3: EVALUATION OF ENVIRONMENTAL IMPACTS

3.1 Introduction

This Initial Study (IS) includes descriptions and analyses of the 16 environmental issue areas listed below. These issue areas incorporate the topics presented in California Environmental Quality Act's (CEQA's) Environmental Checklist (identified in the Appendix G to the CEQA Guidelines).

3.2 Aesthetics
3.3 Agricultural Resources
3.4 Air Quality
3.5 Biological Resources
3.6 Cultural Resources
3.7 Geology and Soils
3.8 Hazards and Hazardous Materials
3.9 Hydrology and Water Quality
3.10 Land Use and Planning
3.11 Mineral Resources
3.12 Noise
3.13 Population and Housing
3.14 Public Services
3.15 Recreation
3.16 Transportation and Traffic
3.17 Utilities and Service Systems

Each of the analytical sections in this summary identifies the:

- Environmental Setting
- Regulatory Setting
- Environmental Impacts

3.1.1 ENVIRONMENTAL SETTING

The environmental setting sections present a description of the physical environment for each of the 16 environmental parameters analyzed for the proposed Project. The discussion of environmental setting varies among the parameters. Separate environmental setting discussions are presented for regional and local environments as appropriate. The content and level of detail of the environmental setting is relative to the parameter discussed and the extent of the potential impacts that could occur from Project activities.

3.1.2 REGULATORY SETTING

Current regulatory settings are presented in the Regulatory Setting sections of the 16 environmental parameters. Federal, state, regional, and local regulations applicable to the Project are identified.

3.1.3 ENVIRONMENTAL IMPACTS

The results of the environmental analyses conducted for the proposed Project are presented in these portions of Sections 3.2 through 3.17. Each of the environmental analysis discussions present:

- Significance criteria
- Impact discussion
- Levels of significance
- Mitigation measures

The significance criteria are a benchmark for determining if a project would result in significant environmental impacts when evaluated against the baseline (i.e., existing conditions).

Each of the environmental analysis sections presents discussions on the potential effects of the proposed Project on the environment. Analyses are presented for each CEQA Environmental Checklist question, accompanied by a determination made as to whether or not the proposed Project would result in a significant environmental impact based on the established thresholds of significance. Mitigation measures are identified, if warranted, that could reduce the impact to a less than significant level. The impact analyses are divided into the basic phases of the Project (i.e., construction, operation and maintenance), and further divided by component if warranted by the environmental parameter, significance criteria, or impact analysis.

3.2 Aesthetics

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

3.2.1 ENVIRONMENTAL SETTING

Regional Visual Character

The predominant characteristic landscape of the Project Area is large-scale agriculture, consisting of a level landscape overlain with a geometric quilt of roads, row crops, vineyards, orchards, utilities, and water conveyance systems. Grazing occupies some lands. Natural features that contrast with the overall agriculture setting include the Mendota Wildlife Management Area, Alkali Sink Ecological Reserve, San Joaquin River, and Fresno Slough.

Residential, commercial, and agricultural processing uses are sparsely scattered throughout the Project Area vicinity. These include:

- Isolated residences along the pipeline route
- A cluster of homes off of Road 16 near the entrance to the Gill Ranch Storage Field (Storage Field)
- Several homes along the south side of State Route (SR) 180
- Commercial uses (a restaurant and boat rental business) at Fresno Slough
- The closed Spreckels Sugar Plant on the north side of SR 180
- Cotton gins
- Various other active and inactive agriculture-related industrial facilities

The concrete-lined California Aqueduct is located near the western end of the pipeline route, and the Chowchilla Canal is located along a portion of the electric power line route and eastern end of the pipeline route, west of the Storage Field.

Scenic Highways

SR 198 is the closest state-eligible scenic highway, located approximately 28 miles (mi) south of the Project Area (Caltrans 2008). The closest scenic highway designated by Fresno or Madera Counties is Interstate 5, located approximately 3 mi west of the westernmost extent of the Project

Area (Fresno County 2000). There is no visual connection between the scenic highway portion of Interstate 5 and the Project Area.

Local Visual Character

Gill Ranch Storage Field

The approximately 5,020-acre (ac) Storage Field is in active agricultural production (Figure 3.2-1) including row crops, orchards, and vineyards. Numerous existing gas wells and related surface facilities, including piping, tanks, and compression facilities, are interspersed within the agricultural operations (Figure 3.2-2a). Many of the existing wells have been plugged and abandoned. Overhead electrical power lines are present along the proposed electric power line route at Avenue 3, and at Road 16 near the proposed central compressor site. Agricultural storage yards and access roads are also interspersed in the Storage Field (Figure 3.2-2b).

The San Joaquin River passes through the southeast corner of the Storage Field downstream from Gravelly Ford. The river is a meandering channel bounded by approximately 10-foot (ft) high levees on both sides. Limited native riparian vegetation is present in the channel and along the river banks. The reach of the San Joaquin River downstream from Gravelly Ford is dry during a majority of the year, as currently managed.

The proposed compressor station location is presently cultivated with irrigated row crops. The nearest major roads are SR 180, located approximately 4 mi south in Fresno County, and Avenue 7, located 4 mi north, in Madera County.

A cluster of six residences (seven mailboxes) is located off of Road 16 near the entrance to the Storage Field, and approximately 1.1 mi north of the proposed central compressor station site and nearest proposed injection/withdrawal (IW) well site (Figure 3.2-2c and Figure 3.2-3). The residences are oriented around a landscaped u-shaped drive with a median that contains a row of mature shade trees. This grove of trees effectively blocks views to the south from residences on the north side of the median. Individual homes have additional ornamental plantings and shade trees. An abandoned cotton gin and storage yard are located across Road 16 near these residences. Immediately to the south of the residential area are abandoned offices, storage buildings, and industrial and farm equipment yards.

Gas Pipeline Alignment and Pipeline Surface Facilities

The area is primarily in agricultural use. Visually prominent exceptions along the pipeline corridor include:

- Isolated residences along the western portion of the pipeline route (e.g., along Lincoln Avenue, SR 33, and immediately west of Fresno Slough) (Figure 3.2-2d)
- Numerous residences and storage units along the south side of SR 180 between Fresno Slough and San Mateo Avenue
- The closed Spreckels Sugar Plant on the north side of SR 180 at San Mateo Avenue (comprising multi-story office buildings and silos, large parking lots, multiple industrial enclosures, ,highways, and rail spurs)
- Various other active and inactive agriculture-related industrial uses (Figure 3.2-2e and f)

A developed commercial recreation area located on the east bank of the Fresno Slough consists of a boat launch and day-use facilities, campground, and restaurant (Figure 3.2-2g). The concrete-lined California Aqueduct is located near the western end of the pipeline corridor.

Natural features along the pipeline corridor include the Mendota Wildlife Management Area, Alkali Sink Ecological Reserve, San Joaquin River, and Fresno Slough. The Mendota Wildlife Management Area is seasonally open for public recreational use.

Figure 3.2-1: Compressor Station Photo Simulation at Close Range

SOURCE: Entrix 2008 and RMT Inc. 2009

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Figure 3.2-2: Gill Ranch Visual Exhibits Photos

(a) Typical proposed IW wellpad at existing gas production wellpad in Gill Ranch surrounded by orchards (Source: Entrix)

(b) Typical agricultural road in Gill Ranch to be used for gathering lines between IW well pads and central compressor station. (Source: Entrix)

Figure 3.2-2 *(Continued)*: Gill Ranch Visual Exhibits Photos

(c) Existing residences looking west from Road 16. (Source: 2M Associates)

(d) Pipeline corridor looking west along Lincoln Avenue near intersection with Highway 33. (Source: Entrix)

Figure 3.2-2 *(Continued)*: Gill Ranch Visual Exhibits Photos

(e) Pipeline corridor in agricultural field looking north of San Joqauin River looking north toward Gill Ranch. (Source: Entrix)

(f) Pipeline corridor looking east from proposed meter station at PG&E line 401 tie-in point. Pipeline to follow center of road. (Source: Entrix)

Figure 3.2-2 *(Continued)*: Gill Ranch Visual Exhibits Photos

(g) Fresno Slough and Jack's Resort looking north from SR 180. (Source: 2M Associates)

(h) Power line route at Chowchilla Canal crossing looking south from Avenue 7. (Source: Entrix).

Figure 3.2-3: Compressor Station Photo Simulation from Nearest Residences

Existing view looking southwest from Road 16 adjacent to residential area (date of photograph: December 16, 2008).

Simulation of view looking southwest from Road 16 adjacent to residential area during operations of the Compressor Station and Gas Field area. Simulation based on Sight Plan and lighting information presented in Figure 3.2-4.

SOURCE: Entrix 2008 and RMT Inc. 2009

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The location of the proposed Pacific Gas and Electric Company (PG&E) Line 401 interconnection facility along Lincoln Avenue is presently surrounded by mature orchard trees and is not visible from the public road network.

Electric Power Line Route

The proposed power line route would be located parallel to public roadways including Avenue 7-1/2, Avenue 7, the Chowchilla Canal Road, and Avenue 3. These roads are generally bordered by agricultural fields. Avenue 7-1/2 and Avenue 7 are heavily traveled public roads between the cities of Fresno and Madera to the east, and Firebaugh and other cities to the west and north. There are existing power lines along these roadways, except for an approximately 1-mi section along Avenue 7.

Chowchilla Canal Road is primarily used by local agricultural operators and has existing power lines along its entire length between Avenue 7 and Avenue 3. Along Avenue 3 from the Chowchilla

Canal to the central compressor location there are also existing power lines. The surrounding area contains field crops and agricultural storage facilities (Figure 3.2-2h). Several existing gas well facilities are visible within the Storage Field along Avenue 3. There are no residences, commercial uses, or recreational uses located along the power line route.

Staging Areas

The visual character of the Mendota Railyard, where equipment arriving via rail would be off-loaded and transported to construction staging sites, is an industrial railroad facility with several storage yards. It is surrounded by residential and commercial uses.

Construction staging would occur at four locations, all of which are agricultural in character. Two staging sites would be located at the Spreckels Sugar Plant at the intersection of SR 180 and San Mateo Avenue. Construction staging would be located at an area that is undeveloped and had been used previously for staging, and at an area that is presently developed.

Staging would also take place at an idle cotton gin and storage yard at the entrance to the Storage Field along Road 16 across from existing residences, and in the agricultural field immediately adjacent to the proposed central compressor station site.

Light and Glare

Light pollution is defined as any adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste (IDA 2007). There are few significant light sources in the immediate vicinity of the Project Area. Existing sources of light and glare that do exist are generally related to residences, agricultural storage and processing facilities, and outbuildings. Traffic traveling on highways and local roads is another contributor of light and glare in the region.

Viewer Sensitivity

Definition

Viewer sensitivity is a measure of public concern for changes to scenic quality. Numbers of viewers, viewer activity, view duration, distance away from seen objects (foreground versus background), adjacent landscape character, and special planning designations such as scenic route designation are used to characterize viewer sensitivity.

Sensitive Viewers

Viewers with a high sensitivity level in the vicinity of the Project Area include residents with foreground views to project facilities, and recreation visitors to the Mendota Wildlife Management Area and Fresno Slough. Viewers with a moderate sensitivity level would be motorists traveling along public roads that would pass by staging areas and/or construction activities or with foreground views of Project facilities.

3.2.2 REGULATORY SETTING

Federal

There are no relevant federal policies or regulations affecting visual resources within the Project Area or in the vicinity of the Project Area.

State

There are no relevant state policies or regulations affecting visual resources within the Project Area or in the vicinity of the Project Area.

Local

Fresno County General Plan

The Fresno County General Plan (2000) contains goals and policies intended to conserve, protect, and maintain the scenic quality of Fresno County, including its cultivated farmland, and to discourage development that degrades areas of scenic quality (Goal OS-K). The General Plan also recognizes the need to provide efficient and cost-effective utilities that serve the existing and future needs of people in the unincorporated areas of the County (Goal PF-J). County policies include working with local gas and electric utility companies to design and locate appropriate expansion of gas and electric systems, while minimizing impacts to agriculture and minimizing visual impacts on existing and future residents (Policy PF-J.2).

Madera County General Plan

The Madera County General Plan (1995) contains policies intended to protect the County's visual resources. These policies require new development in scenic rural areas to avoid highly visible locations, except when necessary to avoid hazards; or when the proposed construction will incorporate design and screening measures to minimize the visibility of structures and graded areas (Policy 1.H.1). County policies call for the provision of adequate gas and electric service and facilities to serve existing and future needs while minimizing noise, electromagnetic, and visual impacts on existing and future residents (Policy 3.J.l.).

