inflow along the subbasin boundaries. Groundwater levels in the vicinity of the proposed action are generally within 5 to 10 feet of the land surface (DWR, 2003c; DWR, 2003d). Most of the subbasin's groundwater system is full and discharges excess groundwater to streams. Seasonally, groundwater levels typically decline during the hot, dry summer months when regional groundwater production occurs at its seasonal maximum, but these levels recover each year during the wet season. California has experienced a variety of climate conditions since 1980, including a 6-year drought from approximately 1987 through 1992. During this drought, groundwater levels decreased across much of the SVGB; however, after the drought ended, groundwater levels generally recovered.

The nature of surface water-groundwater interaction across the SVGB is complex, both spatially and temporally, but in most areas shallow groundwater levels lead to groundwater discharge to surface streams. As a result of pronounced drought conditions or groundwater production (such as those encountered in Sacramento County) groundwater levels may decline to a level such that streams that formerly gained streamflow from groundwater discharge now recharge the groundwater system through streambed infiltration. If streams dry up (either seasonally or during drought conditions) they would no longer provide a source of recharge to the underlying aquifer system.

3.1.1.3 Water Use

Municipal, industrial, and agricultural water demands in the hydrologic region are approximately 8 million ac-ft (DWR, 2003b). Major water supplies in the hydrologic region are provided through surface storage reservoirs, mainly Reclamation's Shasta Reservoir (Central Valley Project facility) on the upper Sacramento River and DWR's Oroville Reservoir (State Water Project facility) on the Feather River. Groundwater is also a major source of water supply in the hydrologic region. The exact quantity of annual groundwater pumping in the SVGB is unknown; however, estimates suggest that approximately 2.5 million ac-ft/yr are pumped from municipal, industrial, and agricultural production wells (DWR, 2003b). Agricultural, industrial, and municipal groundwater users in the SVGB pump primarily from deeper continental deposits, whereas domestic groundwater users in the basin generally pump from shallower deposits.

Municipal, industrial, and irrigation well yields in the Sutter Subbasin average approximately 730 gpm (Olmsted and Davis, 1961; DWR, 2003c) and range in total depth from 60 to 672 feet bgs, averaging 205 feet bgs (DWR, 2003c). Domestic wells in the subbasin range in total depth from 35 to 320 feet bgs, averaging 121 feet bgs. Seasonal fluctuations in groundwater levels in the Sutter Subbasin are generally less than 5 feet and can be up to 25 feet during drought years (DWR, 2003a; DWR, 2003d).

3.1.1.4 Land Subsidence

Land subsidence is the decline in ground-surface elevation resulting from natural forces (such as earthquakes) and anthropogenic activities (for example, groundwater, oil, and gas extraction). Land subsidence can be elastic (temporary compaction of subsurface material that rebounds as groundwater levels recover) or inelastic (permanent compaction of subsurface material). The magnitude of land subsidence in the SVGB is generally minimal and confined to limited areas of the basin. In these limited areas, land subsidence is likely the result of groundwater extraction. Yolo County has experienced the most subsidence within the SVGB outside the Delta region, with the greatest subsidence reported between Zamora and Knights Landing (approximately 7 feet between 1949 and 2002, which is 0.13 foot per year).

3.1.1.5 Groundwater Quality

Groundwater quality in the SVGB is generally good and sufficient for municipal, agricultural, domestic, and industrial uses (DWR, 2003b); however, some localized groundwater quality problems exist. Total dissolved solids levels are generally below the California and U.S. Environmental Protection Agency (EPA) secondary drinking water standards in most of the SVGB. The total dissolved solids levels tend to be higher between the confluence of the Sacramento and Feather Rivers, and south of the Sutter Buttes.

3.1.2 Environmental Consequences

3.1.2.1 Environmental Commitments Incorporated into the Project

Groundwater. See Section 2.3.2 for specific actions to minimize potential impacts on groundwater resources.

Surface Water. See Section 2.3.3 for specific actions to minimize potential impacts on surface water resources.

3.1.2.2 Assessment Methods

Groundwater of economic importance moves through the subsurface from a place of groundwater recharge to a place of groundwater discharge. When a pump is operated and lifts water to the land surface through its riser pipe inside a groundwater well, it is removing groundwater from aquifer storage as well as intercepting groundwater that would have otherwise moved to a different place of groundwater discharge. As a result, groundwater temporarily discharged from a groundwater well is initially removed from storage in the aquifer, which is eventually balanced by a temporary loss of water from somewhere else. The decline in the water level inside the pumping well creates a hydraulic gradient (slope) toward the well within the surrounding groundwater system outside the well. This slope causes groundwater from the surrounding groundwater system to flow

radially (laterally and vertically) to the well, resulting in a declining water table (unconfined aquifer) or potentiometric surface (confined aquifer) in the surrounding aquifer. The feature formed by the decline in surrounding groundwater levels from groundwater pumping is referred to as the cone of depression. Operation of existing production wells, located within the cone of depression of a proposed well and streams that overlie this cone of depression, have the potential to be adversely affected.

Potential effects on groundwater and surface water resources were forecast using a numerical groundwater flow model, known as the Sacramento Valley Finite-Element Groundwater Model (SACFEM) (Appendix B). SACFEM was developed using the MicroFEM (Hemker, 2011) modeling code, which is capable of simulating three-dimensional, transient, single-density groundwater flow in layered systems. SACFEM was developed specifically to evaluate potential effects on surface water and groundwater resources associated with proposed conjunctive water management projects across the valley.

SACFEM is composed of a groundwater model and a surface water budgeting module that computes the monthly agricultural pumping groundwater recharge due to deep percolation of applied water and precipitation. The model is calibrated to groundwater levels measured in monitoring wells during a 34-year period (water years⁴ 1970 through 2003). Forecasts of project-related effects can be evaluated for a broad range of hydrologic conditions, because this calibration period includes a variety of year types, such as severe drought periods (for example, 1976 through 1977 and 1987 through 1992) and extremely wet years (such as 1983). Appendix B presents complete documentation of SACFEM. Appendix C provides a discussion of technical details associated with the proposed action simulations using SACFEM.

Pre-existing production wells (such as municipal, industrial, agricultural, or domestic wells) in the SVGB are typically spaced apart at least 0.25 mile. It is assumed in the groundwater impact evaluation that proposed well locations are also at least 0.25 mile from any active pre-existing production wells. Therefore, the approach for forecasting groundwater-level effects of the proposed action includes evaluating the incremental drawdown⁵, at distances of 0.25 mile and greater, from a project well against the groundwater-related significance criteria.

Operation of the proposed action could also result in reduced streamflow by increasing streambed infiltration, intercepting groundwater that would have otherwise discharged to surface water bodies, or some combination thereof. Streams with the greatest potential for impact were identified by delineating areas with forecast incremental drawdowns in the shallow aquifer of 1 foot or greater as a result of implementing the proposed action.

⁴ A water year runs from October 1 of the previous calendar year through September 30 of the current calendar year (for example, water year 1976 includes the period of October 1, 1975, through September 30, 1976).

⁵ For the purpose of this evaluation, incremental drawdown was computed through the following method: A SACFEM simulation was initially conducted over the water years 1970 through 2003 simulation period and referred to as the baseline simulation. A project simulation was then conducted with the baseline model, but with the proposed project pumping added at the appropriate monthly rates, locations, and depths. The incremental drawdown was then computed by subtracting the project groundwater levels from baseline groundwater levels at each model node and for each month over the water years 1970 through 2003 simulation period. Forecasting groundwater level-related impacts in this manner facilitates assessment of incremental project-related impacts on groundwater and surface water resources with consideration of dynamic hydrologic conditions (such as droughts and wet periods).

Available historical streamflow data were obtained for streams within these areas and compared with simulated streamflow depletions to assess the potential magnitude of streamflow effects.

3.1.2.3 No Action

Under the no action alternative, MFWC would not construct the groundwater production well. MFWC would continue to operate under the provisions of its contract with Reclamation and face cutbacks of up to 25 percent of its base and project water supplies during critically dry water years. MFWC would continue to implement its current water management program, including using groundwater for irrigation as necessary. Annual domestic and agricultural groundwater use has been estimated at 3,900 and 171,400 ac-ft, respectively, in the Sutter Subbasin (DWR, 2003b). MFWC anticipates that in drought years/periods groundwater pumping would increase both within its service area and in adjacent areas to meet future water demands.

3.1.2.4 Proposed Action

Construction. Effects on surface water quality could occur during the construction phase of the proposed action because of stockpile erosion and spoil piles, which, if not properly placed and managed, could result in sedimentation and associated effects on water quality. Before construction activities begin, the contractor would develop and implement an SWPPP to reduce sediment discharged from the site. Implementing the SWPPP in conjunction with the use of BMPs, as outlined in Section 2.3.3, would mitigate potential adverse effects on surface water quality resulting from construction activities.

No effects on local groundwater levels are anticipated as part of the well drilling and installation process.

Operation.

Groundwater. Model simulations were performed to forecast potential effects that could result from implementing the proposed action. The MFWC project would involve annual groundwater production from April 1 through October 31, with an assumed total project volume of approximately 3,300 ac-ft/yr (proposed pumping rate of 3,500 gpm apportioned over the 214-day pumping period). Model results were used to forecast the incremental drawdown that could occur in both the shallow (upper 50 feet of the unconfined aquifer associated with typical domestic well depths) and regional (depth interval associated with most of the groundwater production) aquifers. It was assumed that the proposed action well would pump groundwater from an approximately 100- and 175-foot-bgs interval, which is similar to the pumping intervals associated with typical area wells.

Figure 3-1 presents the forecast maximum incremental drawdown in the shallow aquifer that occurred at the end of October 1992, corresponding to the end of a 6-year drought (consistent with the 1987 to 1992 period). Incremental drawdown, resulting from project implementation in the shallow aquifer, is forecast to be no more than approximately 18.5 feet by the end of the pumping season, with an incremental drawdown typically not exceeding 5 to 10 feet in most areas (see Figure 3-1). The maximum incremental drawdown of 18.5 feet is forecast at 0.25 mile from the proposed well. This incremental drawdown is forecast to dissipate to approximately 4 to 7 feet within 1 mile of the well.

The forecast incremental drawdown in the regional aquifer is no more than 22 feet, not exceeding 5 feet in most areas (see Figure 3-2). The maximum incremental drawdown of 22 feet is forecast at a distance of 0.25 mile from the proposed well and is forecast to dissipate to 4.5 to 8 feet within 1 mile of the well.

The magnitude and distribution of forecast incremental drawdown in the shallow and regional aquifers would not affect groundwater levels such that yields of pre-existing nearby wells would decrease to a rate that would not support existing land uses. Additionally, groundwater elevations would return to pre-project levels because the Sutter Subbasin would refill each spring, with the possible exception of during multi-year droughts.

Surface Water. No streams are located within the area of forecast incremental drawdown of 1 foot or greater in the shallow aquifer; however, because the Sacramento River is the largest stream in the SVGB, forecast stream effects were compared with available measured streamflow data. The peak reduction of streamflow in the Sacramento River that could occur because of the proposed action would represent a very small percentage (less than 0.5 percent) of the total streamflow; and would have no adverse effect to surface water within the project area.

Land Subsidence. The proposed action would not cause a permanent lowering of groundwater levels, because Sutter Subbasin would refill each spring, with the possible exception of during multi-year droughts. Given the forecast minimal drawdown effects, no inelastic land subsidence is anticipated to occur.

Groundwater Quality. Implementation of the proposed action would not result in regional changes in groundwater flow patterns in the SVGB, so it is not anticipated that operation of the project well would alter the pre-existing distribution of poor-quality groundwater in the SVGB.

3.1.2.5 Cumulative Effects

Potential cumulative effects were analyzed assuming individual proposed groundwater production projects funded through grants associated with the Sacramento Valley IRWMP were simultaneously active (excluding the Anderson-Cottonwood Irrigation District [ACID] project, which is located in the Redding Groundwater Basin and was evaluated using the Redding Groundwater Basin Finite-Element Model [CH2M HILL, 2011a]). Appendix C provides a detailed description of the SACFEM analysis process and a map of participating wells.

Groundwater. Model simulations were performed to forecast potential effects that could result from simultaneously implementing proposed Proposition 50-funded projects. Appendix C provides proposed operational parameters for each well participating in the Sacramento Valley IRWMP (excluding ACID). Model results were used to forecast the incremental drawdown that could occur in both the shallow (water levels within the upper 50 feet of the unconfined aquifer) and regional aquifer levels. The regional aquifer was divided into a middle pumping zone and a deeper pumping zone for the cumulative analysis.

Figures 3-3 through 3-5 present the forecast maximum incremental drawdown in the shallow and regional aquifer systems from the projects. No interference drawdown among individual projects is forecast because of the distance between proposed projects in each district. Figures 3-3 through 3-5 present the forecast maximum incremental drawdown that occurred in October 1992, which corresponds to the end of a 6-year drought (consistent with the 1987 to 1992 period).