3.2.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on aesthetics if the Project would:

a) Have a substantial adverse effect on a scenic vista

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

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

d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area

Impact Discussion

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

There are no designated scenic vistas or scenic highways within the vicinity of the Project Area. Expansive views of the Mendota Wildlife Management Area and Alkali Sink Ecological Reserve are available from SR 180 looking south. These resource areas may be considered scenic vistas due to their relatively undeveloped natural features, including channels of water and native vegetation. However, the pipeline corridor is located north of SR 180 away from areas with views to these resource areas. There would be no impacts to scenic vistas as a result of construction or operation and maintenance of the proposed project, and no mitigation measures would be required.

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

Construction

Storage Field and Facilities. No scenic highways or historic buildings are present in the Project Area, and the Storage Field and mainline valves would be located in agricultural areas, primarily planted with row crops. The construction of the project would not significantly damage scenic resources and no mitigation would be required.

Gas Pipeline. The Fresno Slough and the San Joaquin River may be considered scenic resources due to their relatively undeveloped natural features, including channels of water and native vegetation. The gas pipeline would be drilled under the Fresno Slough and the San Joaquin River, however. Construction would be temporary, and no permanent damage would occur. Impacts would be less than significant and no additional mitigation would be required.

Electric Power Line. The electric power line would be built in a corridor already used for power lines, except for a 1-mi section built in an existing right of way (ROW). Impacts from construction would be temporary and less than significant. No mitigation would be required.

Operation and Maintenance

The Project would not damage scenic resources such as trees and rock outcroppings during operation and maintenance because no previously undisturbed ground would be disturbed. Temporary impacts to scenic resources could occur during some operation activities, but these impacts would be less than significant. Mitigation would not be required.

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

Construction

Staging Areas. The Mendota Railyard is an existing industrial facility. Temporary construction-related activities at this off-loading site would be typical of the site's existing activities and would not degrade or change the visual character of this area.

The staging areas in the Spreckels Sugar Plant would be located within the plant's fences in areas once used for plant operations. The staging areas would be partially visible from select nearby residences. The temporary use of the staging areas would not cause a substantial change in the visual character of the existing landscape because equipment would be removed subsequent to construction.

The staging area at the abandoned cotton gin site near the Storage Field is located in an open area adjacent to an existing developed area. Temporary use of this area for equipment staging and worker parking would be visible from the existing residences along Road 16; however, this use would not degrade or change the visual character of the area due to the present use of the site for agricultural storage and processing. Equipment staging adjacent to the proposed central compressor site would not be visible from public roads or residences.

The temporary use of proposed staging areas for construction equipment staging and worker parking would not cause a substantial degradation or change in the visual character of the existing landscape. Potential impacts to visual resources would be less than significant and no mitigation would be required.

Gas Storage Field and Facilities. Construction activities would involve a variety of actions including: preparation at access points; a perimeter earthen berm and fencing; erection of structures to house the compressors and associated control equipment; construction of an

electrical substation; and installation of equipment and piping. Construction of the compressor station is estimated to take 12 months.

Construction activities would be partially visible from the southern line of residences along Road 16, and from the entrance to residences along Road 16, approximately 1.1 mi from the compressor station area. The most visually prominent actions that could be noticed from the residential area would be materials and equipment transport to the site from the staging area, and presence of cranes used to erect buildings and compressor equipment.

Based on the distance from the residences, the variability of construction actions at any one time, and the temporary presence of construction activities, visual impacts would not be significant and mitigation would not be required.

The IW wells and Observation and Monitoring (OM) wells would occupy several well pads interspersed throughout the Storage Field. The most prominent visual features during the temporary drilling and construction phase would be the drill rigs. Drill rigs would occupy well pads in sequence, and would be present at each site for 24 hours per day over an approximately 2-week period. The entire drilling program for all new wells, including new well drilling and completion, and reworking and completion of existing wells, is anticipated to last approximately 7 months. The approximately 150-ft-tall rig mast would be visible from surrounding areas during both day and nighttime use. The nearest sensitive receptors to the proposed well pads are the residences along Road 16, approximately 1.1 mi northeast of the nearest proposed well pad. The scale of the drill rig seen at this distance would be visually evident; however, impacts at this distance would be less than significant because of the temporary presence of drill rig(s). Other well pads would be more distant from these residences. The drill rigs would likely be visible from Avenue 7 located 4 mi north of the Storage Field, and possibly from SR 180, located 4 mi south of the Storage Field. The scale of the drill rig seen at this distance would be visually insignificant.

The temporary presence of a drill rig would not substantially degrade the visual character of the Project Area because of the distance to the receptor sites and the duration of drilling at any one location. No mitigation would be required.

Gas Pipeline. The pipelines would be constructed underground along public and private roadways. The pipeline corridor, but not the pipeline, would be visible from public roadways including SR 33, West Panoche Road, and SR 180. The proposed mainline valve sites would be located in open level agricultural fields. One site would be located along the west side of SR 33, and the other site would be located near the intersection of San Mateo Avenue and SR 180.

The existing existing landscape would be disturbed to install the pipe during construction. The Applicants would implement an Agricultural Impact Mitigation Plan (Mitigation Measure Agriculture-1) that includes site restoration measures developed in coordination with the individual farmers. The resulting vegetation changes that may occur, even if left cleared and not returned to agriculture crops, would be linear in character and appear as one of many access roads or open areas of a geometric landscape designed and managed for large-scale agricultural operations.

The Applicants propose to implement restoration measures in natural, non-agricultural areas, including re-vegetation of the pipeline corridor (see Mitigation Measure Biology-16 and Mitigation Measure Agricultural-1). These measures would ensure that the pipeline corridor is not seen as a visibly contrasting feature. Impacts resulting from the construction of the pipeline would be temporary and less than significant with implementation of mitigation.

Electric Power Line. A variety of actions would be visible from the local street system during the construction of the new 115-kilovolt (kV) electric power line along Avenue 7, and consolidation with existing facilities along the remainder of the electric power line route. Impacts resulting from the

construction of the electric power line would be temporary and less than significant. No mitigation would be required.

Operation and Maintenance

Gas Storage Field and Facilities. The Storage Field facilities have the potential to change the visual character of the area by introducing new structures to the Project Area. Mitigation Measure Aesthetics-1 would be sufficient to mitigate any potential change in visual character.

> **Mitigation Measure Aesthetics-1:** All compressor station structures shall be painted or use integral coloring that is a shade of "Carlsbad Canyon" as identified in the Bureau of Land Management's (BLM's) published color chart (Standard Environmental Colors Chart CC-001). All finishes shall be flat and non-reflective. Compressor station structures that shall be painted include, but are not limited to:
>
> a) Compressor station and operations buildings
> b) Exposed auxiliary equipment or equipment housings
> c) Contact towers
> d) Exposed piping, tanks and vessels
>
> Galvanized equipment need not be painted.
>
> The Applicants shall provide to the California Public Utilities Commission (CPUC) materials samples for CPUC staff review and approval at least 30 days prior to construction of the compressor station.

A new access road to a well pad, if necessary, would not degrade or change the visual character of the area because gravel access roads are common in the Storage Field area.

Compressor Station. The compressor facility, related gas and water handling equipment, and the electrical substation would be located on a 10-ac site near the center of the Storage Field that is generally not accessible to or viewed by the general public. The area is approximately 4 mi from Avenue 7 to the north and SR 180 to the south. It is surrounded by private agricultural lands with most of the crops within the area, including grapes, more than 10 ft high. Visibility to the lower elements of the compressor station and electrical substation, from anywhere but immediately adjacent to the site, would be visually blocked by the intervening agricultural vegetation during production season, as well as by the levees and limited riparian vegetation along the San Joaquin River. Three residences on the south side of the residential drive off of Avenue 16 near the entrance to the Storage Field have limited, partially blocked south and southeast views to the Storage Field area and the compressor station site.

A site plan, elevations, structure heights and dimensions, and an isometric view of the compressor station are provided in Appendix B. The taller elements of this facility that would be seen from a distance include:

- The compressor building (35-ft height)
- Two somewhat smaller and lower operations buildings
- Two EG contactors (37-ft to 40-ft height)
- Components of the electric substation, wood poles leading to it (70-ft height) and two poles within the substation (60-ft height) for the electric power line
- Lighting standards (20-ft to 25-ft height)

The most prominent feature would be the compressor building, which would measure 170 ft long, 75 ft wide, and 35 ft tall. Other buildings would not be as large or as tall as the compressor

building; however, the combined buildings would have a massing effect within the central portion of the facility. The tallest features will be 70-ft-tall power poles on the north side of Avenue 3; two 60-ft-tall steel poles at the electrical substation, two approximately 35-ft to 37-ft-tall contact towers; and 20-ft to 25-ft-tall area light poles and fixtures. Overall, the components listed above would contribute to the industrial character of the facility.

Figure 3.2-2 shows the existing view of the compressor station area as viewed from approximately 1.1 mile north of the area along Road 16, and adjacent to the southeast residence off of Road 16. Figure 3.2-2 presents a visual simulation from the same location of the compressor station and related facilities after construction and with the Applicant Proposed Measures.

The taller elements of the compressor facility would be visible with vertical forms that would be skylined and would contrast with the surrounding level agricultural landscape. The compressor facility would increase the industrial character of the immediate surroundings but would not differ substantially from ancillary farm structures present throughout the area, including the abandoned cotton gin and other facilities to the east and north of the residences off of Road 16. The compressor station facilities would be similar in scale to existing structures that may be seen within the area from a viewing distance of approximately 1.1 mi and, as compared to those immediately adjacent to the residences and across Avenue 16 from the residences, would be small in comparison.

Well Pad Facilities. The visible elements within each well pad facility would include:

- The approximately 0.7-ac earthen and gravel well pad and access road
- Up to 4 wellheads
- Associated aboveground piping
- A small control building
- Communications equipment
- Perimeter security fencing

The wellheads and other structures would measure up to 10 ft in height and would be consolidated within a small area within the well pad. These facilities would generally be located where there are existing gas wells, and the existing well pads would be slightly expanded. The proposed well pads are surrounded by existing agricultural operations. The proposed well pad facilities would not result in a substantial degradation or change in the visual character of the existing landscape considering the distance to the nearest residences and public roads, the relatively low profile of these structures, and the numerous existing well pads and facilities that are similar in appearance and size. Any impacts to aesthetics would be less than significant and no mitigation would be required.

Gas Pipeline. Operation of the pipeline would include pipeline inspections and maintenance. Such activities would be conducted via existing roads. No permanent new access roads would be constructed for the purpose of pipeline inspection. The Agricultural Impact Mitigation Plan (Mitigation Measure Agriculture-1) and Mitigation Measure Biology-16 would ensure that all pipeline corridors are re-vegetated and restored as appropriate.

Permanent pipeline markers would be installed at regular intervals along the alignment in accordance to California Department of Transportation (Caltrans) standards. These structures are designed to be seen by the public. The placement and relative small size of the markers would not degrade the existing visual character because they would be unobtrusive and generally located in or near existing roadway utility corridors where various signs and markers are commonplace. Potential impacts to visual resources from the pipeline would be less than significant and no mitigation would be required.

The PG&E gas interconnection facility would consist of piping and valve equipment surrounded by a security fence. This site is presently surrounded by mature orchards and is not visible from public roadways or residences. Two mainline valve facilities would be located adjacent to public roadways. Valve equipment would project approximately 3 ft above the ground surface and would be surrounded by security fencing. These components would be finished according to Mitigation Measures Aesthetics-2 and Aesthetics-3. Piping and equipment related to these facilities would not substantially alter the visual character of the area because of their small size and their locations along existing utility corridors that already contain electric power lines.

> **Mitigation Measure Aesthetics-2:** Security fencing shall be galvanized with a flat, low reflective finish.
>
> **Mitigation Measure Aesthetics-3:** Gas interconnection facilities shall be painted a shade of "Covert Green" as identified in the BLM's published color chart (Standard Environmental Colors Chart CC-001). All finishes shall be flat and non-reflective. Materials samples will be provided to CPUC for CPUC staff review and approval at least 30 days prior to construction of the interconnect facilities.

Electric Power Line. Power lines are common in agricultural areas and along roadways in the vicinity of the Project Area. There are no residences, commercial uses, or recreational uses located immediately along the proposed power line route. Segments of the power line located along Avenue 7-1/2 and Avenue 7 would be visible from these roadways. There are existing power lines along these roadways except for an approximately 1-mi section along Avenue 7. New wood poles would replace existing electric distribution wood poles that are within the proposed alignment. The new wood poles would be approximately 70 ft tall, as compared to the approximately 50-ft height of the existing poles. The new wood electric power line poles would be typical of wood poles on other power lines in the vicinity of the Project Area and would not be out of character with the existing landscape features, even though the taller wood poles would be slightly more prominent than the existing wood poles.