The forecast incremental drawdown in the shallow aquifer is no more than 18.5 feet, not exceeding 5 feet in most areas (see Figure 3-3). The maximum incremental drawdown of 18.5 feet is forecast at a distance of 0.25 mile from the proposed MFWC well and is forecast to dissipate to 4.5 to 8 feet within 1 mile of the well. The incremental drawdown in the shallow aquifer is forecast to dissipate to less than 5 feet within 1 mile of the other groundwater production project wells. The magnitude of incremental drawdown effects are reduced where stream seepage provides a recharge source to the aquifer.

Incremental drawdown, resulting from project implementation in the mid-depth pumping zone of the regional aquifer, is projected to not exceed 5 to 10 feet in most areas (see Figure 3-4). The maximum incremental drawdown of approximately 30 feet is forecast at 0.25 mile from an RD 108 well; however, the incremental drawdown is forecast to dissipate to 9 to 10 feet within 1 mile of the well. Incremental drawdowns ranging from 3 to 21 feet at 0.25 mile from the other groundwater production wells are forecast to dissipate to between 2 to 8 feet within 1 mile of the wells.

Forecast incremental drawdown resulting from project implementation in the deep pumping zone of the regional aquifer is projected to be no more than approximately 12 feet by the end of the pumping season, with incremental drawdown near the groundwater production projects typically not exceeding 5 to 10 feet in most areas (see Figure 3-5). A maximum incremental drawdown of approximately 12 feet is forecast at a distance of 0.25 mile from the Glenn-Colusa Irrigation District (GCID) wells, and is forecast to dissipate to 4.5 to 8 feet within 1 mile of the wells. Incremental drawdown at a distance of 0.25 mile from other groundwater production project wells ranges from 3 to 11 feet and is forecast to dissipate to 2.5 to 7 feet within 1 mile of the other groundwater production wells.

It is assumed that no pre-existing production wells operate within 0.25 mile of the MFWC, RD 108, and GCID wells. Because the forecast incremental drawdowns dissipate within a relatively short distance from the proposed wells, and groundwater elevations would return to pre-project levels (because the SVGB would refill each spring, with the possible exception of during multi-year droughts), the magnitude and distribution of incremental drawdowns are not anticipated to reduce yields of nearby pre-existing wells enough to affect existing land uses. As a result, cumulative incremental drawdowns in the shallow, mid-depth pumping zone of the regional aquifer and in the deep pumping zone of the regional aquifer are considered to have no adverse effects on these aquifer systems.

Surface Water. Model results were used to forecast the stream effects that could occur in response to simultaneous operation of the proposed SVGB projects. The following streams are located within the area of forecast incremental drawdown of 1 foot or greater in the shallow aquifer: Sacramento River, Feather River, Willow Creek, the South Fork of Willow Creek, Walker Creek, Wilson Creek, French Creek, Colusa Basin Drain, and GCID canal. No simulated reduction in streamflow is forecast for Walker Creek, the South Fork of Willow

Creek, and French Creek. A time series of measured streamflow data for Willow Creek, Wilson Creek, and the GCID canal are unavailable, so potential effects on these streams were not estimated. According to SACFEM, peak streamflow reductions would represent less than 0.5 percent of the total streamflows measured individually within the Sacramento River, Feather River, and Colusa Basin Drain. This percent-reduction forecast represents a small fraction of the total streamflows and would have no adverse effects on local surface water.

Land Subsidence. Simultaneous operation of the groundwater production wells would not cause a permanent lowering of groundwater levels, because Sutter Subbasin would refill each spring, with the possible exception of during multi-year droughts. Given the forecast minimal drawdown effects, no cumulative inelastic land subsidence is anticipated to occur, even in multi-year drought conditions.

Groundwater Quality. Implementation of the proposed projects would not result in regional changes in groundwater flow patterns in the SVGB, and it is not anticipated that operation of the project wells would alter the pre-existing distribution of poor-quality groundwater in the SVGB.

3.2 Land Use/Agricultural Resources

3.2.1 Affected Environment

The MFWC service area, located in Sutter County, lies east of the Sacramento River and is bounded on the east by the Sutter Mutual Water Company service area. The service area encompasses approximately 9,200 acres divided among cultivation of rice, alfalfa, corn, and tomatoes.

In 2000, Sutter County had an estimated population of 102,376. Forecasts show that by the year 2020, Sutter County's population would reach approximately 141,159 people (California Department of Finance, 2007). Since 1990, 9,333 acres of farmland have gone out of production and 2,354 acres of new urban land have been created (California Department of Conservation [DOC], 2002). Of the 389,439 acres mapped in Sutter County in 2000, 352,187 were in agricultural use; 11,360 acres were urbanized; 1,848 acres were water; and 24,044 acres were other (DOC, 2002). Approximately 165,817 acres in Sutter County are classified as Prime Farmland, comprising nearly 43 percent of the total land area. From 2004 to 2006, the total Prime Farmland acreage in Sutter County decreased by 385 acres. Tables 3-1 and 3-2 show the land use summary and change by land use category, as well as the land use conversion experienced from 2004 to 2006, for Sutter County.

TABLE 3-1
Sutter County Land Use Summary and Change by Land Use Category

Land Use Category	Total Acreage Inventoried		2004 to 2006 Acreage Changes			
	2004	2006	Acres Lost (-)	Acres Gained (+)	Total Acreage Changed	Net Acreage Changed
Prime Farmland	166,202	165,817	658	273	931	-385
Farmland of Statewide Importance	107,742	107,194	704	156	860	-548
Unique Farmland	19,480	19,245	436	201	637	-235
Farmland of Local Importance	0	0	0	0	0	0
Important Farmland Subtotal	293,424	292,256	1,798	630	2,428	-1,168
Grazing Land	50,636	51,516	336	1,216	1,552	880
Agricultural Land Subtotal	344,060	343,772	2,134	1,846	3,980	-288
Urban and Built-up Land	12,582	12,928	25	371	396	346
Other Land	30,914	30,856	504	446	950	-58
Water Area	1,883	1,883	0	0	0	0
Total Area Inventoried	389,439	389,439	2,663	2,663	5,326	0

Source: DOC, 2011.

TABLE 3-2
Sutter County Land Use Conversion from 2004 to 2006

Land Use Category		Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-up Land	Other Land	Water Area	Total Converted to Another Use
Prime Farmland	to:	--	0	1	0	1	287	288	85	285	0	658
Farmland of Statewide Importance	to:	2	--	0	0	2	506	508	120	76	0	704
Unique Farmland	to:	0	0	--	0	0	402	402	0	34	0	436
Farmland of Local Importance	to:	0	0	0	--	0	0	0	0	0	0	0
Important Farmland Subtotal		2	0	1	0	3	1,195	1,198	205	395	0	1,798
Grazing Land	to:	91	25	106	0	222	--	222	63	51	0	336
Agricultural Land Subtotal		93	25	107	0	225	1,195	1,420	268	446	0	2,134
Urban and Built-up Land	to:	10	15	0	0	25	0	25	--	0	0	25
Other Land	to:	170	116	94	0	380	21	401	103	--	0	504
Water Area	to:	0	0	0	0	0	0	0	0	0	--	0
Total Acreage Converted	to:	273	156	201	0	630	1,216	1,846	371	446	0	2,663

Source: DOC, 2011.

3.2.2 Environmental Consequences

3.2.2.1 Environmental Commitments Incorporated into the Project

Analysis of potential effects on land use/agricultural resources associated with the implementation of the proposed action assumes cooperation and coordination with willing landowners to site the well either (1) on MFWC-owned lands in areas that would not substantially interfere with agricultural operations or require rezoning or substantial local approvals, or (2) in mutually agreeable locations on private land.

3.2.2.2 No Action

Under the no action alternative, MFWC would continue to implement its current water management program. Surrounding land uses would remain consistent with current uses, and land uses within the MFWC service area would continue to adjust based on water availability within the District. Although Sutter County anticipates annual population growth rates of up to 3.8 percent, most of this growth centers around Yuba City, and land would be developed for urban uses (Sutter County, 2010a). Future non-agricultural development within Sutter County is anticipated to be limited to residential growth in the rural communities of Sutter Pointe and East Nicolaus Trowbridge (Sutter County, 2010a).

3.2.2.3 Proposed Action

Construction. There would be no effects on land use resulting from the construction of the proposed action. The proposed well location is unoccupied and currently in use for agricultural purposes. No other projects are anticipated at this location within the near future, so construction would not hinder the existing or planned use of the site.

Operation. Operation of the proposed action would have no effects on land use. The proposed action would be implemented to maintain existing agricultural land uses, resulting in minor beneficial effects on existing agricultural land uses within the MFWC service area.

3.2.2.4 Cumulative Effects

No substantial cumulative effects on land use or agricultural resources are anticipated because no impacts on these resources are expected from the implementation of the proposed action.

3.3 Biological Resources

3.3.1 Affected Environment

Reconnaissance-level field surveys were conducted on April 18, 2011, to characterize the potential for wildlife occurrence. During the field reconnaissance, information on the biological resources such as dominant vegetation type, bird species present, and overall site conditions was noted. The results of the surveys are summarized below and provided in Appendix D. Figure 3-6 shows the species identified within the project area.

3.3.1.1 Flora

The well location is in a highly disturbed agricultural area within a power line and cement-lined irrigation canal corridor, as shown in Attachment 1 to Appendix D, Photographs 1 and 2. The predominant vegetation type observed on the well pad site includes non-sensitive ruderal species such as globe mallow (*Malvaceae* sp.), ripgut brome (*Bromus diandrus*), soft chess brome (*Bromus hordeaceus*), redstem filaree (*Erodium cicutarium*), and perennial pepperweed (*Lepidium latifolium*), which were recently mowed. Attachment 3 (Table 3-1) to Appendix D lists the plant species observed within the project area.

3.3.1.2 Sensitive Habitats

The MFWC well site is not within or near any sensitive habitats.

3.3.1.3 Fauna

Fauna species observed at the well site and adjacent habitats included the following: western scrub jay (*Aphelocoma californica*), red-winged blackbird (*Agelaius phoeniceus*), western kingbird (*Tyrannus verticalis*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), Turkey vulture (*Cathartes aura*), European starling (*Sturnus vulgaris*), and pocket gopher (*Thomomys* sp.). Attachment 3 (Table 3-2) to Appendix D lists the wildlife species observed within the project areas.

3.3.1.4 Special-status Species

Giant Garter Snakes. No wetland habitat or canals that would support giant garter snakes are within or near the proposed project site.

Rare Plants. Rare plants with the potential to occur within the project area were identified using the California Natural Diversity Database and California Native Plant Society (CNPS) databases and are listed in Attachment 2 to Appendix D. Nine plants species were identified on the Meridian, Grimes, Sutter Buttes, and Tisdale Weir USGS 7.5-minute quadrangles. Eight of the plant species are not likely to occur within the project area because suitable habitat is not present. The well site is adjacent to an active orchard and is routinely maintained through mechanical means such as mowing, agricultural cultivation, and pesticide application.

Although not observed during the site visit, the round-leaved filaree (*California macrophylla*), a CNPS 1B species, has the potential to occur within the project area. CNPS status codes are defined in Attachment 2 (Table 2-1) to Appendix D. Round-leaved filaree occurs in valley and foothill grasslands and cismontane woodlands with clay soils and in disturbed soils.

Fishery Resources. No waterways that support fishery resources are located within the MFWC project area.

Raptors and Migratory Birds. The well site was inspected for raptors and migratory birds and suitable nesting habitat. An active red-tail hawk nest was observed approximately 1,400 feet directly west of the proposed well site. The well site has the potential to support ground- and tree-nesting birds, such as killdeer (*Charadrius vociferus*), red-tailed hawk, and Swainson's hawk during the breeding season. The majority of bird species are protected under the Migratory Bird Treaty Act.

Roosting Bats. No structures or other suitable features were in the vicinity that would provide roosting sites for special-status bat species. Therefore, the proposed well location is not expected to affect roosting bat species.

3.3.2 Environmental Consequences

3.3.2.1 Environmental Commitments Incorporated into the Project

See Section 2.3.5 for specific actions to minimize effects on biological resources.

3.3.2.2 No Action

Under the no action alternative, MFWC would continue to implement its current water management program. Resulting effects on biological resources would be similar to what is presently occurring within the Company's service area.

3.3.2.3 Proposed Action

Construction. Construction within the 0.5-mile buffer of an active Swainson's hawk nest during the nesting season would require adherence to the California Endangered Species Act and would be considered to have an adverse effect. Construction activities within nesting habitat for other special-status bird species could result in a violation of the Migratory Bird Treaty Act, and would be considered to have an adverse effect if not addressed. Adherence to the proposed avoidance and minimization measures would protect nesting bird species that could be affected by the proposed action and would reduce the effect such that no adverse effect would occur on nesting birds.

Operation. There would be no effects on biological resources as a result of operational activities associated with this proposed action.

3.3.2.4 Cumulative Effects

Once construction is complete and the site is restored, the well location would appear largely unchanged from its existing conditions. No substantial cumulative effects on biological resources or sensitive species are anticipated because no effects on these resources are expected from implementing the proposed action.

3.4 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the federal government's responsibility to cultural resources. Section 106 of the NHPA requires the federal government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 *Code of Federal Regulations* (CFR) Part 800. These regulations describe the process that the federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking

would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking would have on historic properties, and consult with the SHPO, to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

3.4.1 Affected Environment

3.4.1.1 Central California Prehistory

The general trend throughout California prehistory has been an increase in human population density over time, coupled with greater sedentism and the use of a greater diversity of food resources. The earliest sites in the Sacramento Valley are Fluted Point Tradition and Western Pluvial Lakes Tradition sites, thought to be 11,500 to 7,500 years old. Following the Fluted Point and Western Pluvial Lakes Traditions in time in central California is a cultural period characterized by what is called the Windmill Pattern. The majority of known Windmill Pattern sites date to approximately 5,000 to 2,250 years ago (Fredrickson, 1974) and are characterized by tools related to hunting, fishing, and milling. The subsequent Berkeley Pattern dates to approximately 2,500 to 1,250 years ago (Fredrickson, 1974), and subsistence relied less on hunting and fishing than the Windmill Pattern and more on acorns. The Augustine Pattern dates from about 1,250 to 250 years ago. Augustine Pattern sites are much more widespread than Berkeley Pattern sites and are characterized by intensive fishing, hunting, and acorn gathering (Fredrickson, 1974).

3.4.1.2 Ethnography

MFWC is located in an area used by both the Patwin and the Nisenan.

There were two major territorial, and possibly linguistic, divisions of the Patwin: the River Patwin and Hill Patwin. The River Patwin occupied the area around Knights Landing and the areas which include the MFWC APE. Many Patwin were subjected to forced missionization or died from epidemics introduced by European trappers in the 1830s. The advent of the Gold Rush further decimated Patwin populations; the 1972 Bureau of Indian Affairs census listed only 11 Patwins (Johnson, 1978).

The Nisenan, also referred to as the Southern Maidu, occupied territory from the west bank of the Sacramento River and throughout the drainages of the Yuba, Bear, and American Rivers. In 1833, large portions of the Nisenan population died in epidemics. In the early 1850s, gold was discovered near one of the villages of the Hill Nisenan, and the area was quickly overrun with thousands of miners. As of the 1970s, a few Hill Nisenan families still lived in their traditional area in the foothills (Wilson and Towne, 1978). The conversion of land and intensive farming practices in and around the APE over the last century has likely disturbed many Native American cultural sites as well as other cultural resources.

3.4.1.3 Historic Era

In 1542, Juan Rodriguez Cabrillo explored the California coast by ship. The Mission Period began with the establishment of Spanish Colonial military outposts. In 1821, Mexico gained independence from Spain, beginning the Mexican Period, and in 1848, the United States formally obtained California in the Treaty of Guadalupe Hidalgo (Cleland, 1962), beginning the American Period.

In 1902, President Theodore Roosevelt signed the federal Reclamation Act, also known as the Newlands Act, which allowed for the federal government to fund and construct irrigation projects in 16 states and territories in the West (Pisani, 2002). The Central Valley Project, originally conceived and designed by the state of California, was intended to move water into the San Joaquin Valley, control flooding in the Sacramento Valley, improve navigation along the major rivers in the Central Valley, and provide hydroelectric power to a number of the state's industries.

The Wright Act of 1887 allowed for the formation of irrigation districts under the democratic control of the water users, and several irrigation districts, including Turlock and Modesto, were created under this act (Paterson, 1989). In the Sacramento Valley, the Central Irrigation District was created under the Wright Act in 1887, and the Browns Valley Irrigation District was created under this act in 1888. Many of the first districts failed. In January 1909, two major storms hit the area around Knight's Landing and the Sacramento rose approximately 20 feet, breaking levees and washing away buildings, railroad tracks, and livestock. This flooding prompted the signing of the California Reclamation Act in 1911 (Dow, 2008). One of the goals of this act was to drain 1.5 million acres of land in nine counties for reclamation. One of these RDs is RD 70. The boundaries of RD 70 include MFWC. The creation of RD 70 was approved on March 21, 1905. MFWC was established in 1926. MFWC now provides water to almost 10,000 acres.

The present character of the APE and its surrounding area north of the town of Meridian seems to derive primarily from the development of agriculture, beginning with the Mexican land grants and progressing through the rural towns and farms of the early 1900s. One of the primary necessities for such development revolved around water, water rights, and the infrastructure to convey that water for the purpose of agricultural and residential development. In the Sacramento Valley, the Central Irrigation District was created under the Wright Act in 1887, and the Browns Valley Irrigation District was created under this act in 1888. Many of the first districts failed. In January 1909, two major storms hit the area around Knight's Landing and the Sacramento River rose approximately 20 feet, breaking levees and washing away buildings, railroad tracks, and livestock. This flooding prompted the signing of the California Reclamation Act in 1911 (Dow, 2008). One of the goals of this act was to drain 1.5 million acres of land in nine counties for reclamation. One of the reclamation districts, RD 70, was approved on March 21, 1905; and its boundaries included MFWC. The original water conveyance framework managed by MFWC was developed as part of RD 70, which was approved in March 1905. MFWC was formed in 1926, and continued operation, maintenance, and further development of the system.

3.4.1.4 Identification Efforts

In an effort to identify historic properties, MFWC contracted CH2M HILL to complete an inventory and evaluation of cultural resources within the APE. CH2M HILL requested a

records search at the Northeast Information Center on May 10, 2011, which identified no previous studies that encompass the APE and no previously recorded resources within or adjacent to the APE. A pedestrian survey of the APE was conducted on April 26, 2011, by CH2M HILL archaeologist Natalie Lawson. One new cultural resource was identified within the APE: one segment of the Railroad Ditch (CH2M HILL, 2011b). The Railroad Ditch was constructed by MFWC in the 1940s as a lateral of the Main Line Canal, which is MFWC's primary conveyance facility. The original water conveyance framework managed by MFWC was developed as part of RD 70. MFWC was formed in 1926, and continued operation, maintenance, and further development of the system. The Railroad Ditch segment within the APE was documented on Department of Parks and Recreation forms.

CH2M HILL applied the National Register criteria of evaluation to the MFWC Railroad Ditch segment and recommended that that the segment within the APE is eligible for listing on the National Register as a contributing element to Railroad Ditch as a whole, assuming the entire canal is eligible, under Criterion A for its association with the history of early settlement, reclamation, and agriculture in Sutter County near the town of Meridian. This segment of the Railroad Ditch has remained a part of the water conveyance system within an agricultural landscape and exhibits the same, or similar, structural design to convey water for agricultural purposes. The check structure has also retained its integrity of location, setting design, workmanship, and association, and still functions as originally intended.

3.4.1.5 Determination of Effects

Reclamation concludes that the well construction project would result in no adverse effects on historic properties pursuant to 36 CFR Part 800.5(b). The proposed project would not alter the characteristics that make the segment of MFWC Railroad Ditch within the APE eligible for inclusion in the National Register. Construction of the new wells would not diminish the integrity of design or appearance of the canal segment. The proposed modifications are consistent with the purpose and function for which the MFWC Railroad Ditch as a whole was built and would not affect the ability to deliver water.

3.4.1.6 Consultation

Reclamation identified the United Auburn Indian Community, Enterprise Rancheria of Maidu Indians, and the Mechoopda Indian Tribe of Chico Rancheria as tribes likely to have knowledge of historic properties in the area and who may attach religious and cultural significance to historic properties affected by the proposed undertaking pursuant to the regulations in 36 CFR Part 800.3(f)(2). Reclamation sent letters to these tribes on August 10, 2011, to invite their assistance in identifying sites of religious and cultural significance pursuant to 36 CFR Part 800.4(a)(4). The Maidu Band of Strawberry Valley Rancheria were identified as an Indian organization likely to have knowledge of historic properties in the area pursuant to the regulations in 36 CFR Part 800.4(a)(3). Reclamation sent letters to request their assistance in identifying historic properties that may be located within the APE. The Mechoopda Indian Tribe responded on August 16, 2011, to notify Reclamation that they have no concerns regarding cultural resources within the APE.

Reclamation will consult with the SHPO regarding a finding of no adverse effects on historic properties pursuant to 36 CFR Part 800.5(b). Concurrence from the SHPO to conclude the Section 106 compliance process is pending.

3.4.2 Environmental Consequences

3.4.2.1 No Action

Under the No Action Alternative, there would be no impacts to cultural resources because the well would not be constructed and there would be no change in operations. Conditions related to cultural resources would remain the same as existing conditions.

3.4.2.2 Proposed Action

The Proposed Action is the type of activity that has the potential to affect historic properties. A records search, a cultural resources survey, and Tribal consultation identified historic properties within the APE. Project activities would not adversely affect historic properties pursuant to 36 CFR Part 800.5(b). Constructing the proposed well and connecting the discharge pipeline to the MFWC railroad would not diminish the structural integrity and would not adversely affect the historic characteristics that make the canal eligible for listing on the National Register under Criterion A. The function of the canal would not change. Because no historic properties would be adversely affected, no cultural resources would be affected as a result of implementing the proposed action. Concurrence from the SHPO to conclude the Section 106 compliance process is pending.

3.4.2.3 Cumulative Effects

The proposed action has the potential to affect cultural resources. Because Reclamation determined that no historic properties would be adversely affected, no cultural resources would be affected as a result of implementing the proposed action. Reclamation will consult with SHPO regarding this determination. The project would not be implemented until the Section 106 compliance process is complete.

3.5 Indian Trust Assets

ITAs are legal interests in assets that are held in trust by the United States government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. “Assets” are anything owned that holds monetary value. “Legal interests” means there is a property interest for which there is a legal remedy, such as compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. ITAs cannot be sold, leased, or otherwise alienated without the United States’ approval. Trust assets may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITAs may be located off trust land.

Reclamation shares the ITA responsibility with the other agencies of the Executive Branch to protect and maintain ITAs reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

3.5.1 Affected Environment

No ITAs are located in the vicinity of the project area.

3.5.2 Environmental Consequences

3.5.2.1 No Action

There would be no effects on ITAs because conditions under the no action alternative would remain the same as existing conditions.

3.5.2.2 Proposed Action

There would be no effects on ITAs because there are none in the proposed action area.

3.5.2.3 Cumulative Effects

Because no ITAs are within the proposed action location, there would be no adverse cumulative effects on ITAs.

3.6 Environmental Justice

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” dated February 11, 1994, requires agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minorities and low-income populations and communities, as well as the equity of the distribution of the benefits and risks of their decisions. Environmental justice addresses the fair treatment of people of all races and incomes with respect to actions affecting the environment. Fair treatment implies that no group of people should bear a disproportionate share of negative effects from an environmental action. To comply with the environmental justice policy established by the Secretary of the Interior, U.S. Department of Interior agencies are to identify and evaluate any anticipated effects, direct or indirect, from a proposed project, action, or decision affecting minority and low-income populations and communities, including the equity of the distribution of the benefits and risks. Accordingly, this section examines the anticipated effects associated with the alternatives with respect to potentially affected minority and economically disadvantaged groups.

3.6.1 Affected Environment

MFWC is located in Sutter County. In 2009, the U.S. Census reported a total population in Sutter County of 92,614. The vast majority of people living in Sutter County are white (approximately 79 percent). Persons of Latino or Hispanic origin and Asian persons make up most of the remaining population in the county. Most of Sutter County’s population is located in Yuba City.

The unemployment rate in Sutter County was reported to be approximately 21.5 percent in 2010, which was significantly higher than the state estimate of 12.3 (California Employment

Development Department [EDD], 2011). The medium household income for Sutter County was \$49,146, less than California's medium income level of \$61,017. The 2008 estimated poverty level in Sutter County was at 15.5 percent, more than 2 percent higher than in the rest of the state.

The 2007 Census of Agriculture reported that of the 2,028 farms in Sutter County, 167 of them were principally operated by women, and 175 were principally operated by Spanish, Hispanic, or Latino operators. Most farms in the county were reported as operated by whites (1,639 farms), with the next highest number of farms (353 farms) operated by Asians. The market value of products sold in Sutter County in 2007 was \$317,607,000, with the majority of the sales occurring for crops (U.S. Department of Agriculture, 2007).

3.6.2 Environmental Consequences

3.6.2.1 No Action

Under the no action alternative, general employment, income, and demographic trends would continue. The no action alternative would not alter these trends and so would have no effect on environmental justice.

3.6.2.2 Proposed Action

Construction activities associated with the proposed action would require a local or regional contractor, who would likely employ local or regional workers. Also, if workers were temporarily relocated into the area during the construction phase, the construction effort would likely result in local expenditures for lodging, food, and construction-related materials and equipment. Accordingly, construction-related environmental justice effects are expected to be positive; no adverse effects would occur.

Implementing the proposed action would increase the reliability of the water supply, resulting in beneficial effects on agricultural production-related employment. Increased reliability of supply would lessen one uncertainty in farm production in MFWC, which could result in increased agricultural job security. Accordingly, project-related environmental justice effects are expected to be positive; no adverse effects would occur.