Two tubular steel poles would be installed on either side of Chowchilla Canal Road near Avenue 3 in order to allow the power line to span the canal. These steel poles would be 120 ft tall and would contrast with the general horizontal agricultural landscape that surrounds it. These poles would be located in a relatively remote agricultural area 4 mi south of Avenue 7, however, and would be equally distant from any residences. The poles, though they could be visible from Avenue 7, would not be prominent from this distance, and other intervening landscape features such as the Chowchilla Canal levee, trees along the San Joaquin River, and other power poles would further diminish the prominence of the new steel poles.

The proposed power poles and lines would not substantially change or degrade the visual character of the existing landscape. Any impacts to aesthetics from these facilities would be less than significant and no mitigation would be required.

d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

Construction

Project construction would typically occur between 7 am and 7 pm. However, horizontal directional drilling (HDD) operations and drilling at well pads would occur at night and would require lighting.

The only area in which nighttime HDD construction would be visible in the immediate foreground would be in the vicinity of the proposed Fresno Slough HDD exit location. This work site is located on the north side of SR 180, across from several residences between the Fresno Slough and San

Mateo Avenue. The HDD operations may require lighting for a period of approximately 1 week or less.

Drilling activities at well pads will require 24-hour operations for a period of up to 6 months in order to complete the drilling program for the various proposed wells. Nighttime drilling would require the use of lighting on the drill rig. This lighting would likely be visible from residences at Road 16, and potentially from public roadways, including Avenue 7 and SR 180. The Applicants' preliminary drilling plan specifies that drilling contractors shall minimize the use of lighting to only that required to safely illuminate the work area.

The temporary use of nighttime lighting together with the implementation of Mitigation Measures Aesthetics-4 and Aesthetics-5 would render any construction-phase impacts from lighting and glare short-term and less than significant.

> **Mitigation Measure Aesthetics-4:** Night lighting for construction at the horizontal directional drilling (HDD) site, if required, shall be fully shielded and directed away from residential areas. Lights shall be turned out in areas where they are no longer needed.
>
> **Mitigation Measure Aesthetics-5:** The Applicants' drilling plan shall specify that lights shall be fully shielded and directed inward on the work area.

Operation and Maintenance

Gas Storage Field and Facilities. One light fixture would be installed at each of the IW and OM well pads. These lights would be mounted either on a light pole near the gate or on the instrumentation building within the well pad at an approximate height of up to 15 ft. The well pads would be remotely monitored and would not require substantial night lighting during operations and maintenance. These lights would only be used when the site is accessed. Routine inspections would occur during daylight hours, and nighttime maintenance and construction (e.g., well work-overs or major equipment replacement) would be infrequent.

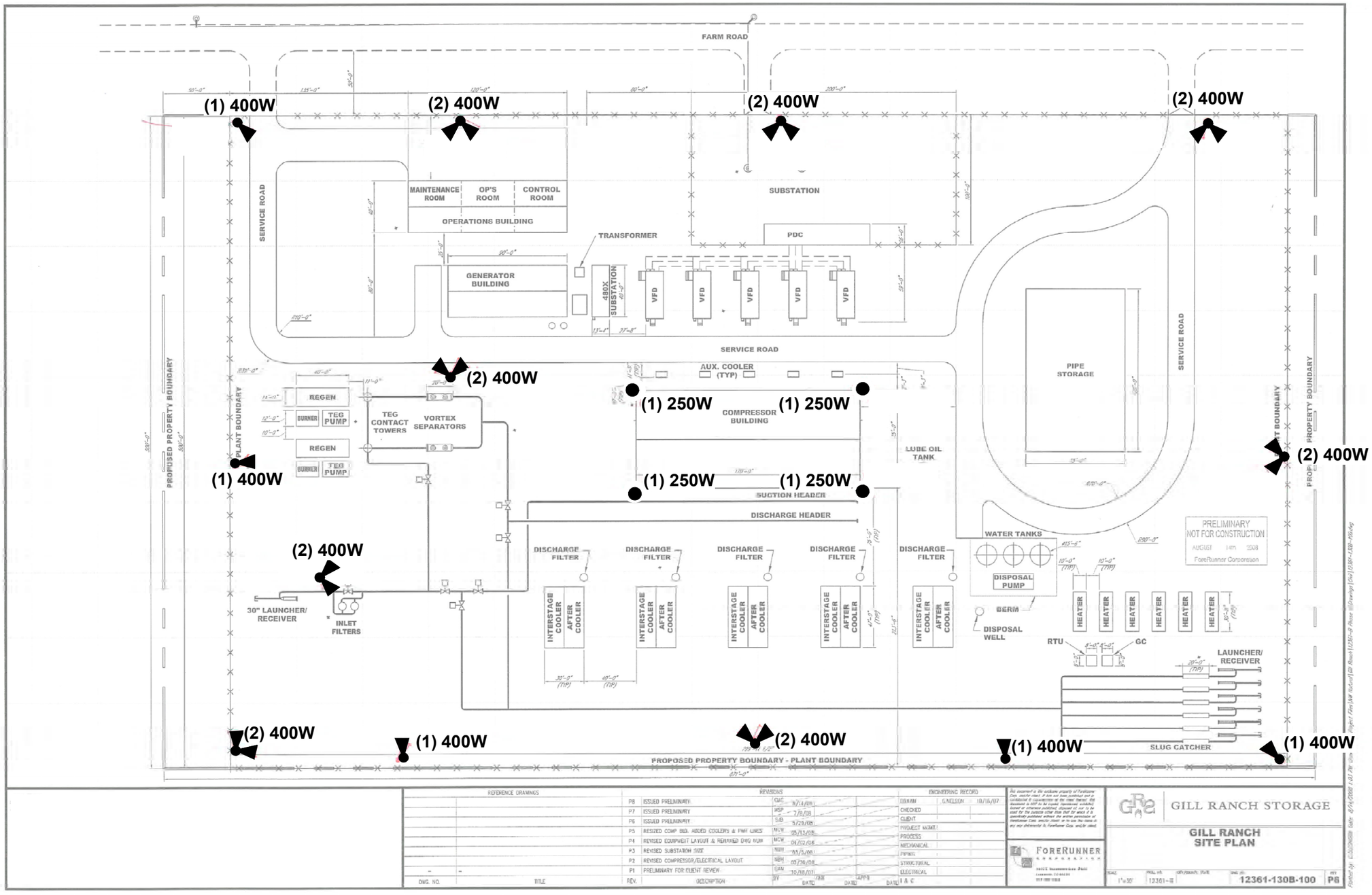
Implementation of Mitigation Measures Aesthetics-2, Aesthetics-3 and Aesthetics-6 would render any impacts from lighting and glare less than significant.

> **Mitigation Measure Aesthetics-6:** Injection and Withdrawal (IW) and observation and monitoring (OM) well pad lighting shall be used only when the site is accessed for monitoring or servicing.

Compressor Station. The preliminary lighting plan for the central compressor station is shown in Figure 3.2-4 and would be a potential source of offsite light and glare. Lighting would allow for security and routine inspections. The central compressor station facilities would be staffed during normal business hours and continuously monitored 24 hours per day. Nighttime lighting during normal operations includes area lighting mounted on 35-ft-high poles around the perimeter of the facility with an additional light on an internal service road, and wall mounted lights at each corner of the compressor building. The preliminary lighting plan specifies 400 watts (W) for most light fixtures that would be partially shielded. This new source of light could be discernable from distant roadways and residences. Additional lighting would be used during occasional nighttime maintenance activities. Such lighting would be temporary and less than significant.

Implementation of Mitigation Measures Aesthetics-5, Aesthetics-6, and Aesthetics-7 would render any impacts from lighting and glare less than significant.

Figure 3.2-4: Preliminary Lighting Plan for the Central Compressor Station



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Mitigation Measure Aesthetics-7: All permanent outdoor site and building lighting shall be directed at the ground and immediate area around the mounting pole or building wall. All permanent outdoor lighting shall be fully shielded such that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal. Poles used for site lighting shall not exceed a height of 35 ft.

Gas Pipeline. One light fixture would be installed at the pipeline interconnect site. This light would be mounted either on a light pole near the gate or on the instrumentation building within the facility at an approximate height of up to 15 ft. The valve stations located along the gas transmission line would not be lighted.

The gas pipeline would be buried and would not be a source of light or glare during operation. Maintenance of the pipeline would typically occur during the daytime. Emergency maintenance could occur during the night and require lighting; however, this lighting would be shielded and directed toward the work area. Such impacts would be temporary. Implementation of Mitigation Measure Aesthetics-8 would reduce impacts to less than significant.

Mitigation Measure Aesthetics-8: The pipeline interconnect site lighting shall only be used when the site is accessed for monitoring or servicing.

Electric Power Line. In the event that maintenance of the electric power line is required during the nighttime, lighting would be used. Lighting would be shielded and directed toward the work area. Impacts would be temporary during electric power line maintenance and thus would be less than significant. No mitigation would be required.

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3.3 Agricultural Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☒	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☒	☐	☐

3.3.1 ENVIRONMENTAL SETTING

CEQA considers "agricultural land" to be Prime Farmland, Farmland of Statewide Importance, and Unique Farmland, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Department of Conservation (DOC) (Public Resources Code §21060.1). These designations are defined below (DOC 2007a, DOC 2007b).

- **Prime Farmland:** Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. Prime Farmland generally has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks.
- **Unique Farmland:** Unique Farmland is land other than Prime Farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.
- **Farmland of Statewide Importance:** This is land, in addition to Prime and Unique Farmlands, that is of statewide importance for the production of food, feed, fiber, forage, and oil seed crops. Criteria for defining and delineating this land are to be determined by the appropriate state agency or agencies. Additional farmlands of statewide importance

generally include those that are nearly Prime Farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as Prime Farmlands if conditions are favorable.

Regional Setting

The proposed Project would be located in an agricultural area in the unincorporated portions of Madera and Fresno Counties. Agriculture is the major industry in both counties.

Madera County

Madera County ranks 13th among the California counties in annual total agricultural crop production. The 2007 crop exceeded $1 billion and increased 18% from the previous year. The total harvested acreage was approximately 648,300 ac in 2007. Milk is Madera County's leading commodity with a value of $301,833,000 (Madera County Agricultural Commissioner 2007).

The County had approximately 365,300 ac of Important Farmland in 2004, the most recent year for which data are available, as reported by the DOC 2004 Important Farmland Acreage Summary.

Fresno County

Fresno County ranks first among California's counties in annual agricultural crop value. The 2006 crop value exceeded $4.8 billion. The most valuable agricultural commodity in 2006 was the grape at $562,751,000 (Fresno County Agricultural Commissioner's Office 2006 as cited in Entrix 2008).

Fresno County had approximately 1,391,500 ac of Important Farmland in 2004 (DOC 2004 as cited in Entrix 2008).

Local Setting

Agricultural land is present throughout the Project Area, including the Storage Field and the proposed pipeline and electric power line corridors.

Madera County

The portion of the Project Area in Madera County is designated Agriculture Exclusive (AE) in the Madera County General Plan (1995). The portion of the Project Area in Madera County is zoned Agriculture, Rural Exclusive, 20 ac and 40 ac (Madera County Code 2007 as cited in Entrix 2008). The western portion of Madera County, where the majority of the gas storage, electric power line, and a portion of the gas pipeline are located, is characterized by large-acreage farms.

Gas Storage Field and Facilities. The Storage Field area is also in active agricultural production; it is currently cultivated with irrigated row crops, orchards, and vineyards. The San Joaquin River passes through the southeastern portion of the Storage Field. The proposed 10-ac central compressor station would be centrally located within the Storage Field, along Avenue 3, approximately 0.25 mi east of Road 16. The compressor station site is presently cultivated with irrigated row crops.

Electric Power Line. Existing PG&E electric distribution lines are located along the proposed electric power line route, except for an approximately 1-mi segment along Avenue 7 where there is no existing transmission line. The area surrounding the electric power line corridor is in agricultural production (e.g., row crops and orchards).

Gas Pipeline. Approximately 2 mi of gas pipeline would be located in Madera County. The land use along and adjacent to the pipeline corridor is primarily agricultural (e.g., row crops and orchards).