3.6.2.3 Cumulative Effects

There would be no resulting cumulative environmental justice effects as a result of the proposed action.

3.7 Socioeconomic Resources

3.7.1 Affected Environment

3.7.1.1 Population and Housing

Historical trends in population since 1990 for Yuba City, Sutter County, and the state of California are shown in Table 3-3. Population trends indicate that the Yuba City has had a higher percentage of growth, especially from 2000 to 2010, than Sutter County. Annexations represent a significant share of Yuba City's population growth (Yuba City, 2004). In 2009, there were an estimated 33,480 housing units in Sutter County.

TABLE 3-3
Population Estimates and Growth in Yuba City, Sutter County, and the State of California

Area Evaluated	Population Estimates			Average Growth
	1990	2000	2010	
Yuba City	27,385	36,758	65,372	35%
Sutter County	64,415	78,930	99,154	19%
California	29,758,213	33,873,086	38,648,090	12%

Source: California Department of Finance, 2010.

3.7.1.2 Economic Base

Table 3-4 provides the employment profile for Sutter County compared to the State of California, as of December 2009.

TABLE 3-4
Employment Profile for Sutter County and the State of California

Area	Total Civilian Labor Force	No. of Employed (Civilian)	No. of Unemployed (Civilian)	Unemployment Percentage	Total Farm	Total Non-farm
Sutter County	41,800	33,600	8,200	19.5	5,200	36,600
California	18,366,300	16,025,600	2,340,700	12.7	423,000	13,782,800

Source: EDD, 2011.

The reported unemployment rate for Sutter County is higher than the state average. Estimated employment by industry for the county, compared to California, as of July 2010, is shown in Table 3-5.

TABLE 3-5
Sutter County and State of California Employment by Industry Sector, December 2009

Industry ^a	Sutter County Employment		California Employment	
	Total	Percent of Total	Total	Percent of Total
Total, All Industries	25,400		14,205,800	
Total Farm	2,200	9	423,000	3
Total Non-farm	23,200	91	13,782,800	97
Goods Producing	2,500	10	1,835,100	13
Mining and Logging	200	1	26,200	0.2
Construction	1,000	4	563,100	4
Manufacturing	1,300	5	1,245,800	9
Service Providing	20,700	81	11,947,700	84
Information	300	1	447,400	3

TABLE 3-5
Sutter County and State of California Employment by Industry Sector, December 2009

Industry ^a	Sutter County Employment		California Employment	
	Total	Percent of Total	Total	Percent of Total
Financial Activities	1,000	4	780,100	5
Professional & Business Services	1,900	7	2,052,000	14
Educational & Health Services	3,800	15	1,726,600	12
Leisure & Hospitality	2,400	9	1,509,800	11
Other Services	700	3	481,900	3
Government	4,700	19	2,375,700	17

^aIndustry employment is by place of work; excludes self-employed individuals, unpaid family workers, household domestic workers, and workers on strike.

Source: EDD, 2010.

Most of the workforce in both Sutter County and the state of California is in the service industry. Compared to the state, Sutter County has the larger per capita percentage of farm employment, representing 9 percent of the total industry employment.

3.7.2 Environmental Consequences

3.7.2.1 Assessment Methods

Potential effects on socioeconomic resources were identified by how the implementation of the proposed action could alter existing socioeconomic conditions either locally or regionally. The extent of the potential socioeconomic effect that could occur is related to the operation of the groundwater production well and associated drawdown and pumping costs. To estimate the potential effects on socioeconomic resources, the potential increase in pumping costs per ac-ft of lift was estimated for electric and diesel pumps using a pumping cost formula (Anderson, 1961) in combination with the anticipated maximum increment of anticipated additional drawdown/pumping. For electric pumps, the estimated cost per ac-ft is approximately \$0.38 for 1 foot of lift. Dollars per kilowatt-hour are based on an average of the estimated blended rates published by Pacific Gas and Electric Company for small agricultural users, \$0.26 per kilowatt-hour (Pacific Gas and Electric Company, 2011). Estimated cost per ac-ft for diesel pumps is also projected to be approximately \$0.38 for 1 foot of lift. The price of diesel fuel per gallon was obtained from the *Monthly Retail On-Highway Diesel Prices for California* (U.S. Department of Energy, 2011). For the last 5 years, ending in April 2011, the average price of a gallon of diesel fuel was \$3.22. Pump efficiency is assumed to be 82 percent and motor efficiency 85 percent for both electric and diesel pumps.

Table 3-6 shows the estimated increase in pumping costs per ac-ft of groundwater for the range of groundwater surface elevations changes anticipated to occur during operation of the proposed well (see Section 3.1, Water Resources). The estimated increase in pumping costs would be highest adjacent to the well because this is where drawdown would be the

greatest. The magnitude of costs would decrease with increased distance from the production well.

TABLE 3-6
Estimated Increase in per-ac-ft Pumping Costs

Energy Type	Pumping Cost per ac-ft	
	10-foot Elevation Change	15-foot Elevation Change
Electric	\$3.77	\$5.65
Diesel	\$3.85	\$5.77

Note:

Although the cost per ac-ft per foot of lift is the same for both pump types, variation occurs when evaluating a range of lift due to rounding.

3.7.2.2 No Action

In general, agricultural economies in the proposed action area are not anticipated to substantially change. It is anticipated that some lands, primarily those near urban areas in Sutter County, would be converted to non-agricultural use, in accordance with local general plans and zoning constraints. However, conditions under the no action alternative would generally reflect current conditions.

3.7.2.3 Proposed Action

Construction. Construction of the production well associated with the proposed action would result in temporary beneficial effects as a result of increased labor needs for construction and increased spending at local businesses. Small construction crews would work for specific periods, resulting in increased spending by workers at local businesses and local suppliers. Additionally, materials and equipment needed for construction, as well as actual facilities materials (such as pumps, piping, and motors), would be obtained from the project area wherever feasible and available. Construction of the proposed action would result in minor beneficial effects on the local economy.

Operation. Increased drawdown in the vicinity of the groundwater production well is anticipated to increase groundwater pumping costs. The projected shallow aquifer drawdown resulting from implementation is expected not to exceed 18.5 feet at 0.25 mile from the proposed well, with drawdown decreasing as distance from the proposed groundwater production well increases.

Effects on socioeconomic conditions would be significant if the proposed action resulted in displacement of a business or residence from its established location or resulted in substantial disruption of existing agricultural operations. The potential significance of the increase in groundwater pumping costs was based on the change in groundwater pumping costs relative to baseline agricultural conditions. The average operating cost, net revenue, groundwater, and applied water use was estimated for agricultural production in the study area (Table 3-7).

TABLE 3-7
Agricultural Conditions in the Study Area

Agricultural Conditions	Parameter
Percent of Crop Water Demand Met with Groundwater ^a	28
Average Agricultural Operating Costs ^b	\$1,654 per acre
Average Agricultural Net Revenue ^c	\$720 per acre
Average Agricultural Applied Water Use ^d	3.36 ac-ft per acre

^aDWR, 2010.

^bUniversity of California – Davis, 2011; DWR, 2007.

^cUniversity of California – Davis, 2011; DWR, 2007; U.S. Department of Agriculture, 2011.

^dDWR, 2007.

The percentage of groundwater used to meet total crop demand and crop type would create varying effects. However, on average the estimated increases in operating costs resulting from increased pumping costs would be less than 1 percent. Increases in operation costs would be only local in nature.

Land surrounding the proposed groundwater production wells is primarily agricultural; however, domestic wells in the study area could also be affected. The average annual water use per household is typically less than 1 ac-ft/yr (DWR, 2010). The change in groundwater pumping costs would at most increase domestic water use costs for a typical household by less than \$6.00 a year which represents less than 1 percent of median household income in the study area (U.S. Census Bureau, 2011).

The relatively minimal increase in pumping costs would not be expected to threaten the economic viability of crop production or adversely affect groundwater pumping for domestic use. Effects would be limited to the local area; no regional effects would occur. The area affected by the proposed action would remain productive farmland, despite a marginal increase in pumping costs, and the proposed action would not adversely affect socioeconomic resources.

3.7.2.4 Cumulative Effects

The proposed action would likely result in small but beneficial social and economic effects during the construction phase. No substantial cumulative socioeconomic effects are anticipated because no effects on this resource are expected from the implementation of the proposed action.

3.8 Air Quality

3.8.1 Affected Environment

The proposed action is located in Sutter County, which is within the FRAQMD. FRAQMD regulates air quality within Sutter and Yuba Counties. Sutter County lies within the

Sacramento Valley Air Basin, which is bordered by mountain ranges to the west, north, and east, and has prevailing winds that generally blow from the south to the north.

Table 3-8 summarizes the attainment status for Sutter County. The *Sutter County General Plan Draft Environmental Impact Report* (Sutter County, 2010a) states the following:

...a wide variety of activities contribute to the emission of criteria air pollutants including fuel combustion, petroleum production, farming operations, and motor vehicles. Other contributions come from waste disposal, cleaning and surface coatings, solvent evaporation, and natural sources. Natural sources make up approximately five percent of Sutter County's emissions totals. It should also be noted that farming operations in Sutter County contribute approximately 42 percent to the total PM emissions (11.51 tons of PM per day from farming operations with 27.26 tons of PM per day for the entire county).

TABLE 3-8
Attainment Status for Sutter County

Pollutant	Designation/Classification	
	State Standard	Federal Standard
Ozone – 1-hour	<ul style="list-style-type: none"> – Southern portion of county: serious nonattainment – Remaining: nonattainment – transitional 	NA
Ozone – 8-hour	Nonattainment – transitional	<ul style="list-style-type: none"> – Southern portion of county: severe nonattainment – Sutter Buttes >2,000 feet: nonattainment – Remaining: unclassified/attainment
PM ₁₀	Nonattainment	Unclassified
PM _{2.5}	Attainment	Nonattainment
CO	Attainment	Unclassified/attainment
NO ₂	Attainment	Unclassified/attainment
SO ₂	Attainment	Unclassified/attainment
Sulfates	Attainment	NA
Lead (Particulate)	Attainment	NA
Hydrogen Sulfide	Unclassified	NA
Visibility-reducing Particles	Unclassified	NA

Source: FRAQMD, 2010a.

Notes:

CO = carbon monoxide
 NA = not applicable
 NO₂ = nitrogen dioxide
 PM_{2.5} = particulate matter 2.5 micrometers or less in aerodynamic diameter
 PM₁₀ = particulate matter 10 micrometers or less in aerodynamic diameter
 SO₂ = sulfur dioxide

3.8.1.1 Federal Regulations

The federal Clean Air Act (CAA) requires EPA to establish and maintain national ambient air quality standards that are used to manage air quality across the country. Pollutants for which standards have been established are termed “criteria” pollutants, because the standards are based on criteria that show a relationship between pollutant concentrations and effects on health and welfare. EPA and the state establish acceptable pollutant concentration levels to serve as ambient air quality standards (see Table 3-9).

If ambient concentrations of any of the criteria pollutants in an area exceed the state or federal standards established for those pollutants, the area is designated a “nonattainment” area. The CAA requires states with nonattainment areas to develop plans, known as State Implementation Plans (SIP), that describe the measures the state would take to achieve attainment with national ambient air quality standards. In California, local air districts and other agencies prepare SIP elements for the areas under their regulatory jurisdiction and submit these elements to CARB for review and approval. CARB incorporates the individual air district elements into a statewide SIP, and the plan is then submitted to EPA for approval and publication in the *Federal Register*.

Air quality management districts or air pollution control districts issue permits to construct and operate stationary emission sources and implement regulations for new or modified stationary emission sources. Air boundaries are based on meteorological and geographic conditions and, where possible, jurisdictional boundaries such as county lines. Mobile sources, such as vehicles, and off-road engines, such as construction equipment and agricultural pump engines, are subject to emissions standards developed by EPA and CARB.

3.8.1.2 General Conformity

The General Conformity rule was established under Section 176(c) of the CAA and assures that federal activities in nonattainment and maintenance areas meet the federal air quality standards. Under the conformity provisions of the CAA, no federal agency can approve a project unless the project has been demonstrated to conform to the applicable SIP. These conformity provisions were put in place to make sure that federal agencies would contribute to the efforts of attaining the national ambient air quality standards. EPA has issued two types of conformity guidelines: transportation conformity rules that apply to transportation plans and projects, and general conformity rules that apply to other federal actions. A conformity determination⁶ is only required for the alternative that is ultimately selected and approved. A project is assumed to conform if the total net project-related emissions are less than the de minimis thresholds established by the rule. A project that produces emissions that exceed conformity thresholds is required to demonstrate conformity with the SIP through mitigation or other accepted practices. The de minimis thresholds applicable to the proposed action are presented in Table 3-10.

⁶A conformity determination is a process that demonstrates how an action would conform to the applicable SIP. If the emissions cannot be reduced sufficiently, and if air dispersion modeling cannot demonstrate conformity, then either a plan for mitigating or a plan for offsetting the emissions would need to be pursued.