Fresno County

Large-acreage farms dominate most of the project study area in Fresno County. The portion of the Project Area in Fresno County, with the exception of the Mendota Wildlife Area, is designated Agriculture in the General Plan. The portion of the Project Area in Fresno County is zoned Exclusive Agricultural (EA) (Fresno County Ordinance Code 2007 as cited in Entrix 2008). The AE Zoning District is intended to be an exclusive district for agriculture and for those uses that are necessary and an integral part of the agricultural operation. This District is intended to protect the general welfare of the agricultural community from encroachments of non-related agricultural uses, which by their nature, would be injurious to the physical and economic wellbeing of the agricultural district.

Gas Storage Field and Facilities. One proposed OM well pad site, and two alternative OM well pad sites have been identified throughout the portion of the Storage Field that is in Fresno County. Buried gas and water gathering lines are proposed to be located within the existing agricultural roads between the well pads and the central compressor station. Agricultural activities in the Fresno County portion of the Storage Field include row crops and orchards.

Gas Pipeline. Approximately 25 mi of gas pipeline would be located in Fresno County. Land use along and adjacent to the pipeline corridor is primarily agricultural or agricultural processing facilities. Agricultural processing facilities include the Spreckels Sugar Plant on the north side of SR 180, cotton gins, and various other active and inactive agriculture-related industrial uses. Several parcels of Farmland of Local Importance are located near the Mendota Wildlife Management Area in Fresno County.

Williamson Act Contracted Properties

The proposed Project surface facilities, as well as segments of the proposed pipeline alignment, are located on lands that are presently under Williamson Act contracts with the county. The Williamson Act is explained under the Regulatory Setting section, below. Williamson Act contracted properties are shown in Figure 3.3-1.

3.3.2 REGULATORY SETTING

Federal

No federal regulations apply to potential impacts to agricultural resources in the Project Area.

State

Williamson Act

The State allows local governments to enter into Williamson Act contracts or Farmland Security Zone (FSZ) contracts in order to preserve agricultural land and provide tax benefits to the landowner, as discussed.

The Williamson Act, formally known as the California Land Conservation Act of 1965 (California Government Code §51200– 51297.4, as amended), enables local governments to enter into contracts with private landowners that restrict specific parcels of land to agricultural or related open-space use. In return, these landowners receive property tax assessments that are based upon farming and open space uses rather than other potentially higher tax bases (DOC 2007b as cited in Entrix 2008). An agricultural preserve can consist of no less than the following minimum acreage:

- An area of 10 to 40 ac for Prime agricultural land if surrounded by or substantially surrounded by or contiguous to other agricultural preserve lands;
- An area of 40 ac or more for Prime agricultural land;

- An area of 40 to 160 ac for non-prime agricultural land if surrounded by or substantially surrounded by or contiguous to other agricultural preserve lands; and
- An area of 160 ac or more for non-prime agricultural land; provided that in order to meet this requirement, two or more parcels may be combined if they are contiguous and if they are in common ownership or use.

The Williamson Act states that a Board or Council, by resolution, shall adopt rules governing the administration of agricultural preserves. The rules of each agricultural preserve specify the uses allowed. Any commercial agricultural use would generally be permitted within any agricultural preserve. Local governments may identify compatible uses permitted with a use permit. Notwithstanding any determination of compatible uses by a city or county, unless the city or county, after notice and hearing, makes a finding to the contrary, the erection, construction, alteration, or maintenance of gas facilities are specifically determined under the Williamson Act to be compatible uses within any agricultural preserve (California Government Code §51238).

The FSZs are more stringent agricultural preservation contracts between a private landowner and public agency than standard Williamson Act contracts. There are no parcels designated as FSZ in the Storage Field, or along the proposed Project gas pipeline and electric power line alignments.

Local

Fresno County and Madera County regulate land use through zoning and general plan designations, which specify allowable uses, as well as through general plan policies, described below. California law generally provides that the CPUC has paramount siting authority with respect to projects developed by public utilities subject to the jurisdiction of the CPUC.

Fresno County

The Fresno County General Plan includes policies related to agriculture. These policies include, but are not limited to, the following:

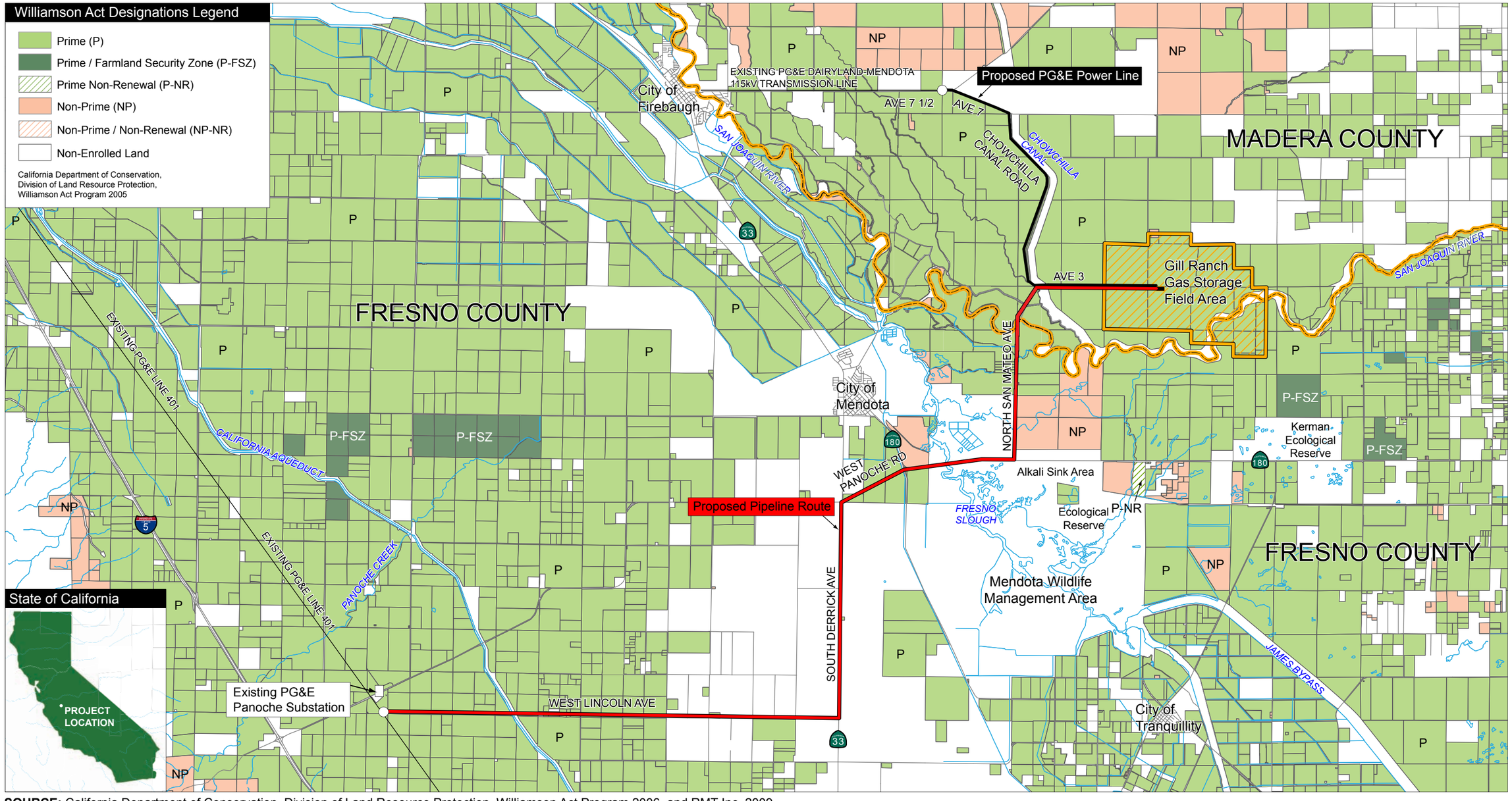
LU-A.2: The County shall allow by right in areas designated Agriculture activities related to the production of food and fiber and support uses incidental and secondary to the on-site agricultural operation. Uses listed in Table LU-3 (page 2-13 of the General Plan) illustrate the range of uses allowed in areas designated Agriculture. Table LU-3 lists under Agricultural uses allowed by right, certain oil and gas development activities pursuant to the policies in Section OS-C, Mineral Resources of the Open Space and Conservation Element; uses allowed by special permit include liquefied petroleum gas distribution and storage, mineral extraction, and oil and gas development pursuant to the policies in Section OS-C, Mineral Resources of the Open Space and Conservation Element.

LU-A.3: The County may allow by discretionary permit in areas designated Agriculture, special agricultural uses and agriculturally-related activities, including value added processing facilities, and certain non-agricultural uses listed in Table LU-3. Approval of these and similar uses in areas designated Agriculture shall be subject to the following criteria:

a) The use shall provide a needed service to the surrounding agricultural area which cannot be provided more efficiently within urban areas or which requires location in a non-urban area because of unusual site requirements or operational characteristics;

b) The use should not be sited on productive agricultural lands if less productive land is available in the vicinity;

Figure 3.3-1: Williamson Act Designations in the Project Area



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c) The operational or physical characteristics of the use shall not have a detrimental impact on water resources or the use or management of surrounding properties within at least one-quarter (1/4) mile radius; and

d) A probable workforce should be located nearby or be readily available;

LU-A.14: The County shall ensure that the review of discretionary permits includes an assessment of the conversion of productive agricultural land and that mitigation be required where appropriate.

OS-C.6: The County shall accept California Land Conservation (Williamson Act) contracts on land identified by the State as containing significant mineral deposits subject to the use and acreage limitations established by the County.

Madera County

The Madera County General Plan includes policies related to agriculture. These policies include, but are not limited to, the following:

5.A.13: The County shall require development within or adjacent to designated agricultural areas to incorporate design, construction, and maintenance techniques that protect agriculture and minimize conflicts with adjacent agricultural uses.

5.A.14: The County shall continue to enforce the provisions of its Right-to-Farm Ordinance and of the existing state nuisance law.

3.3.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on agriculture if the Project would:

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

b) Conflict with exiting zoning for agricultural use, or a Williamson Act contract

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use

Impact Discussion

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

Construction

Temporary Land Conversion. Construction of the Storage Field facilities would result in the temporary loss of agricultural land at two of the proposed construction staging areas.

One staging area would be located adjacent to and to the east of the proposed compressor station site. This site would be located in an agricultural field, and measures approximately 6 ac. The impacts would be temporary, and the field would be returned to agricultural use following construction. Impacts would be mitigated to less than significant levels with the implementation of Mitigation Measure Agriculture-1, which would require the preparation and implementation of an

Agricultural Impact Mitigation Plan, and Mitigation Measure Agriculture-2, which would require the preparation and implementation of a Post-Construction Crop Monitoring Plan.

Another proposed staging site would be located at an idle cotton gin located at the northern perimeter of the Storage Field. The site is a 20-ac agricultural storage yard site, and a 10-ac portion has been selected for use in construction staging with approval of the landowner. No impacts to agriculture would occur at this site.

In the unlikely event that agricultural land is disturbed during construction as a result of using areas along roadsides in the Field for staging, the land would be restored in accordance with the Agricultural Mitigation Plan procedures.

The use of TUAs along the pipeline corridor would temporarily convert agricultural land to non-agricultural use. The use of Mitigation Measures Agriculture-1 and Agriculture-2 would mitigate this impact to less than significant.

Mitigation Measure Agriculture-1: The Applicants shall prepare and implement an Agricultural Impact Mitigation Plan. The Plan shall be submitted to the CPUC for CPUC staff review and approval at least 45 days prior to the start of construction[1]. The Plan shall include measures that will reduce impacts to agricultural operations during construction of the proposed facilities, in coordination with landowners. Measures shall include, but are not limited to:

a) Farmers shall be compensated for the loss of crops during construction of the proposed facilities.

b) Agricultural fields shall be surveyed and regraded where needed to their original elevation following construction where needed.

c) Follow-up elevation surveys and finish grading shall be provided, if necessary, to ensure that the field grading and irrigation flows are not adversely affected.

d) Fences and irrigation facilities shall be replaced or repaired to their original condition following construction.

e) The Applicants shall coordinate with owners of land adjacent to the pipeline route regarding temporary blockage of access to the owner's parcel due to pipeline construction. Alternative access routes shall be provided, or farmers shall be provided breaks in spoil piles, trenches, or pipe strings to accommodate their need for field access during construction.

f) Topsoil shall be restored to preconstruction conditions as soon after construction is completed as practical.

g) Soils in the temporary construction easement located above the Westland Water District water pipeline shall not be scrapped, leveled, or removed during construction.