TABLE 3-9
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards ^a	National Standards ^b	
			Primary ^c	Secondary ^d
Ozone	1-hour	0.09 ppm	---	Same as primary
	8-hour	0.070 ppm	0.075 ppm	
PM ₁₀	24-hour	50 µg/m ³	150 µg/m ³	Same as primary
	Annual arithmetic mean	20 µg/m ³	---	
PM _{2.5}	24-hour	---	35 µg/m ³	Same as primary
	Annual arithmetic mean	12 µg/m ³	15.0 µg/m ³	
CO	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	
NO ₂	Annual arithmetic mean	0.030 ppm	0.053 ppm (100 µg/m ³)	Same as primary
	1-hour	0.18 ppm	0.100 ppm (188 µg/m ³)	None
SO ₂	24-hour	0.04 ppm	---	---
	1-hour	0.25 ppm	0.075 ppm (196 µg/m ³)	---
Lead	30-day average	1.5 µg/m ³	---	---
	Calendar quarter	---	1.5 µg/m ³	Same as primary
	Rolling 3-month average	---	0.15 µg/m ³	
Visibility-reducing Particles	8-hour	See Note e	---	---
Sulfates	24-hour	25 µg/m ³	---	---
Hydrogen Sulfide	1-hour	0.03 ppm	---	---
Vinyl Chloride	24-hour	0.01 ppm	---	---

^aCalifornia standards for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), NO₂, and suspended particulate matter (PM₁₀, PM_{2.5}, and visibility-reducing particles) are values that are not to be exceeded. Others are not to be equaled or exceeded.

^bNational standards, other than ozone, particulate matter, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once per year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, is equal to or less than the standard.

^cNational Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

^dNational Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

^eIn sufficient amounts to produce an extinction coefficient of 0.23 per kilometer due to particles, when the relative humidity is less than 70 percent.

Notes:

-- = no established standard

µg/m³ = microgram per cubic meter

ppm = parts per million (by volume)

TABLE 3-10
General Conformity De Minimis Thresholds Applicable to the Proposed Action

Pollutant	Attainment Status Designation	De Minimis Rates (tons per year)
PM _{2.5}	Nonattainment	100
NO _x	Precursor to PM _{2.5}	100

Sources: 40 CFR 93.153 and EPA, 2010a.

Notes:

The proposed action is located in the northern portion of Sutter County that is designated as unclassified/attainment of the federal ozone standard.

NO_x = nitrogen oxide

3.8.2 Environmental Consequences

3.8.2.1 Environmental Commitments Incorporated into the Project

See Section 2.3.6 for specific actions to minimize potential air quality effects.

3.8.2.2 No Action

Under the no action alternative, MFWC would continue to implement its current water management program. Groundwater use each year and the resulting effects on air quality would remain the same as existing conditions and would vary by year type.

3.8.2.3 Proposed Action

Construction. Air quality effects were evaluated in terms of daily and annual emissions from construction activities. Construction activities such as excavation, grading, and vehicle travel would create a short-term increase in PM₁₀ and PM_{2.5} from dust and exhaust emissions. Exhaust emissions of NO_x and reactive organic gases (ROG) from construction can contribute to ozone formation. Emissions were estimated for construction of the production well. Construction was assumed to occur over a 30-day period. Construction equipment emissions were estimated using URBEMIS2007 (Rimpo and Associates, 2007). Emissions from vehicles, such concrete trucks, were estimated using EMFAC2007 emission factors. It was assumed that 1 acre would be disturbed for the well construction.

Appendix E contains the construction emission calculations and URBEMIS2007 output.

Construction emissions were evaluated by comparison to the FRAQMD threshold levels and the applicable general conformity de minimis threshold levels (FRAQMD, 2010b). The daily and annual construction emissions are presented in Tables 3-11 and 3-12, respectively. The average daily and annual construction emissions would be fewer than the FRAQMD threshold levels; therefore, construction of the proposed action would not have an adverse effect on air quality. In addition, annual emissions would be less than the general conformity de minimis threshold levels; therefore, the proposed action does not require a conformity determination.

TABLE 3-11
Average Daily Construction Emissions

Emission Source	Emissions (lb/day)			
	NO _x	ROG	PM ₁₀	PM _{2.5}
Construction Activities	15	2	14	4
FRAQMD Threshold ^a	25	25	80	NA

^aThe FRAQMD threshold for NO_x and ROG emissions from construction is 25 lb/day averaged over the project length.

Notes:

lb/day = pounds per day

NA = not applicable

TABLE 3-12
Annual Construction Emissions

Emission Source	Emissions (tons/year)			
	NO _x	ROG	PM ₁₀	PM _{2.5}
Construction Activities	0.23	0.03	0.21	0.05
General Conformity De Minimis Threshold	100	NA	NA	100
FRAQMD Threshold ^a	0.375	0.375	NA	NA

^aThe FRAQMD threshold for NO_x and ROG emissions from construction is 25 lb/day averaged over the project length, not to exceed 4.5 tons/year. For the proposed action, this equates to an allowable rate of 0.375 tons/year (25 lb/day * 30 day project length * 1 ton/2000 lb).

Note:

NA = not applicable

Operation. Operation of the MFWC production well would require electricity to operate the pump; however, this would not generate onsite emissions. Therefore, the proposed action would not have an adverse effect on air quality.

3.8.2.4 Cumulative Effects

Construction of the proposed action would result in a minor, short-term increase in emissions, fewer than the applicable threshold levels (see Table 3-12). Therefore, construction would not have a adverse, cumulative effects on air quality. Operation of the project involves operation of an electric-powered pump and would not result in an adverse, cumulative effect on air quality.

3.9 Global Climate Change

3.9.1 Affected Environment

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from the following (EPA, 2011):

- Natural factors, such as changes in the sun's intensity or slow changes in Earth's orbit around the sun
- Natural processes within the climate system (such as changes in ocean circulation)
- Human activities that change the atmosphere's composition (such as through burning fossil fuels) and the land surface (such as deforestation, reforestation, urbanization, and desertification)

Greenhouse gases (GHG) include the following pollutants (EPA, 2011):

- Carbon dioxide (CO₂) is a naturally occurring gas, and also is a by-product of burning fossil fuels and biomass, as well as land use changes and other industrial processes. It is the principal anthropogenic GHG that affects Earth's radiative balance.
- Methane (CH₄) has a global warming potential approximately 20 times that of CO₂. CH₄ is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.
- Nitrous oxide has a global warming potential approximately 300 times that of CO₂. Major sources of nitrous oxide (N₂O) are soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.
- Hydrofluorocarbons (HFC) are compounds containing only hydrogen, fluorine, chlorine, and carbon. HFCs have been introduced as a replacement for the chlorofluorocarbons identified as ozone-depleting substances.
- Perfluorocarbons (PFC) are compounds containing only fluorine and carbon. Similar to HFCs, PFCs have been introduced as a replacement for chlorofluorocarbons. PFCs are also used in manufacturing and emitted as by-products of industrial processes. PFCs are powerful GHGs.
- Sulfur hexafluoride (SF₆) is a colorless gas soluble in alcohol and ether, and slightly soluble in water. A very powerful GHG used primarily in electrical transmission and distribution systems, as well as dielectrics in electronics.

3.9.1.1 Regulatory Background – Federal

The EPA Mandatory Reporting Rule became effective on December 29, 2009, and sources required to report were to begin collecting data on January 1, 2010 (EPA, 2009). In general, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of carbon dioxide equivalent (CO₂e)

emissions are required to submit annual reports to EPA. The EPA reporting requirements continue to be updated.

In addition, the Supreme Court decision in *Massachusetts et al. v. Environmental Protection Agency et al.* (Supreme Court Case 05-1120) found that EPA has the authority to list GHGs as pollutants and to regulate emissions of GHGs under the CAA. On April 17, 2009, EPA found that CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆ may contribute to air pollution and may endanger public health and welfare.

3.9.1.2 Regulatory Background – State and Regional

In 2006, the California state legislature signed the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), which provides the framework for regulating GHG emissions in California under AB 32. This law requires CARB to design and implement emission limits, regulations, and other measures such that statewide GHG emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020. The statewide 2020 emissions limit is 427 million metric tons of CO₂e (CARB, 2007). CO₂ emissions account for approximately 90 percent of the statewide GHG emissions (CARB, 2007). CH₄, N₂O, HFCs, PFCs, and SF₆ account for the remainder of the statewide GHG emissions (CARB, 2007).

Part of CARB's direction under AB 32 was to develop a scoping plan that contains the principal strategies that the state would use to reduce GHG emissions that cause climate change. The scoping plan includes a range of actions, which include direct regulations, alternative compliance mechanisms, monetary and nonmonetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 cost of implementing fee regulation to fund the program (CARB, 2008). The first regulation that CARB adopted pursuant to AB 32 was the regulation requiring mandatory reporting of GHG emissions. This regulation requires large industrial sources emitting more than 25,000 metric tons of CO₂ per year to report and verify their GHG emissions from combustion of both fossil fuels and biomass-derived fuels.

Sutter County has prepared a climate action plan to address reducing GHG emissions as part of the County's land use planning (Sutter County, 2010b). The plan contains a range of reduction measures that include state-mandated energy efficiency requirements along with other types of energy-efficient construction techniques, such as installation of energy-efficient lighting, windows, water heaters, light-colored paving, and planting trees.

3.9.2 Environmental Consequences

3.9.2.1 No Action

Under the no action alternative, MFWC would continue to implement its current water management program. Groundwater use each year and the resulting effects on global climate change would remain the same as existing conditions and would vary by year type.

3.9.2.2 Proposed Action

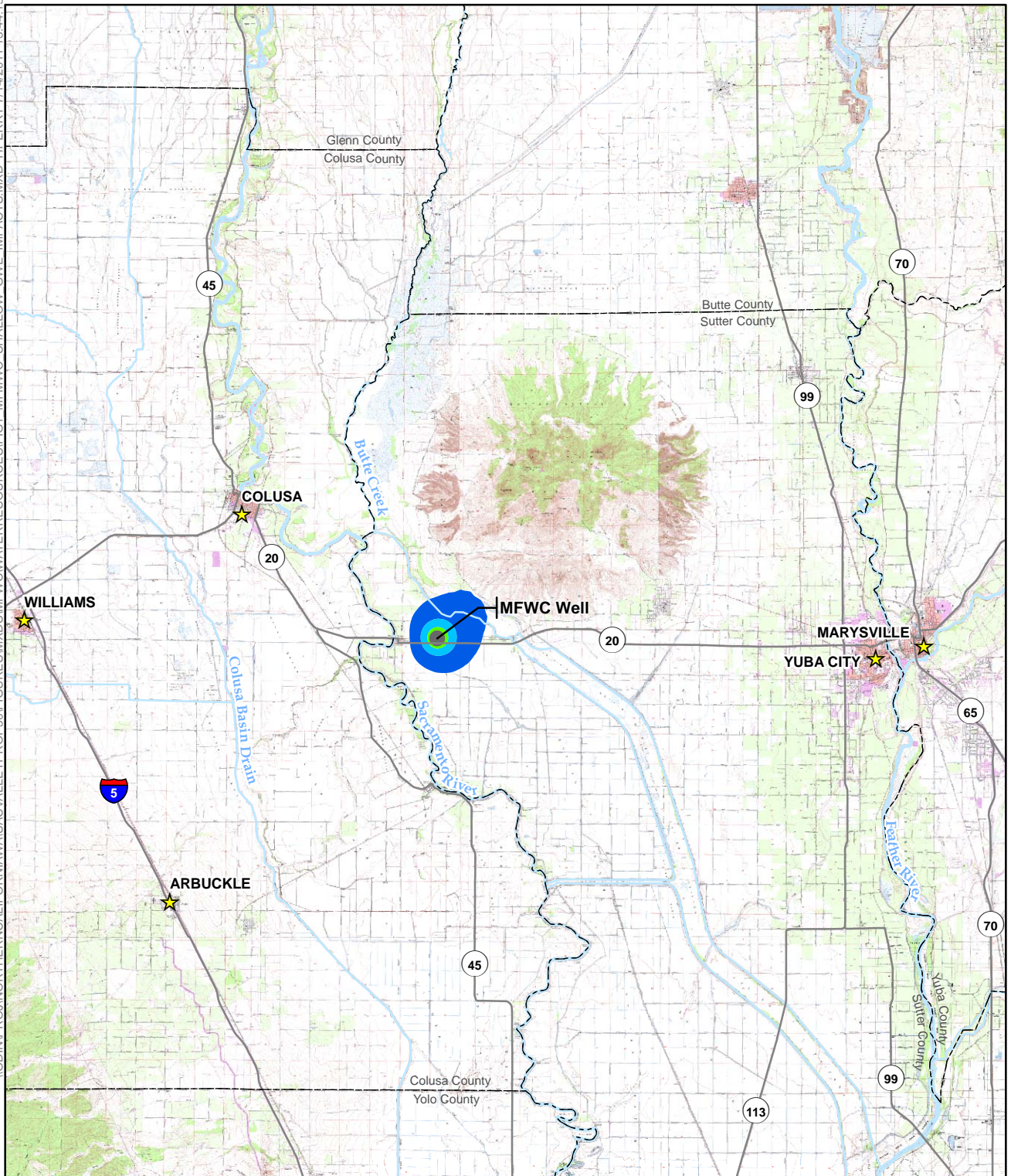
Construction and operation of the proposed action may generate GHG emissions. Construction would include activities that emit GHGs, such as the use of heavy equipment and vehicles. Construction would result in a minor, short-term increase in GHG emissions (total of approximately 32 metric tons of CO₂). Operation of the proposed action would

include use of an electrically operated pump. Operation of the MFWC production well is not expected to generate additional indirect GHGs, associated with the electricity used to operate the pump, to the extent that they would cause an adverse effect. Based on the draft NEPA guidance for considering direct GHG emissions, a value of 25,000 metric tons of CO₂e would be an indication of whether a qualitative or quantitative assessment may be meaningful for decision makers under NEPA (Council on Environmental Quality, 2010). Emissions from electricity use are considered indirect emissions; the proposed action would not include a direct GHG emissions source, such as an onsite stationary source. Therefore, construction and indirect emissions from the electricity use for operation of the MFWC production well would be less 25,000 metric tons of CO₂e and would not have an environmental effect.