Mitigation Measure Agriculture-2: The Applicants shall prepare and implement a Post-Construction Crop Monitoring and Mitigation Plan. The Plan shall be submitted to the CPUC for CPUC staff review and approval at least 45 days prior to the start of construction. The Plan shall include measures that will reduce impacts to agricultural operations after construction of the proposed facilities, in coordination with landowners. The Applicants shall identify remaining soils and agricultural impacts associated with construction that require mitigation and shall implement the measures in the Plan. Follow-up restoration or appropriate measures included in the Plan shall include, but shall not be limited to:

[1] Throughout this MND, where Applicants are required to submit plans for CPUC staff review and approval by a specified date, it is anticipated that such review and approval will occur after the specified date for submittal.

a) Crop monitoring shall be conducted for two consecutive cropping seasons following the completion of facility construction and restoration of construction areas and construction staging areas.

b) On-site monitoring of growing crops shall be conducted at least two times during each growing season during the two-season crop monitoring period.

c) Gill Ranch Storage, LLC (GRS) shall correct trench settlement, as necessary, to maintain pre-construction grades. In agricultural land where trench settling is excessive and cannot be restored by touch-up surface grading, GRS shall import topsoil.

d) GRS shall require the contractor to remove all imported rock material during Easement Area restoration activities. GRS shall remove and dispose the excess rock from the Easement area where cultivation or soil settlement results in excessive surface rock compared to adjacent areas not disturbed by construction.

e) GRS shall correct irrigation system deficiencies/problems resulting from pipeline construction.

f) GRS shall correct subsurface drainage systems repairs that fail due to pipeline construction, provided those repairs were made by GRS. Subsurface drain line breaks or other damages to subsurface drainage systems that occur within the Easement Area shall be corrected to the extent that such breaks are the result of pipeline construction.

g) Subsurface drainage facilities or other measures shall be installed to restore these affected areas to pre-construction conditions.

h) GRS shall monitor the Easement Area for noxious weed infestations in conjunction with crop production monitoring described above. GRS shall take the appropriate measures to control any new noxious weed infestations that were not occurring within the Easement Area prior to pipeline construction.

Land Access. There is a potential that construction activities could impede access to agricultural parcels. Agricultural facilities such as fences, drainage conveyance features, water lines, and dikes may be damaged or removed during construction if care is not taken to avoid, relocate, or immediately repair damages. These impacts would be mitigated to less than significant by Mitigation Measure Agriculture-1.

Permanent Land Conversion. The proposed Project would result in the permanent conversion of 13.05 ac of agricultural land in areas designated Prime Farmland (6.30 ac) or Farmland of Statewide Importance (6.75 ac) (Farmland). No Unique Farmland would be converted to non-agricultural use. The conversion of Prime Farmland and Farmland of Statewide Importance is listed by acreage in Table 3.3-1. Farmland designations are shown in Figure 3.3-2.

The proposed Storage Field facilities are located on land classified variously as Prime Farmland and Farmland of Statewide Importance. The central compressor station would convert 10 ac of agricultural land to non-agricultural use, 5 ac of which is Prime Farmland.

The Project also would include up to 15 IW wells, which would be located on 4 well pads. Three existing well pads would be expanded and one new well pad would be developed. The typical existing well pad measures 150 by 240 ft (0.8 ac), and the typical proposed well pad measures 250 by 300 ft (1.7 ac). Use of 3 existing well pads for IW wells would result in conversion of varying acreages at each site (1.4, 1.54, and 0.6 acres) for a total of 3.54 ac. The fourth IW well pad site would require conversion of up to 1.7 acres. The total conversion for of agricultural land to non-agricultural use would be 5.24 ac for the IW wells.

It is conservatively assumed that up to 5 out of the 8 proposed OM well pads would be located in areas where there are no existing Gas Field facilities, resulting in an additional estimated 3.5 ac of agricultural conversion (based on a typical OM well pad dimension of 150 by 200 ft, or 0.7 ac per well pad), because the well pad locations could change.

Table 3.3-1: Prime Farmland and Farmland of Statewide Importance Converted to Non-Agricultural Uses

Project Component	Land Converted (ac)	
	Prime Farmland	***Farmland of Statewide Importance***
Compressor Station[1]	5.00	0.00
IW Well Pads[2]	0.00	4.64
OM Well Pads[3]	0.70	2.10
Access Roads[4]	0.00	0.00
Meter Station[5]	0.60	0.00
Two Mainline Valves (MLVs)[6]	0.00	0.01
Access Roads and Contingency	0.00	0.00
Total	***6.30***	***6.75***

Notes:

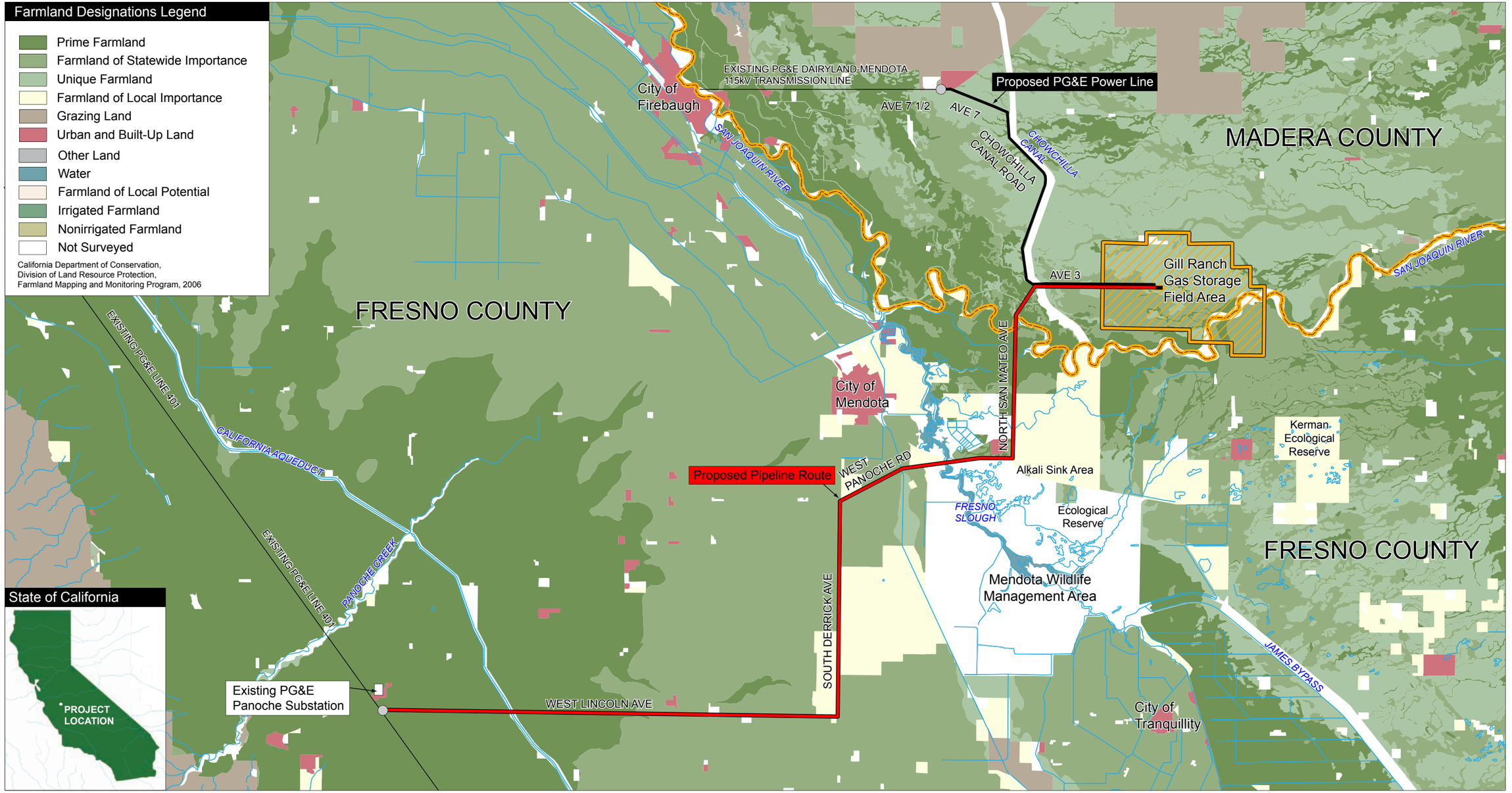
1. The compressor site is entirely in agricultural production; access will be via existing road.
2. Assumes one IW pad is undeveloped and requires 1.7 ac agricultural conversion; and the remaining pads are partially developed and require 3.54 ac agricultural conversion. Assumes three pads would expand existing well pads, and the remaining one pad would be entirely in agricultural production land.
3. Assumes five of the eight OM well pads are in agriculture and require 0.7 ac each; two of the well pads would be co-located with proposed IW well pads and requires no additional agricultural conversion; and the eight pad would be fully developed and requires no agricultural conversions.
4. Assumes possible additional land converted from agriculture for new access roads, depending on final well pad site selection, and valve station access road/gate requirements and locations, is not Prime Farmland or Farmland of Statewide Importance. Assumes no new access required for Line 401 meter station.
5. The facility measures 190 by 115 ft. Access is via existing road.
6. Each of the two MLVs measures 15 by 15 ft. Access is via existing roads.

SOURCE: Entrix 2008

Certain well pads may require new roads, even though most of the proposed well pads may be accessed by existing roads. Existing roads may need to be widened or lengthened in order to meet the new well pad requirements. The typical well pad access road would likely require no more than 0.1 ac per well pad. It is conservatively assumed that an additional 1.0 ac of agricultural land conversion spread among several well pads for new access roads (an average of 0.2 ac well pad spread over nine new well pads) because these well locations could change.

The amount of Prime Farmland that would be converted to non-agricultural land is also below the significance threshold of 10 ac, which is noted in California Government Code §51222 as the size of a parcel large enough to sustain their agricultural use in the case of prime agricultural land. The amount of Farmland of Statewide Importance, Unique Farmland, and non-Prime Williamson Act lands is also below the significance threshold of 40 ac as defined in the California Government Code §51222. The Applicants propose to reduce the impact further by participating in the land conservation programs that are currently being developed in Fresno and Madera Counties. Mitigation Measure Agriculture-1 would require that the Applicants implement an Agricultural Impact Mitigation Plan to avoid or minimize any long-term impacts to the affected agricultural land.

Figure 3.3-2: Farmland Designations in the Project Area



SOURCE: California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program 2006 and RMT Inc. 2009

LEGEND

Proposed Pipeline Route | Proposed PG&E Power Line | Gill Ranch Gas Storage Field Area | County Boundary | Tie-In Point

0 1 2 3 4 5 10 Miles

N W E S

RMT
ENVIRONMENT • ENERGY • ENGINEERING

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A minimal percentage of Farmland would be converted to a non-agricultural use. Madera County has approximately 365,300 ac of Important Farmland (Prime, Unique, Statewide Importance, and Local Importance), and Fresno County has approximately 1,391,500 ac of Important Farmland (DOC undated as cited in Entrix 2008). The conversion of 13.05 ac of Important Farmland by the proposed Project activities would equal approximately 0.00074 percent of the total acreage of Important Farmland in Madera and Fresno Counties. Impacts would be reduced to less than significant with implementation of Mitigation Measure Agriculture-3.

Mitigation Measure Agriculture-3: The Applicants shall participate in land conservation programs that are currently being developed in Fresno and Madera Counties. Madera County's program will create permanent conservation easements to preserve agricultural land and native habitat. Madera County will manage the program and the easements. Fresno County is developing a similar program that will be administered by a qualified land trust. The Applicants' participation in the programs shall comply with the following guidelines:

a) The Applicants shall pay fees into the conservation program to permanently preserve an appropriate quantity of land to fully mitigate Project impacts. The Applicants shall permanently preserve at least 20.35 ac (19.54 ac in Madera County and 0.81 ac in Fresno County). Additional land, included as 1.00 ac of contingency and access road land in this Project's Initial Study analysis of impacts to agriculture, shall be preserved at a 1:1 ratio in the county in which the land was converted to non-agricultural use.

b) Prior to construction, the Applicants shall enter into an agreement with each County to fully mitigate the farmland that is actually converted within that County either through acquisition of easements or other real property interests in prime farmland to ensure that the required acreage is permanently retained in productive agriculture (County Farmland Mitigation Agreement). The County Farmland Mitigation Agreement shall provide that in lieu of actually acquiring interest in real property, the Applicants shall either pay a fee to the County to fund a County agricultural land preservation program or directly fund a qualified third party approved by the County that will acquire easements or other real property interests in prime farmland.

c) To the extent that a suitable conservation program is available in either County prior to construction of the Project, all payments of fees or funding for easement acquisition required by the County Farmland Mitigation Agreement for that County shall be completed by the Applicants prior to commencement of construction.

d) If a suitable conservation program is not available in either County prior to commencement of construction of the Project, the Applicants shall post a bond prior to construction, in an amount reasonably determined by the County to provide for implementation of the farmland mitigation described above. The Applicants shall use the bond money to participate in a suitable farmland conservation program or regional land trust, following the above guidance for the area of land to be preserved. The conservation agreement shall be in place prior to the start of Project operations. The Applicants shall submit the name of the trust/conservation program, prior to the signing of the agreement, to the CPUC for approval.

e) If the Applicants find that the desired amount of conservation in each county cannot be obtained with a good faith effort (e.g., if a County does not contain land available for conservation, or if programs require a purchase of a denomination of land so as to make purchase in both counties inappropriate), then the amount of land to be preserved in each County may be adjusted with the approval of CPUC staff. The amount of land to be preserved shall still be at least 20.35 ac.

Gas Pipeline. The gas pipeline would require conversion of approximately 0.3 ac of agricultural land (a combination of orchard and agricultural access roads) for construction of a tap and meter facility in Fresno County at the PG&E Line 401 tie-in point, and for construction and access related to two mainline valves along the alignment. The tap and meter station location is designated as

Prime Farmland. The proposed mainline valves along Highway 33 and Highway 180 are designated as Farmland of Statewide Importance.

Pipeline trenching and temporary use areas (TUAs) would result in temporary loss of agricultural production in various areas along the pipeline corridor. The land would be returned to agricultural use following the completion of pipeline construction. Impacts would be short-term and less than significant. Implementation of Mitigation Measures Agriculture-1 and Agriculture-2 would reduce impacts to less than significant.

Electric Power Line. The new power line would be constructed within existing PG&E distribution line ROWs, with the exception of an approximately 1-mi segment. The existing distribution lines are located in public road ROW where PG&E currently has a franchise authorizing it to operate. PG&E would construct the new 1-mi segment of the electric power line in public road ROW. Construction within these existing corridors would be temporary, and would not result in the permanent loss of agricultural land. Construction could temporarily impede access to agricultural land. Mitigation Measure Agriculture-1, which would require coordination with landowners regarding access to land parcels, would mitigate impacts to less than significant levels.

Operation and Maintenance

Operation and maintenance would not convert farmland. No additional farmland would be lost during operation and maintenance.

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

Construction

Some proposed Project components would be located on lands that are presently under Williamson Act contracts. The Applicants' acquisition of the 10-ac compressor site and related surface facility sites would automatically void the Williamson Act contracts pertaining to those sites (California Government Code §51295) if the Applicants obtain CPUC approval for the Project. There would be no conflict with Williamson Act contracts because the contracts would be voided upon transfer of land to the Applicants.

California Government Code §51238 states that "the erection, construction, alteration, or maintenance of gas, electric, water, communication, or agricultural laborer housing facilities are hereby determined to be compatible uses within any agricultural preserve". There would be no conflict with existing zoning for agricultural use.

Operation and Maintenance

Operation and maintenance of any of the facilities would not result in additional land disturbance or conversion to non agricultural use. Operation and maintenance would not conflict with cancellation of Williamson Act contracts. There would be no impact.

c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

Construction

The proposed project would not directly conflict with Williamson Act contracts, as discussed under impact (b). The proposed project would, however, result in the conversion of Williamson Act land to non-agricultural use. Approximately 19.34 ac of Williamson Act land would be converted to non-agricultural use (some of this land is also counted in the conversion of Farmland to non-agricultural use). The acreage of land that would be converted as a result of the proposed project is listed by component in Table 3.3-2.

Table 3.3-2: Williamson Act Land Permanently Converted to Non-Agricultural Uses

Project Component	Agricultural Area to be Converted to Non-Agricultural Use (ac)[1,2]
IW Wells	5.24
OM Wells	3.50
Central Compressor Station	10.0
Meter Station at Line 401 Tie In	0.60
Total	***19.34***

Notes:

1 Excludes existing access roads between agricultural roads and well pads

2 Potential new access spurs to well pads are not considered in this analysis. Buried pipeline sections are not considered in this analysis. Proposed aboveground pipeline valve stations are not located on Williamson Act Contracted Lands.

Gas Storage Field and Facilities. Construction of the gas Storage Field and facilities would result in the conversion of 19.34 ac of Williamson Act contract land, as listed in Table 3.3-2. Some of this land is also Prime Farmland or Farmland of Statewide Importance. The implementation of Mitigation Measure Agriculture-3 would mitigate this impact to a less than significant level.

Gas Pipeline. The gas pipeline would be completely buried underground; the meter station would require the conversion of 0.60 ac of Williamson Act contract land to non-agricultural use, as listed in Table 3.3-2. Some of this land is also Prime Farmland or Farmland of Statewide Importance. The use of Mitigation Measure Agriculture-3 would mitigate this impact to less than significant.

Electric Power Line. The electric power line would be sited within an existing utility corridor ROW, or within the existing road ROW. There would be no impact.

Operation and Maintenance

No other changes in the existing environment would result in the conversion of Farmland to non-agricultural use during operation and maintenance of proposed project facilities. There would be no impact.

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3.4 Air Quality

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐
f) Conflict with the State goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth by AB 32, California Global Warming Solutions Act of 2006?	☐	☐	☒	☐

3.4.1 ENVIRONMENTAL SETTING

Regional Setting

Ambient air quality is affected by local climate, topography, and pollutants emitted into the atmosphere from activities such as farming, construction, industrial facilities, and traffic.

Air Basin

The Project site is approximately 23 mi west-northwest of the City of Fresno and 6 mi east-northeast of the City of Mendota, placing the Project within the boundaries of the San Joaquin Valley Air Basin. The San Joaquin Valley Air Basin (SJVAB) is regulated by the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAPCD is made up of eight counties:

San Joaquin	Kings
Stanislaus	Tulare
Merced	Kern County (SJVAB portion)
Madera	Fresno

The SJVAB extends 300 mi and is bounded on the west by Coast Ranges, on the east by the Sierra Nevada, on the north by the San Joaquin-Sacramento County line, and on the south by the Tehachapi Mountains (CARB 2009).

Meteorology

The climate of the San Joaquin Valley is characterized by hot summers, mild winters, and small amounts of precipitation. The major climatic controls in the valley are the mountains on three sides and the semi-permanent Pacific High pressure system over the eastern Pacific Ocean. The Great Basin high pressure system to the east also affects the Valley, primarily during the winter months (Entrix 2008).

Precipitation, temperature, wind speed, and wind direction data have been recorded at the meteorological monitoring station located in Madera, approximately 12 mi east-northeast of the Project Area. Daily high and low temperatures in summer average 95.3 and 59.8 degrees Fahrenheit (°F), respectively (Desert Research Institute as cited in Entrix 2008). Daily high and low temperatures in winter average 56.6 and 36.7 °F, respectively. The average annual rainfall at the Project Area is about 11.3 inches, of which about 80% occurs between November and March (Entrix 2008).

Baseline Air Quality

The United States Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standard (NAAQS) for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter fewer than 10 microns in diameter (PM_{10}), particulate matter fewer than 2.5 microns in diameter ($PM_{2.5}$), and lead. The California Air Resources Board (CARB) has established standards for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, $PM_{2.5}$, lead, hydrogen sulfide, and vinyl chloride (C_2H_3Cl).

Table 3.4-1 shows the current designations under the Clean Air Act (CAA) and CARB standards. Nonattainment and attainment designations are based on whether or not air quality standards have been achieved. Some air basins or areas have not received sufficient analysis for certain criteria air pollutants and are designated as unclassified for those pollutants.

3.4.2 REGULATORY SETTING

Federal

National Ambient Air Quality Standards

The CAA, which was last amended in 1990, requires the USEPA to set NAAQS (40 CFR part 50) for pollutants considered harmful to public health and the environment. The CAA established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The USEPA Office of Air Quality Planning and Standards has set NAAQS for six principal pollutants, which are called "criteria" pollutants (see Table 3.4-2). Units of measure for the standards are parts per million (ppm) by volume, milligrams per cubic meter of air (mg/m^3), and micrograms per cubic meter of air ($\mu g/m^3$).

New Source Performance Standards

The New Source Performance Standards (NSPS) are pollution control standards issued by the USEPA. The NSPS dictate the level of pollution that a new stationary source may produce. These standards are authorized by § 111 of the CAA and the regulations are published in 40 Code of Federal Regulations Part 60.

Table 3.4-1: National And State Air Quality Designations for the SJVAB

Pollutant	National Designation	State Designation
Ozone (1-hour)	-	Nonattainment
Ozone (8-hour)	Serious Nonattainment	Nonattainment
Fugitive Dust (PM_{10})	Attainment	Nonattainment
Fugitive Dust ($PM_{2.5}$)	Nonattainment	Nonattainment
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Attainment
Carbon Monoxide (CO)	Unclassified/Attainment	Attainment/Unclassified
Sulfur Dioxide	Unclassified	Attainment
Sulfates	-	Attainment
Lead	No Designation	Attainment
Hydrogen Sulfide	-	Unclassified

Notes:
[1] Madera County
[2] Fresno County

SOURCE: SJVAPCD 2008

Table 3.4-2: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
		Concentration[3]	Primary[3,4]	Secondary[3,5]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	—	Same as Primary Standard
	8 Hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	
Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	—	
Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	35 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m^3	15.0 µg/m^3	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	9 ppm (10 mg/m^3)	None
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1 Hour	0.18 ppm (339 µg/m^3)	—	

Table 3.4-2 *(Continued)*: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
		Concentration[3]	Primary[3,4]	Secondary[3,5]
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	0.030 ppm (80 µg/m^3)	—
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	—
	3 Hour	—	—	0.5 ppm (1300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	—	—
Lead[6]	30 Day Average	1.5 µg/m^3	—	—
	Calendar Quarter	—	1.5 µg/m^3	Same as Primary Standard
	Rolling 3-Month Average[7]	—	1.5 µg/m^3	
Visibility Reducing Particles Sulfates	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.	No Federal Standards	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride[6]	24 Hour	0.01 ppm (26 µg/m^3)		
Sulfates	24 Hour	25 µg/m^3		

NOTE:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three 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 PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
7. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

SOURCE: CARB 2008A

National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP) are emissions standards set by the EPA for listed federal hazardous air pollutants that may cause an increase in fatalities or in serious, irreversible, or incapacitating illness. These standards are authorized by Section 112 of the CAA and the regulations are published in 40 CFR Parts 61 and 63. The standards in 40 CFR Part 63 are for a particular source category and require the maximum degree of emission reduction that the USEPA determines to be achievable, which is known as Maximum Achievable Control Technology.

New Source Review

Congress established the New Source Review (NSR) permitting program as part of the 1977 CAA Amendments. The NSR is a preconstruction permitting program that serves two important purposes. First, it ensures that air quality is not significantly degraded from the addition of new and modified factories, industrial boilers and power plants. In areas with unhealthy air, the NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, the NSR assures that new emissions do not significantly worsen air quality. Second, the NSR program assures people that any large new or modified industrial source in their neighborhoods will be as clean as possible, and that advances in pollution control occur concurrently with industrial expansion.

NSR permits are legal documents that the facility owners/operators must abide by. The permit specifies what construction is allowed, what emission limits must be met, and often how the emissions source must be operated.

Title V Operating Permits.

Most Title V permits are issued by state and local permitting authorities. These permits are often called Part 70 permits because the regulations that establish minimum standards for State permit programs are found in 40 CFR Part 70. The USEPA also issues Title V permits to sources in Indian country and in other situations, as needed. USEPA-issued permits are called Part 71 permits. Operating permits are legally enforceable documents that permitting authorities issue to air pollution sources after the source has begun to operate.

State

State Implementation Plan

The State Implementation Plan (SIP) describes measures the state would use to attain and maintain federal NAAQS. The SIP consists of narrative, rules, technical documentation, and agreements that an individual state will use to clean up polluted areas. A California law passed in 1988 which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the California Clean Air Act is the requirement that local air districts in violation of the California Ambient Air Quality Standards must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

Air Toxics Hot Spots Act (ATHSA)

The Air Toxics Hot Spots Act (ATHSA) requires stationary sources to report the types and quantities of certain substances routinely released into the air. Some of the goals of the ATHSA are to:

- Collect emission data
- Identify facilities having localized impacts
- Notify nearby residents of significant risks

- Reduce significant risks to acceptable levels

The ATHSA requires a statewide inventory of air toxics emissions from stationary emissions.