3.9.2.3 Cumulative Effects

The proposed action would not result in cumulatively considerable effects on global climate change. Construction would result in a short-term increase in GHG emissions, and operation would create a small increase in indirect GHG emissions.

\\ODINPROJ\NORTHERN\CALIFORNIA\WASAC\VALLEY\PROP50\FIGURES\MXDS\MFWC\WATERRESOURCES\FIG1 MFWC SHALLOW GWE IMPACTS.MXD HPERRY 7/14/2011 13:44:19



LEGEND

- 0.25-MILE BUFFER
- ★ CITY
- MAJOR WATERWAY
- - - COUNTY BOUNDARY
- INCREMENTAL DRAWDOWN (feet)
- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 30

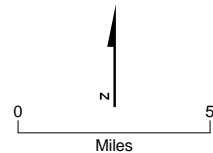
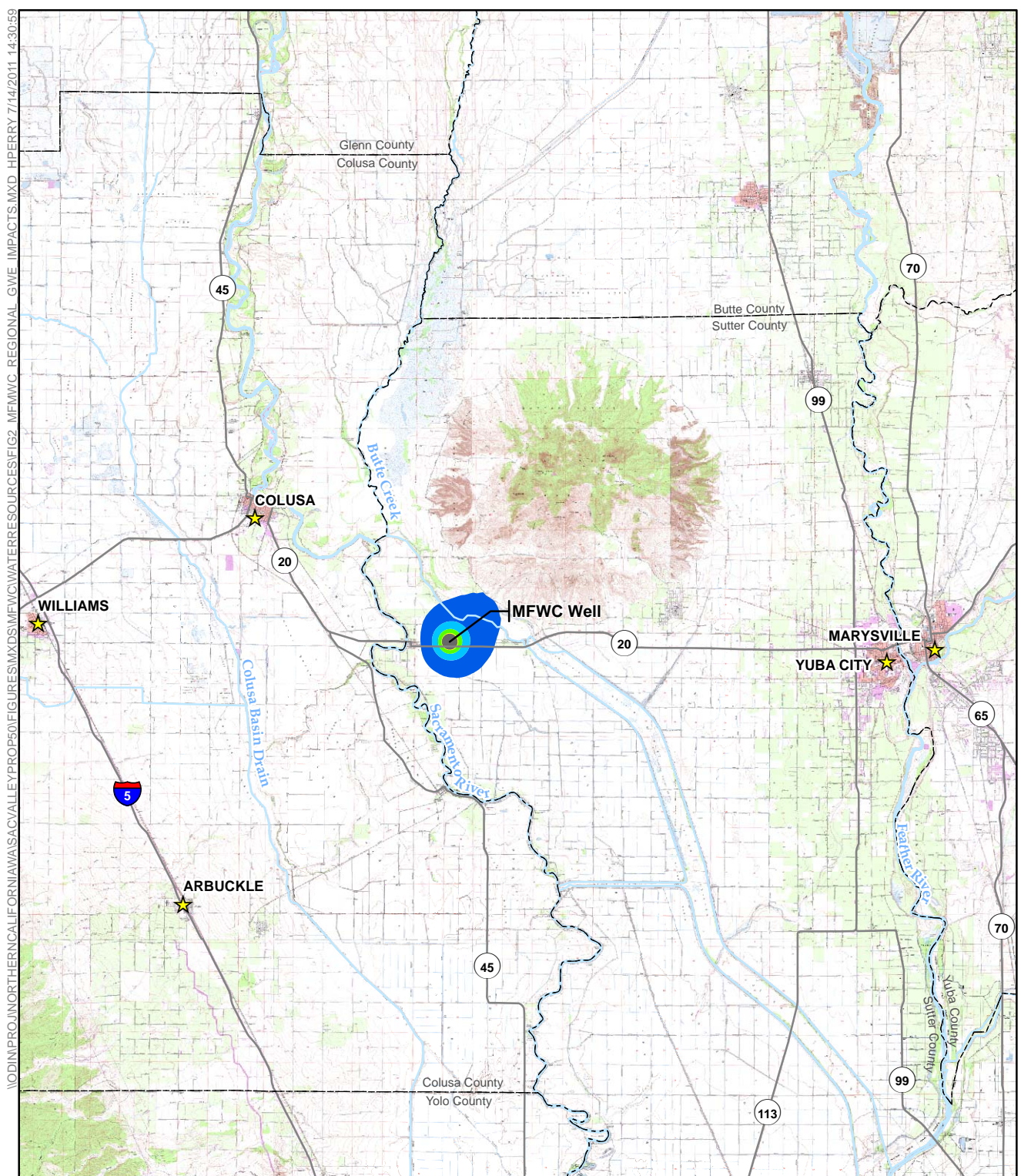











FIGURE 3-1
LOCAL IMPACTS
FORECAST SHALLOW AQUIFER DRAWDOWN
EA/IS AND FONSI/MND FOR MFWC
GROUNDWATER PRODUCTION ELEMENT PROJECT



LEGEND

-  0.25-MILE BUFFER
 CITY
 MAJOR WATERWAY
 COUNTY BOUNDARY
INCREMENTAL DRAWDOWN (feet)
 5 to 10
 10 to 15
 15 to 20
 20 to 25
 25 to 30

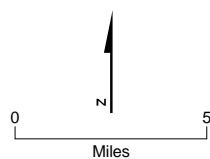
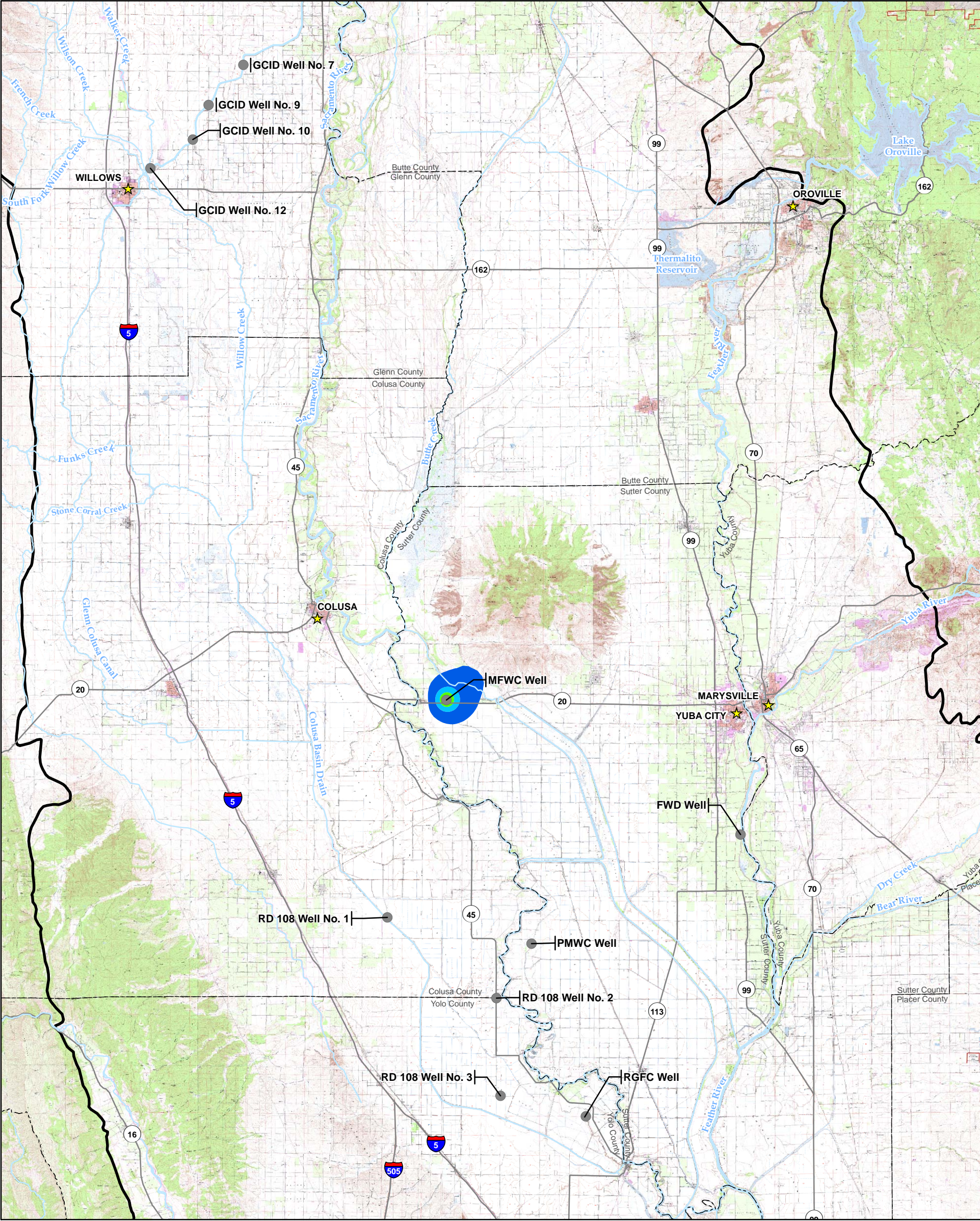


FIGURE 3-2
LOCAL IMPACTS
FORECAST REGIONAL AQUIFER DRAWDOWN
EA/IS AND FONSI/MND FOR MFWC
GROUNDWATER PRODUCTION ELEMENT PROJECT

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LEGEND

- 0.25-MILE BUFFER
- ★ CITY
- MAJOR WATERWAY
- - - COUNTY BOUNDARY
- ▭ SACRAMENTO VALLEY GROUNDWATER BASIN

INCREMENTAL DRAWDOWN (feet)

- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 30

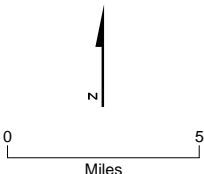


FIGURE 3-3
CUMULATIVE IMPACTS
FORECAST SHALLOW AQUIFER DRAWDOWN
EA/IS AND FONSI/MND FOR MFWC
GROUNDWATER PRODUCTION ELEMENT PROJECT

I:\ODIN\PROJ\NORTH\CA\I\ORNA\VA\SAC\VALLEY\PROP50\FIGURES\MXD\MFWC\WATER\SOURCES\FIG4_CUMULATIVE_DRAWDOWN\MID.MXD HPERRY 7/29/2011 12:34:08

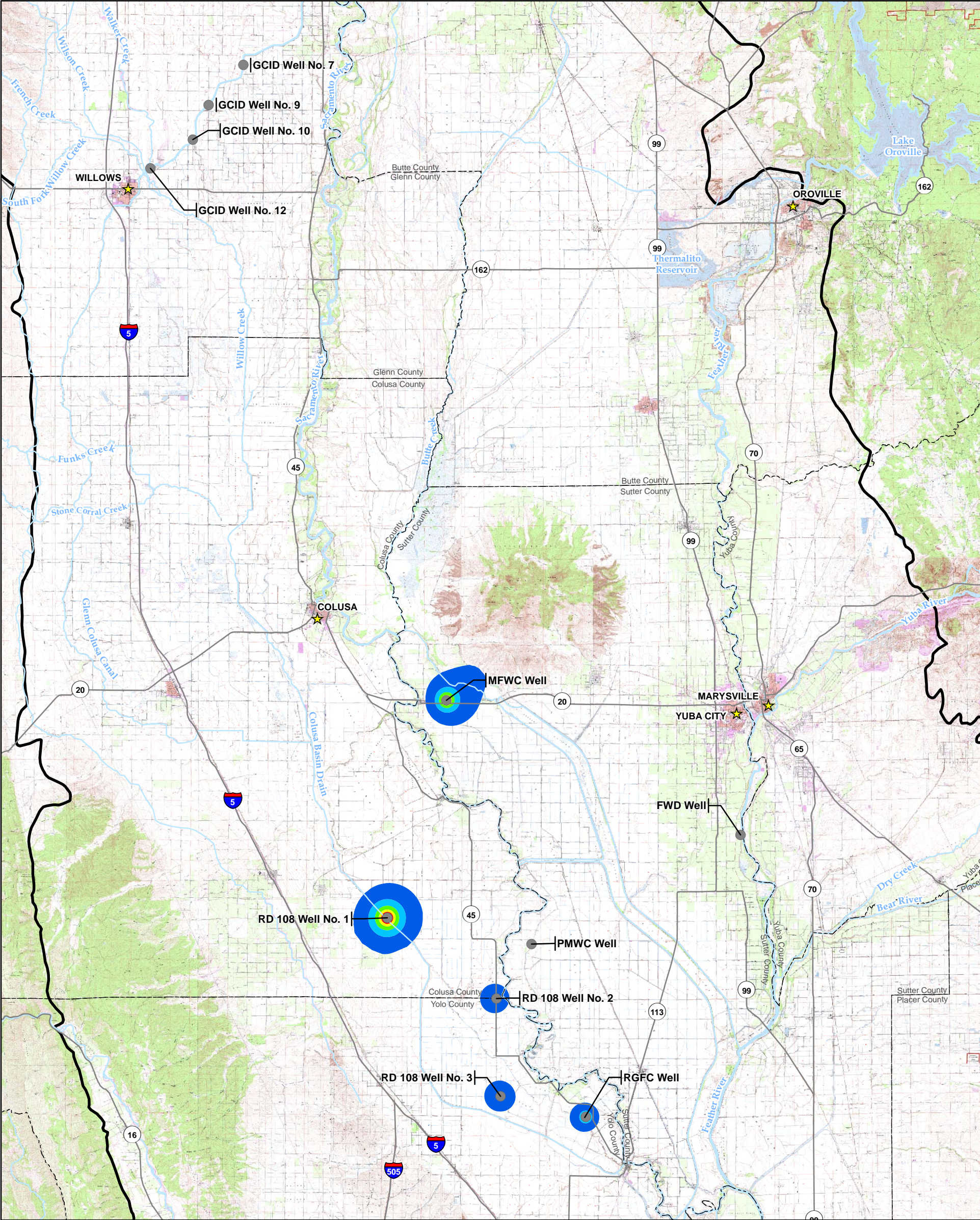
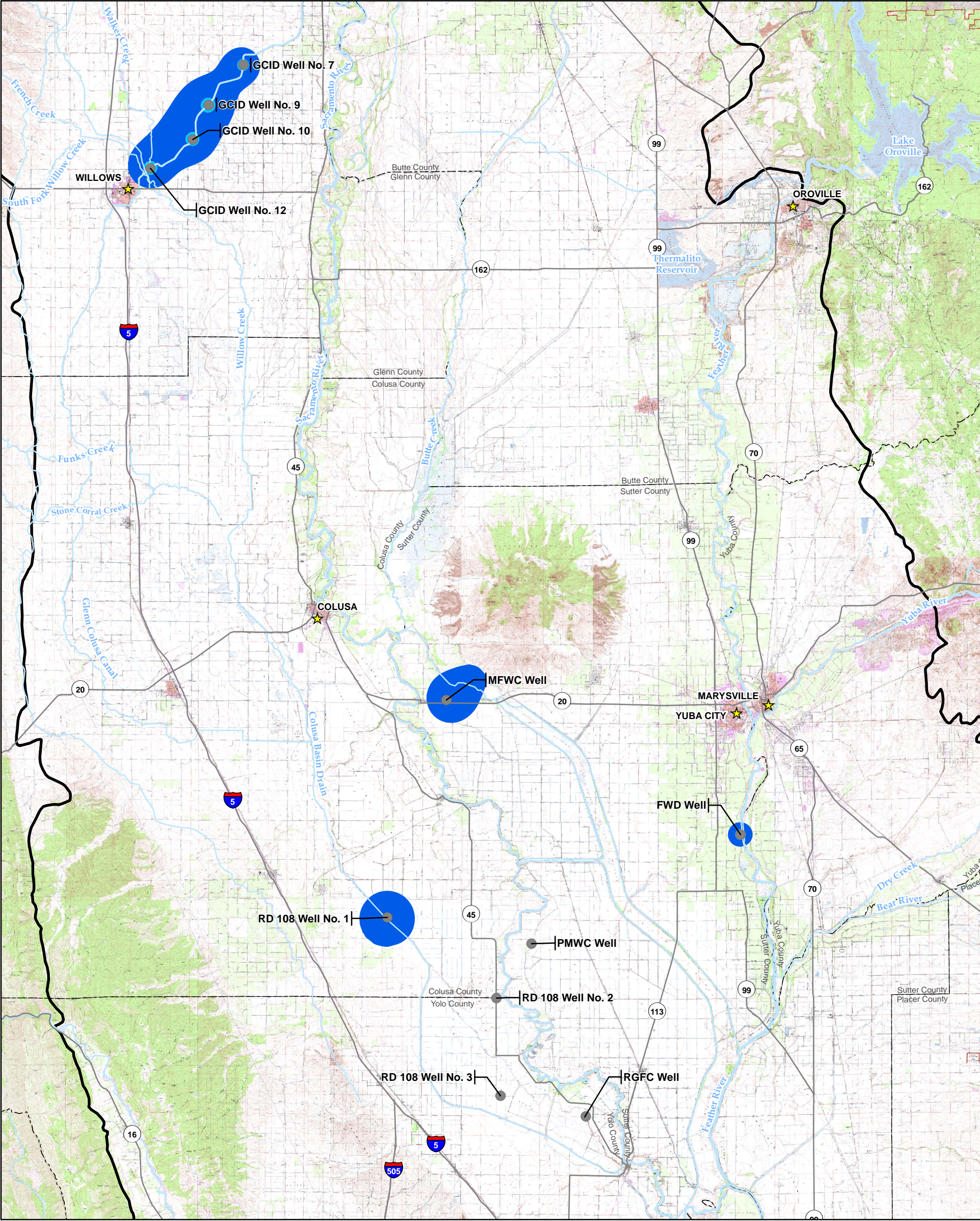


FIGURE 3-4
CUMULATIVE IMPACTS
FORECAST REGIONAL AQUIFER DRAWDOWN
MIDDLE PUMPING ZONE
EA/IS AND FONS/MND FOR MFWC
GROUNDWATER PRODUCTION ELEMENT PROJECT

I:\ODIN\PROJECTS\NORTH\CA\VALLEY\PROF50\FIGURES\MXD\MFWC\WATERRESOURCES\FIG5_CUMULATIVE_DRAWDOWN\DEEP\MXD HPERRY 7/29/2011 12:47:39



LEGEND

- 0.25-MILE BUFFER
- CITY
- MAJOR WATERWAY
- COUNTY BOUNDARY
- SACRAMENTO VALLEY GROUNDWATER BASIN
- INCREMENTAL DRAWDOWN (feet)
- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 30

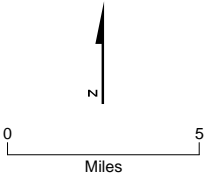
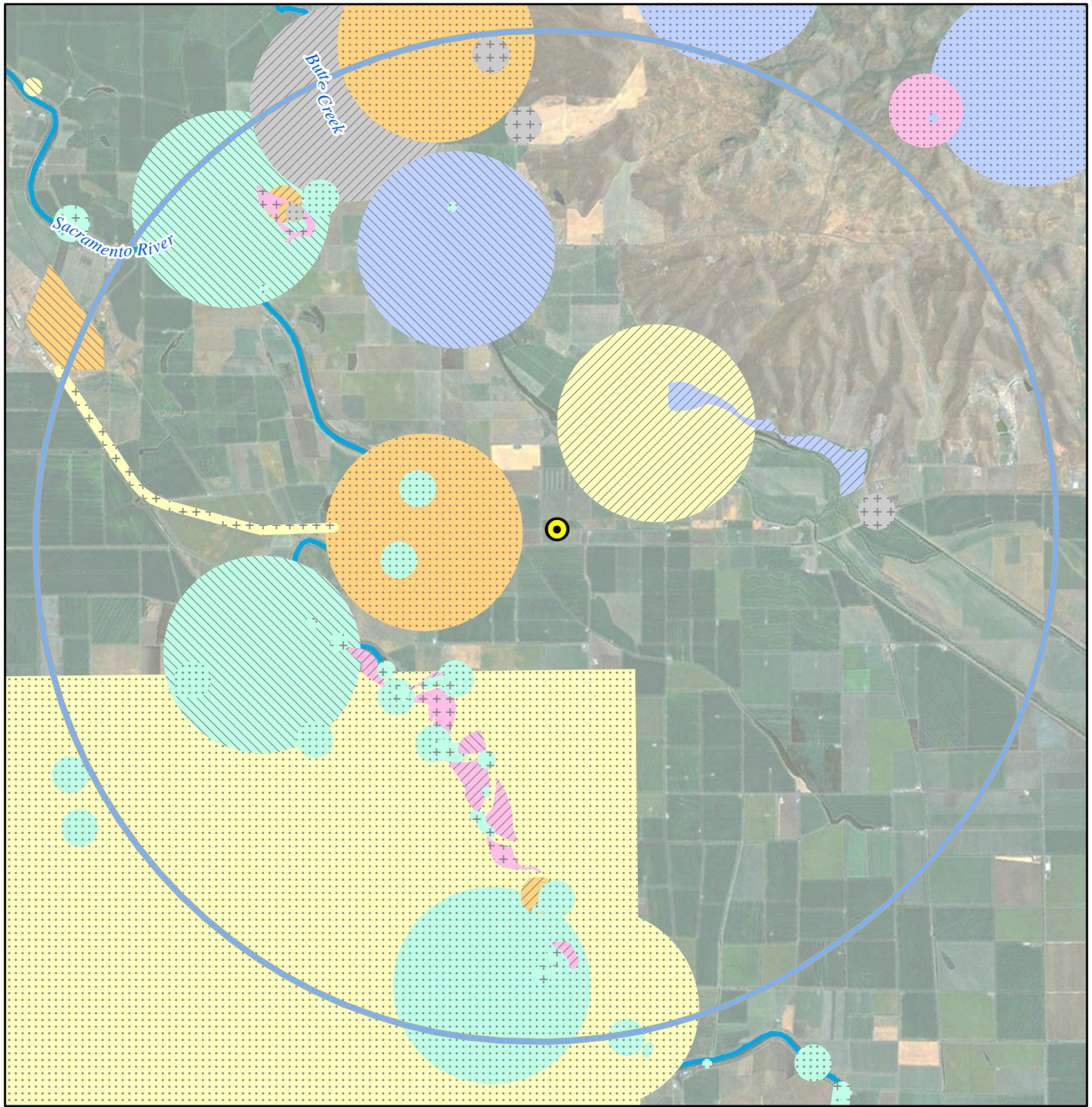


FIGURE 3-5
CUMULATIVE IMPACTS
FORECAST REGIONAL AQUIFER DRAWDOWN
DEEP PUMPING ZONE
EA/IS AND FONS/MND FOR MFWC
GROUNDWATER PRODUCTION ELEMENT PROJECT



LEGEND

- WELL LOCATION
- 5-MILE BUFFER

CALIFORNIA NATURAL DIVERSITY DATABASE

- Colusa layia
- Great Valley Cottonwood Riparian Forest
- Great Valley Mixed Riparian Forest
- Great Valley Willow Scrub
- Marysville California kangaroo rat
- Northern Hardpan Vernal Pool
- San Francisco campion
- San Joaquin pocket mouse
- Swainson's hawk
- Yuma myotis
- bank swallow
- cackling (=Aleutian Canada) goose

- giant garter snake
- greater sandhill crane
- heartscale
- hoary bat
- tricolored blackbird
- valley elderberry longhorn beetle
- vernal pool fairy shrimp
- vernal pool tadpole shrimp
- western red bat
- western yellow-billed cuckoo
- woolly rose-mallow

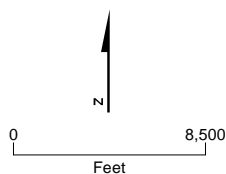


FIGURE 3-6
BIOLOGICAL RESOURCES
 EA/IS AND FONSI/MND FOR MFWC
 GROUNDWATER PRODUCTION ELEMENT PROJECT

SECTION 4

Consultation and Coordination

Several federal and state laws, permits, licenses, and policy requirements have directed, limited, or guided the NEPA and CEQA analyses and decision making processes described in this EA/IS and are listed below.

4.1 Endangered Species Act

Section 7 of the Endangered Species Act (16 USC 1531 et seq.) requires federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to make sure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Due to the lack of suitable habitat and absence of sensitive species, there would not be a requirement for consultation under Section 7 of the act for the proposed action.

4.2 National Historic Preservation Act

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties (properties determined eligible for inclusion in the National Register). Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the APE, identify if historic properties are present within the APE, and assess effects on any identified historic properties.