Airborne Toxic Control Measures

Airborne Toxic Control Measures (ATCMs) are regulations adopted by the CARB that are intended to reduce exposures to toxic pollutants. Each ATCM is codified in the California Code of Regulations.

Global Warming Solutions Act of 2006

The State of California adopted the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) on September 27, 2006 to address the threat of global warming caused by the increase in greenhouse gas (GHG) emissions. AB 32 requires sources within the state to reduce carbon emissions to 1990 levels by the year 2020. The 1990 CO_2 equivalent emissions are estimated to be 427 million metric tons. The CARB has estimated CO_2 equivalent emissions to be 596.4 million metric tons in 2020 if no actions are taken to reduce greenhouse gas emissions. Emission sources in the State would need to reduce emissions by approximately 28 percent (or 169 million tons) before 2020 to meet this goal. Primary sources of greenhouse gas emissions include on-road transportation, electric power generation, and industrial facilities (CARB 2008b).

The CARB recently developed mandatory reporting rules for significant sources of GHGs as a result of AB 32 (Subchapter 10, Article 1, Sections 95100 to 95133, Title 17, California Code of Regulations). The CARB developed a scoping plan that indicates how GHG emission reductions would be achieved from significant GHG sources. The CARB will also adopt regulations to achieve maximum technologically feasible and cost-effective GHG emission reductions.

CARB has proposed draft regulations to limit GHG emissions from electric power plants and other specific source categories. The proposed regulations do not include sources such as gas storage fields. This type of source is also not subject to mandatory GHG emission reporting. This project would not currently be subject to any requirements under the California Climate Change Regulatory Program. The GHG emissions from this project were still estimated to evaluate impacts and several recommended measures were reviewed for feasibility.

CARB Staff Proposal

In its Staff Proposal from October 2008 the CARB initiated development of recommended statewide interim thresholds of significance for GHGs that may be adopted by local agencies for their own use in environmental review. The Staff Proposal serves as a recommendation to the Office of Planning and Research (OPR) for developing revisions to the California Code of Regulations (CCR), as mandated by SB 97. A requirement of SB 97 is that the OPR prepare and submit guidelines for the GHG emissions and GHG impacts mitigation to the Resources Agency.

The Staff Proposal does not address every kind of project that could be subject to CEQA review; rather, the focus is on common project types that are collectively responsible for the majority of GHG emissions in California. Industrial, residential, and commercial projects comprise this group of common projects. CARB's purpose in developing the GHG emissions thresholds are to advance climate objectives, streamline project review, and promote consistency and uniformity in analysis of the impacts of GHG emissions in CEQA documents.

The Staff Proposal contains a preliminary interim GHG threshold concept for industrial projects. The threshold is based on the objective of having most project emissions subject to mitigation under CEQA, thereby substantially reducing GHG emissions from these projects. It was stated in the Staff Proposal that CARB staff believes this can be accomplished with a threshold that allows small projects to be considered less than significant. CARB staff used existing data for the industrial sector to derive a proposed hybrid threshold. The proposed threshold consists of a

quantitative threshold of 7,000 metric tons of CO_2 equivalent per year for operational emissions (excluding transportation), and performance standards for construction and transportation emissions. These performance standards have not yet been finalized.

The OPR released its proposed amendments to CEQA Guidelines related to GHG emissions on April 13, 2009. The rulemaking process must be completed by January 1, 2010.

Local

Air quality is managed at the local level through land use and development planning practices. The proposed project would be regulated under the jurisdiction of the SJVAPCD. The SJVAPCD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws.

Table 3.4-3 lists the several SJVAPCD general prohibitory rules that would apply to this project.

3.4.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on air quality if the Project would:

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

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

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)

d) Expose sensitive receptors to substantial pollutant concentrations

e) Create objectionable odors affecting a substantial number of people

f) Conflict with the State goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth by AB 32, California Global Warming Solutions Act of 2006

Impact Discussion

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

The proposed project would not be subjected to the listed federal air pollution rules. NSPS is not applicable because it is not in a source category for which an NSPS has been issued. The project would not be subject to a NESHAP because the projected emissions are below the major source thresholds of 10 tons per year (tpy) for a single hazardous air pollutant (HAP) and 25 tpy for combined HAPs.

Projects that have air emissions that exceed specified thresholds may require certain types of permits such as NSR or Title V operating permits. The air emissions from the proposed project would not exceed major source thresholds for any of these permit programs; therefore, these types of permits would not be needed for this project.

CARB implements several air regulatory programs that may apply to this project. The California CAA requires the local district to attain and maintain both national and state ambient air quality standards at the “earliest practical date”. Compliance with the SJVAPCD rules and regulations would ensure the proposed project’s compliance with CARB program and the SIP provisions.

Table 3.4-3: Applicable SJVAPCD Permit, Prohibitory, and Fugitive PM_{10} Rules

Rule	Description
Rule 2010 Permits Required	Requires require any person constructing, altering, replacing or operating any source operation which emits, may emit, or may reduce emissions to obtain an Authority to Construct (ATC) or a Permit to Operate
Rule 2201 New and Modified Stationary Source Review	This rule shall apply to all new stationary sources and all modifications to existing stationary sources which are subject to the District permit requirements and after construction emit or may emit one or more affected pollutant. The rule implements both federal and state new source review requirements and contains the following elements: best available control technology (BACT), emission offsets, and air quality impact analysis (AQIA).
Rule 4101 Visible Emissions	Prohibits visible emissions as dark as or darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour.
Rule 4102 Nuisance	Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.
Rule 4201 Particulate Matter Emission Standards	Prohibits PM emissions in excess of 0.1 grains per dry standard cubic foot
Rule 4301 Fuel Burning Equipment	Establishes emission limits for combustion contaminants for "any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer."
Rule 4305 Boilers, Steam Generators, and Process Heaters Phase 2	Limits NO_x emissions from specified combustion devices to 30 parts per million by volume (ppmv) at 3 percent oxygen and CO emissions to 400 ppmv.
Rule 4306 Boilers, Steam Generators, and Process Heaters Phase 3	Limits NOx emissions from specified combustion devices to specified levels. The section applicable to the process gas heaters is 5.11H (Units limited to annual heat input of 9 billion Btu/year to 30 billion Btu/year). The applicable limits are 30 ppmv NOx and 400 ppmv CO.
Rule 4408 Glycol Dehydration Systems	Requires that the dehydrator be vented to a control system.
Rule 4801 Sulfur Compounds	Prohibits sulfur compound emissions, calculated as SO_2, in excess of 2,000 ppmv from any source.
Rule 8011 Fugitive PM_{10} Prohibitions, General Requirements	Sets forth definitions, applicability and administrative requirements for anthropogenic sources of PM_{10}.
Rule 8021 Fugitive PM_{10} Prohibitions, Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities	Limits fugitive dust emissions from construction, demolition, excavation, and related activities.
Rule 8041 Carryout and Trackout (Fugitive PM_{10} Prohibitions)	Requires application of specific measures to minimize fugitive dust emissions from construction carryout and trackout.
Rule 8051 Open Areas (Fugitive PM_{10} Prohibitions)	Requires application of specific measures to minimize fugitive dust emissions from open areas larger than 3.0 ac containing more than 1,000 square ft of disturbed surface.
Rule 8061Paved and Unpaved Roads (Fugitive PM10 Prohibitions)	Requires application of specific measures to minimize fugitive dust emissions from constructed paved and unpaved roads on the Project Area.
Rule 8071 Unpaved Vehicle/Equipment Traffic Areas (Fugitive PM_{10} Prohibitions)	Requires application of specific measures to minimize fugitive dust emissions from unpaved vehicle/equipment traffic areas experiencing more than 50 annual average daily trips.

SOURCE: SJVAPCD 2009

The proposed project would not obstruct the Global Warming Solutions Act of 2006 insofar as mitigation measures would be implemented to ensure the project does not conflict with the regulations and goals that the CARB will also adopt to achieve maximum technologically feasible and cost-effective GHG emission reductions.

The projected benzene emissions from this project would exceed the ATHSA reporting thresholds. The proposed project will have to follow the proper guidelines of the act to in compliance.

The ATCM for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater (17 CCR § 93116) would apply to some of the equipment (specifically, portable generators and drilling rigs) that may be used during the construction phase. The Tier 2 engines that have been proposed for use with this Project would comply with the requirements of the portable engine ATCM.

The diesel fire water pump installed as part of the compressor station would also be subject to the ATCM for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater. The ATCM requires that new direct-drive emergency standby diesel-fueled fire-pump engines (>50 brake horsepower) meet the Tier 2 emission standards specified in the Off-Road Compression Ignition Standards for off-road engines with the same maximum rated power (Title 13 CCR, section 2423) until 3 years after the date the Tier 3 standards are applicable for off-road engines with the same maximum rated power. Tier 3 standards are applicable to 100-horsepower (HP) engines for model year 2008; therefore, the Tier 3 standard for 100-HP pump engines is not applicable until 2011. The proposed fire water pump engine complies with Tier 3 emission standards for its size category, and therefore it complies with the ATCM requirements.

The SJVAPCD has developed an Air Quality Plan and promulgated rules to implement SIP, some of which apply to the proposed project. The SJVAPCD Attainment Demonstration Plan defines the proposed strategies, including stationary source and transportation control measures and new source review rules, which would be implemented to attain and maintain the state ambient air quality standards. The relevant stationary source control measures and new source review requirements would be applicable to the project. The Project has been designed to meet all the applicable Permit, Prohibitory and PM_{10} Rules requirements listed above. The NO_X and VOC emissions from some of the proposed equipment would exceed the SJVAPCD emission thresholds for a BACT determination; therefore, the Applicants completed a BACT analysis (see below).

The emissions caused by the Project would be less than the SJVAPCD's thresholds for emission offsets; therefore, offsets would not be required for this project. An air quality impact analysis would need to be conducted and this analysis would be submitted with the ATC application for SJVAPCD approval, unless the SJVAPCD waives this requirement. The SJVAPCD's Risk Management Review Policy for Permitting New and Modified Sources requires the applicant to evaluate potential impacts of toxic substances. An air toxics risk evaluation would be submitted with the ATC application.

Measures for reducing fugitive dust and emissions from diesel combustion would be implemented during the construction phase as a matter of compliance with SJVAPCD rules. The operation and maintenance of the project would be designed to comply with SJVAPCD rules that include emissions limitations and air pollution control technologies, such as BACT.

A BACT determination would be required for VOC and NO_x emissions from the process heaters and dehydrators. A preliminary BACT analysis conducted by the Applicants suggests that BACT for NO_x from the process heaters and dehydrators would be 9.0 ppmv at 3% O_2. BACT for VOC from these process units would be good combustion control. A BACT determination would also be required for VOC from the natural gas storage facility. The Applicants have proposed that BACT for the thermal oxidizers would be 98% destruction efficiency. BACT for fugitive leaks would be a

Leak Detection and Repair program with monthly inspections and a 10,000 ppm leak definition. The internal combustion sources (emergency standby engines and fire pump) would also be subject to BACT for NO_x and VOC. The Applicants' proposed BACTs for the emergency standby engines and the fire water pump are listed in Table 3.4-4.

The Applicants' proposed BACT for NO_x, VOC, and CO for the fire pump would be in compliance with the Tier 2 standards. The proposed BACT determination would be included in the application for the Authority to Construct. The SJVAPCD would determine whether the proposed BACT measures are acceptable.

The Applicants' air quality plan implicitly incorporates all the rules and regulations of the SJVAPCD. The implementation of these project design features and practices would result in a less than significant impact to air quality and no mitigation measures are required.

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

Construction

The construction phase of the project would result in emissions of NO_x, SO_2, CO, and PM_{10}. Emission rates for these pollutants and meteorological data were used in the AERMOD model to estimate ambient air quality concentrations. The results were then compared to federal and state ambient air standards as shown in Table 3.4-5 (Entrix 2008). Construction emissions from this project would not exceed federal or state ambient air quality standards for NO_2, SO_2, or CO or federal ambient air standards for PM_{10}.

The background PM_{10} concentration exceeds the 24-hour and annual state ambient air standards. The background $PM_{2.5}$ concentration exceeds the annual federal standard and the 24-hour state standard. The construction impacts alone are well below the standards.