4.3 Regional Water Quality Control Board Permit

The Regional Water Quality Control Board issues permits for activities that could cause impacts on surface waters and groundwater, including construction activities. The Board requires that a National Pollutant Discharge Elimination System permit be obtained if pollutants would be discharged to surface water. Before construction begins, an SWPPP would be prepared by the contractor to comply with the permit.

4.4 Reclamation District No. 1500 Groundwater Management Plan

In 1997, RD 1500, worked collectively with Sutter Mutual Water Company and Pelger Mutual Water Company to develop a groundwater management plan that considered using groundwater as a viable water resource in the Sutter Subbasin. RD 1500 is currently updating the groundwater management plan to comply with Senate Bill 1938 for eligibility of funding in order to develop groundwater resources, increase long-term supply reliability within district boundaries, and assure long-term groundwater reliability and resource sustainability. The updated groundwater management plan will contain basin management

objectives that meet the needs for shared agricultural and environmental interests of Sutter Subbasin water users.

4.5 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act requires that Reclamation consult with fish and wildlife agencies (federal and state) on water development projects that could affect biological resources. This is not a water development project; therefore, the Fish and Wildlife Coordination Act does not apply.

4.6 Migratory Bird Treaty Act

The Migratory Bird Treaty Act implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the act provides that it is unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. Subject to limitations in the act, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting, or exporting of any migratory bird, part, nest, or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits, and migratory flight patterns. The proposed action would not affect migratory birds; therefore, no further coordination is needed under the Migratory Bird Treaty Act.

SECTION 5

California Environmental Quality Act – Environmental Factors and Mandatory Findings of Significance

This section of the EA/IS presents the CEQA analysis of potentially affected environmental factors that may result from implementation of the proposed project. The term “proposed project” used in this section is synonymous with the term “proposed action” used in other sections. Appendix F contains the CEQA impact determination signature page.

5.1 Discussion of Potentially Affected Environmental Factors

The checklist below identifies the physical, biological, social and economic factors that might be affected by the proposed project. Although some project elements could result in an environmental effect, modifications were made to the project, or mitigation measures have been proposed that would reduce impacts to less than significant. The words “significant” and “significance” used throughout the following checklist and elsewhere in this section are related to CEQA, not NEPA, impacts.

5.2 Evaluation of Environmental Impacts

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 would not expose sensitive receptors to pollutants, according to a project-specific screening analysis).
2. Answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. After the lead agency has determined that a particular physical impact might occur, then 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 might be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an environmental impact report 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.

5. Earlier analyses may be used where, pursuant to the tiering, program environmental impact report, or other California Environmental Quality Act process, an effect has been adequately analyzed in an earlier environmental impact report 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 Incorporation,” describe the mitigation measures that 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 (for example, general plans and zoning ordinances). 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. The checklist below is only a suggested form, 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 the following:
 - a) The significance criteria or threshold, if any, used to evaluate each question
 - b) The mitigation measure identified, if any, to reduce the impacts to less than significant

5.3 Initial Study/Environmental Impacts Checklist

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
I. AESTHETICS. Would the proposed project:				
(a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(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) Substantially degrade the existing visual character or quality of the site and its surroundings?	<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 type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Discussion:</p> <p>a, b, c, d. The project site is not considered a unique scenic vista, nor is the proposed project located within the vicinity of a state-designated scenic highway. The proposed project is consistent with the existing visual character of each property and surroundings. Although construction equipment would be temporarily visible during construction, a limited number of residents are near (within 0.5 mile) the proposed project location, and once construction is complete, the visual characteristics of the site would remain consistent with the existing setting. Therefore, no additional aesthetic analysis is necessary for the proposed project.</p>				
<p>II. AGRICULTURE AND FORESTRY RESOURCES. Would the proposed project:</p>				
(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)),	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))				
(d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Involve other changes in the existing environment which, because of their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Discussion: See Section 3.2 for a complete discussion of land uses within the project area.				
III. AIR QUALITY. Would the proposed project:				
(a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that 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"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Discussion:</p> <p>See Section 3.8 for a complete discussion of air quality impacts.</p> <p>a. Construction and operation of the project would not conflict with or obstruct implementation of an air quality plan. FRAQMD is in the process of preparing the PM_{2.5} air quality plan to address attainment of the federal PM_{2.5} standard; the plan is due to EPA in December 2012. The Northern Sacramento Valley Planning Area Attainment Plan for attaining the state ozone standard was released for review in June 2010 (Sacramento Valley Air Quality Engineering and Enforcement Professionals, 2010). Construction would result in a minor, short-term increase in emissions. The project would incorporate measures during construction to reduce emissions (see Section 3.8). Operation would not be expected to result in a net increase in emissions compared to existing conditions. Therefore, the project would be consistent with applicable air quality plans and the impact would be less than significant.</p> <p>b. As shown in Tables 3-11 and 3-12, construction emissions would be less than the FRAQMD thresholds, so construction would not cause or contribute to a violation of an air quality standard. Therefore, construction of the project would have less than significant impacts on air quality.</p> <p>Operation of the MFWC well would require electricity to operate the pump and would not generate onsite emissions. Operation of the proposed project would have a less than significant impacts on air quality.</p> <p>c. As shown in Tables 3-11 and 3-12, construction emissions would be less than the FRAQMD thresholds. Therefore, construction of the project would not result in a cumulatively considerable net increase in emissions and the impact would be less than significant. Operation of the project would not result in a considerable net increase in emissions; therefore, the cumulative impact would be less than significant.</p> <p>d. Construction of the project would generate emissions, such as diesel particulate matter from trucks and construction equipment. Current models and methodologies for conducting health risk assessments are associated with longer term exposure periods of 9, 40, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities (Bay Area Air Quality Management District, 2011). Construction of the project would occur over a 30-day period, and particulate matter emissions would be less than the FRAQMD thresholds. Therefore, the air quality impact would be less than significant. Operation of the project would not generate emissions and would not expose sensitive receptors to substantial pollutant concentrations. Therefore, the air quality impact would be less than significant.</p> <p>e. Operation of the project would not include operation of sources that create odors.</p>				

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the proposed 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 CDFG or USFWS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 CDFG or USFWS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(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"/>
Discussion: See Section 3.3 for a complete discussion of biological resources.				
V. CULTURAL RESOURCES. Would the proposed project:				
(a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Discussion: See Section 3.4 for a complete discussion of cultural resources.				
VI. GEOLOGY AND SOILS. Would the proposed project:				
(a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault zoning map	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
issued by the state geologist for the area or based on other substantial evidence of a known fault? refer to division of mines and geology special publication 42.				
(ii) Strong seismic ground shaking?	<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 proposed project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Discussion:</p> <p>a. The project would not expose people or structures to potential substantial adverse effects.</p> <p>b. The proposed project does not fall within the Alquist-Priolo Earthquake Fault Zone, as shown by the DOC Division of Mines and Geology (DOC, 2010). Soil erosion could occur during construction if appropriate BMPs are not implemented. Please refer to Section 3.1,</p>				

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
<p>Water Resources, for a complete discussion of water quality impacts related to soil erosion. MFWC would confirm proper implementation of applicable BMPs to prevent soil erosion, to assure no significant impact.</p> <p>c, d, e. The project would not be located on an unstable geologic unit or soil, nor would the project be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code. There are no septic tanks associated with the project; therefore, there is no impact.</p>				
<p>VII. GREENHOUSE GAS EMISSIONS. Would the proposed project:</p>				
(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impacts on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Discussion:</p> <p>See Section 3.9 for a complete discussion on global climate change and GHG emissions.</p> <p>a, b. The project would not generate GHG emissions that would have significant impacts on the environment, nor would the project conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.</p>				
<p>VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the proposed project:</p>				
(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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(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 that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) If located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) For a project located within the vicinity of a private airstrip, 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"/>
(g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
<p>Discussion:</p> <p>See Section 3.9 for a complete discussion on global climate change and GHG emissions.</p> <p>a, b. The project would not generate GHG emissions that would have significant impacts on the environment, nor would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.</p>				
<p>IX. HYDROLOGY AND WATER QUALITY. Would the proposed project:</p>				
(a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge causing a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted ⁷)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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, in a manner that would result in substantial erosion or siltation on- or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

⁷Well yield is defined as the maximum sustainable pumping rate that can be supplied by a well without inducing a decline in water levels that exceeds the available drawdown. Available drawdown is defined as the height of the column of water between the static water level and the total depth of the well or the depth of the pump intake.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(k) Substantially reduce in-stream flows of rivers and streams?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(l) Cause permanent land subsidence due to water level declines?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
Discussion: See Section 3.1 for a complete discussion of impacts on water resources as a result of the proposed project.				
X. LAND USE AND PLANNING. Would the proposed project:				
(a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Proposed Project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Discussion: See Section 3.2 for a complete discussion of land use impacts associated with the proposed project.				
XI. MINERAL RESOURCES. Would the proposed 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 a 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"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
Discussion:				
a, b. There are no known mineral resources on the project location; therefore, there are no resulting impacts on mineral resources.				
XII. NOISE. Would the proposed project:				
(a) Expose persons to or generation of noise levels 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) Expose persons to or generation of excessive ground-borne vibration or ground-borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the proposed project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the proposed project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) If within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project site to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) If within the vicinity of a private airstrip, expose people residing or working in the project site to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
<p>Discussion:</p> <p>a, b, c, d, e, f. There would be a temporary increase in noise levels in the project vicinity above existing ambient noise levels during construction. The most noticeable construction noises would likely be related to vehicle backup warning devices and general construction noise. A limited number of sensitive receptors are in the project area. Proposed well locations are at least 0.5 mile from the nearest sensitive receptor.</p> <p>Construction activities would be temporary (maximum duration of 6 weeks). Most construction activities would take place on weekdays between 7 a.m. and 7 p.m. Drilling operations however, are scheduled to occur on a continuous basis, consisting of 24-hour shifts for 10 consecutive days. However, only a limited number of sensitive receptors are within 0.5 mile the proposed project sites, so this impact is considered less than significant.</p>				
<p>XIII. POPULATION AND HOUSING. Would the proposed project:</p>				
(a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Discussion:</p> <p>a, b, c. The proposed project would not induce population growth or displace housing or people.</p>				

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the proposed project:				
(a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered 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 following public services:				
(i) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(ii) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(iii) Schools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(iv) Parks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(v) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Discussion:				
a. No public services would be affected by the proposed project.				
XV. RECREATION. Would the proposed project:				
(a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
Discussion:				
a, b. No recreational facilities would be affected or constructed by the proposed project.				
XVI. TRANSPORTATION/TRAFFIC. Would the proposed project:				
(a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Discussion:</p> <p>a, b. Access to the MFWC production well is via Farmlan Road from State Highway 20. Local traffic on these local roadways would increase slightly during the construction period as construction workers enter and exit the site, and general construction traffic such as dump trucks haul material to and from the site. This traffic would be temporary (a maximum of 8 weeks in duration) and minimal and, therefore, would not significantly affect local roadways. This impact is considered less than significant.</p> <p>c, d, e, f. The proposed project would not modify the level of service in the area, affect air traffic patterns, or create traffic hazards or incompatible uses. Emergency access would not be affected, nor would the project conflict with adopted policies or plans established by the Sutter County Department of Public Works.</p>				
<p>XVII. UTILITIES AND SERVICE SYSTEMS. Would the proposed project:</p>				
(a) Exceed wastewater treatment requirements of the applicable Water Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(d) Have sufficient water supplies available to serve the Proposed Project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Result in a determination by the wastewater treatment provider that serves or may serve the Proposed Project that it has adequate capacity to serve the project's projected demand in addition to the providers existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Discussion: a, b, c, d, e, f, g. Wastewater and stormwater facilities would not be affected by the proposed project. Additionally, excavated material would be disposed of onsite at a location approved by the property owner, in accordance with state and federal laws. There would be no resulting impacts on public utilities because of project implementation.				
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE:				
(a) Does the Proposed Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(b) Does the Proposed 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Does the Proposed Project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Discussion: None required.				

SECTION 6

List of Preparers and Reviewers

6.1 Bureau of Reclamation

Shelly Hatleberg, Natural Resources Specialist
Amy Barnes, Archaeologist
Chip Parrot, Hydrogeologist
Laurie Sharp, Water Conservation Specialist

6.2 Meridian Farms Water Company

Andy Duffey, General Manager, MFWC

6.3 CH2M HILL Consultant Staff

Holly Dawley, Project Manager
Brett Isbell, Project Manager
Mark Oliver, Senior Planner
Heather Perry, Hydrogeologist
Nate Brown, Senior Hydrogeologist
Peter Lawson, Senior Hydrogeologist
Titi Ala, Planner
Heather Waldrop, Planner
Amy Clymo, Air Quality
Natalie Lawson, Archaeologist
Clint Helton, Senior Archaeologist
Victor Leighton, Biologist
Marjorie Eisert, Senior Biologist
Tom Henderson, Project Engineer
Mary Pickens, Technical Editor
Celeste Brandt, Technical Editor
Heather Nichols, Technical Editor

SECTION 7

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