The SJVAPCD has adopted a set of PM_{10} Fugitive Dust Rules collectively called Regulation VIII. Several components of Regulation VIII specifically address fugitive dust generated by construction related activities. The SJVAPCD has determined that any determination of significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. Compliance with Regulation VIII for all sites would constitute implementation of sufficient mitigation to reduce PM_{10} impacts to a level considered less than significant from the perspective of the SJVAPCD. Compliance with Regulation VIII would require the preparation of a Dust Control Plan. The Dust Control Plan would contain, but would not be limited to, the following measures:

1) The Applicants shall improve the existing unpaved roads with all weather surface materials to the IW well sites and the central compressor facility from the existing main access roads in order to reduce construction and long-term Project-generated dust.
2) At all active construction sites:
   - Water all active construction areas at least twice daily as necessary and indicated by soil and air conditions;
   - Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;
   - Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites;
   - Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites; and
   - Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

Table 3.4-4: BACT for Project Components

Pollutant	Standby Engines BACT (g/bhp-hr)	Fire Water Pump BACT (g/bhp-hr)
NO_x	1.0	4.9
VOC	1.0	4.9
CO	2.75	3.7

Table 3.4-5: Modeled Maximum On-Site Construction Impacts

Pollutant	Averaging Time	Maximum Construction Impacts ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2[1]	1-hour Annual	176 1	107 19	283 20	339 ---	--- 100
SO_2	1-hour 24-hour Annual	10 1 0	47 18 5	57 19 5	650 109 ---	--- 365 80
CO	1-hour 8-hour	56 26	4,370 2,420	4,426 2,446	23,000 10,000	40,000 10,000
PM_{10}	24-hour Annual	12 0	122 38	134 38	50 20	150 50
$PM_{2.5}$	24-hour Annual	2 0.1	104 19.8	106 19.9	--- 12	65 15

Notes:
[1] Ozone limiting method applied for 1-hour average, using concurrent 0_3 data (1992). ARM applied for annual average, using national default 0.75 ratio. Uncorrected 1-hour NOx concentration is 236 $\mu g/m^3$.

3) The following measures shall be implemented at construction sites that are greater than 4.0 ac in area (e.g., the central compressor site):
   - Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more);
   - Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.);
   - Limit traffic speeds on unpaved roads to 15 mi per hour;
   - Install sandbags or other erosion control measures to prevent silt runoff to public roadways; and
   - Replant vegetation in disturbed areas as quickly as possible.

4) The following measures shall be implemented at construction sites that are large in area, located near sensitive receptors, or which for any other reason may warrant additional emissions reductions at the discretion of the SJVAPCD:
   - Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mi per hour
   - Limit the area subject to excavation, grading, and other construction activity at any one time.

5) Access to the compressor station shall be provided on a rocked surface exiting immediately off of Avenue 3. Routing to the well sites from Avenue 3 and shall require

an all-weather surface on existing farm roads between the potential well sites and Avenue 3 to provide all season access.

Operation and Maintenance

Emissions for operation and maintenance of the gas storage facility were calculated and found to be below the NSR permitting threshold; NSR permitting would require dispersion modeling to evaluate compliance with ambient air standards. Fugitive dust emissions would be caused by driving on operational dirt roads; compliance with Regulation VIII, which requires implementation of a Dust Control Plan as described above, would reduce impacts to less than significant levels. Only minor emissions of air pollutants from vehicles used for maintenance or operations are expected for the operation phase of the gas pipeline or transmission line; therefore, the operation and maintenance phase of this project is expected to have a less than significant impact on ambient air quality.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Construction

The construction equipment would emit ozone precursors as a result of fuel combustion. The projected Reactive Organic Gas (ROG) emissions of 1.7 tpy would be below the significance threshold for ROGs. The projected NO_x emissions of 35.7 tpy would exceed the threshold for potential significance. Mitigation Measures Air Quality-1 and -2 would be required to reduce the impact to less than significant.

Mitigation Measure Air Quality-1: The Applicants shall participate in the San Joaquin Valley Air Pollution Control District's (SJVAPCD's) Voluntary Emission Reduction Agreement program to offset construction-generated emissions of NOX. An agreement for the Applicant to make a one-time payment that will result in NO_X emission reductions equivalent to at least 26 tons shall be signed prior to the commencement of construction activities. The payment shall be the amount that has been determined by the District to be sufficient to fund projects resulting in equivalent emission reductions of 26 tons of NO_x.

Mitigation Measure Air Quality-2: Construction workers shall meet at staging areas and be transported (in carpools) to jobsites, as practicable. These staging areas will be located in Fresno and Madera Counties, as shown in Figure 2.3-4.

Operation and Maintenance

The emissions of NO_x and ROG from operation and maintenance of the Storage Field and facilities, gas pipeline, and transmission line would be 2.36 tpy and 5.23 tpy, respectively. These emissions are below SJVAPCD's significance thresholds. Impacts would be less than significant and no mitigation would be required.

d) Expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are locations where groups of individuals, including infants, children, the elderly, and the chronically ill, that may be more susceptible than the general population to health risks from air pollution may be found. Schools, day-care facilities, convalescent homes, and hospitals are of particular concern. No such air quality-sensitive receptors were identified within 6 mi of this project.

There are 3 Class 1 areas located within 60 mi of this project. The Class 1 areas are Pinnacles National Monument, Yosemite National Park, and Kaiser Wilderness. Class 1 airsheds require the

highest level of protection under the CAA. An ambient air increment analysis is not required because this project would not trigger Prevention of Significant Deterioration requirements. The responsible Federal Land Managers use an index of 10 tpy per kilometer to determine if a detailed analysis is required for potential visibility or other air quality-related values at Class 1 areas. The calculated index for this project at each of the three Class 1 areas is less than 10 tpy per km; therefore, no further Class 1 impact analysis is required.

There are residential sites within 1,000 ft of the proposed gas pipeline alignment and residences on Road 16, located approximately 1 mi from the proposed central compressor station site. These residences would be exposed to air pollutant emissions during construction activities. Emission reduction measures, as described in section (b), for engine exhaust and fugitive dust during construction activities would be implemented, in accordance with SJVAPCD regulations. Residents in close proximity to the construction activities would not be exposed to substantial pollutant concentrations after implementation of these project design features and practices.

There is one occupied residence within the Storage Field boundary that would be exposed to air pollutant emissions during operation and maintenance of the compressor station. The emissions from the compressor station would be less than the thresholds requiring air dispersion modeling (see section [b] above); therefore, this residence would not be exposed to substantial pollutant concentrations. Sensitive receptors would not be exposed to substantial pollutant concentrations; therefore, there would be no impact.

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

Construction of this Project would not result in emissions of odorous substances.

Natural gas delivered by PG&E would be odorized with methyl mercaptan off-site before it enters the Project gas transmission pipeline and storage facilities. Odorant would not be added on site to the natural gas withdrawn from the storage reservoir; however, this withdrawn storage gas would have residual odorant from the off-site addition. Natural gas is odorized as a safety measure, so that an accidental release of natural gas during the operation phase of this project would be detected more readily.

Aboveground piping would be maintained to minimize leakage of odorized gas under normal circumstances. The proposed BACT for VOC emissions would require that the compressor station's valves, flanges, and other piping components be monitored for leaks by operations personnel as part of the day-to-day operation of the facility. There is only one residence within the Storage Field boundary; therefore, any release of gas would not affect a substantial number of people. Impacts related to odors would be less than significant, and no mitigation measures are required.

f) Conflict with the State goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth by AB 32, California Global Warming Solutions Act of 2006?

There would be no direct impacts from the emissions of GHGs. The potentially adverse impacts from GHG emissions are the result of the cumulative impact of all of the GHG emissions in the world. There are no established significance criteria for GHG emissions; therefore, the significance of project GHG impacts must be evaluated on a case-by-case basis. In its guidance on CEQA and Climate Change, the California Air Pollution Control Officers Association has suggested that a lead agency might rely on thresholds established for criteria pollutants as a screening method, and analyze GHG emissions (and require mitigation) for projects with emissions above the criteria pollutant thresholds. The lead agency may also choose to base local CEQA thresholds on state guidelines or on the category-specific reduction targets established by CARB in its scoping plan for implementing AB 32. The SJVAPCD has not yet established CEQA thresholds for GHG emissions.

While the proposed project would result in emissions of GHGs during the construction and operating phases, no adopted guidance exists to indicate what level of GHG emissions would be considered substantial enough to result in a significant adverse impact on global climate. However, it is generally the case that an individual project is of insufficient magnitude to influence climate change or result in a substantial contribution to the global GHG inventory. Thus, the GHG impacts from a project would be recognized as cumulative impacts. Accordingly, further discussion of the project's GHG emissions and their impact on global climate are addressed in Section 3.18, Mandatory Findings of Significance.

Construction

Emission of greenhouse gases from combustion of fuel by construction equipment is estimated using procedures in the CARB AB 32 reporting regulation. CARB indicates that the emission factor for CA Low Sulfur Diesel is 9.96 kg CO_2/gallon. The estimated fuel consumption by construction equipment is 136,027 gallons; therefore the estimated CO_2 emissions from construction equipment are 1,355 MT CO_2. Using Emfac2007 V2.3 Nov 1 2006, the average CO_2 emission from Fresno County vehicles in 2009 is 0.827 lb CO_2/vehicle miles traveled (VMT). The estimated VMT during construction is 273,000 mi. Therefore the estimated CO_2 emissions from construction traffic is 113 tons. The total estimated emissions of greenhouse gases during construction is 1,457 MT of CO_2 equivalent.

Operation and Maintenance

Three types of greenhouse gas emissions would be emitted from operation of the Project:

- Combustion emissions (primarily CO_2);
- Fugitive emissions (primarily methane from fittings, pumps, and compressors; and
- SF_6 emissions from electrical equipment

Emissions of GHGs from operation and maintenance of the proposed Project would be minimized by using electric motors instead of internal combustion engines to drive the compressors. The resulting annual GHG emissions from these sources are estimated to be 5,509 MT CO_2 equivalent per year.

3.5 Biological Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on 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?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

3.5.1 ENVIRONMENTAL SETTING

Regional Setting

The Project Area is located in the San Joaquin Valley, approximately 25 mi west of Fresno. The San Joaquin Valley is located in central California and extends from Bakersfield in the south to Sacramento in the north. It is bound by the Sierra Nevada on the east, and by the Coast Range on the west. Agriculture has become a dominant land use and source of income; therefore, much of the natural vegetation and habitats have been disturbed for unnatural growth. The Project Area region supports nearly numerous wildlife and vegetative communities.

Existing Conditions

Field visits were conducted throughout the Project Area by Entrix biologists beginning in March 2008 and are ongoing through 2009. The purpose of these site visits was to evaluate existing site conditions, map onsite habitats, including potential Waters of the State and United States, and survey for wetlands, vernal pools, Valley elderberry longhorn beetle, Swainson hawk, and other

nesting raptors. Entrix also conducted protocol level special status plant and blunt-nosed leopard lizard (*Gambelia sila*) surveys, and assessed potential impacts on biological resources from the project. Live Oak Associates, Inc. (LOA) conducted site visits on August 21, 2008 and December 15, 2008 to confirm Entrix's field results. Additional information on special status habitats, special status plant and/or animal species, and other sensitive biological resources was also compiled from the following sources:

- Inventory of Rare and Endangered Plants of California (CNPS 2008)
- California Natural Diversity Data Base (CDFG 2008a)
- Endangered and Threatened Wildlife and Plants (USFWS 2008)
- Annual Report on the Status of California State Listed Endangered, Threatened, and Rare Plants and Animals of California (CDFG 2008b)
- California's Wildlife, Volumes I, II, and III (Zeiner, et. al. 1988 a,b,c)
- Staff Report on Burrowing Owl Mitigation (CDFG 1995)
- Approved Survey Methodology for the Blunt-nosed Leopard Lizard (CDFG 2004)
- Recovery Plan for Upland Species of the San Joaquin Valley (USFWS 1998)
- Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999a)
- San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS 1999b)
- Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1999c)
- Proponent's Environmental Assessment for the Gill Ranch Gas Storage Project, July 2008 (Entrix 2008)
- Gill Ranch Gas Storage Project, Supplement to Proponent's Environmental Assessment (PEA) Application: Response to Completeness Comments, September 18, 2008 (Entrix 2008)
- Gill Ranch Gas Storage Project, Second Supplement to PEA Application: Response to Completeness and Data Needs Comments, October 16, 2008 (Entrix 2008)
- Gill Ranch Gas Storage Project, Response to PEA Data Needs Comments, Nov. 21, 2008 (Entrix 2008)
- Personal communications with Entrix biologists

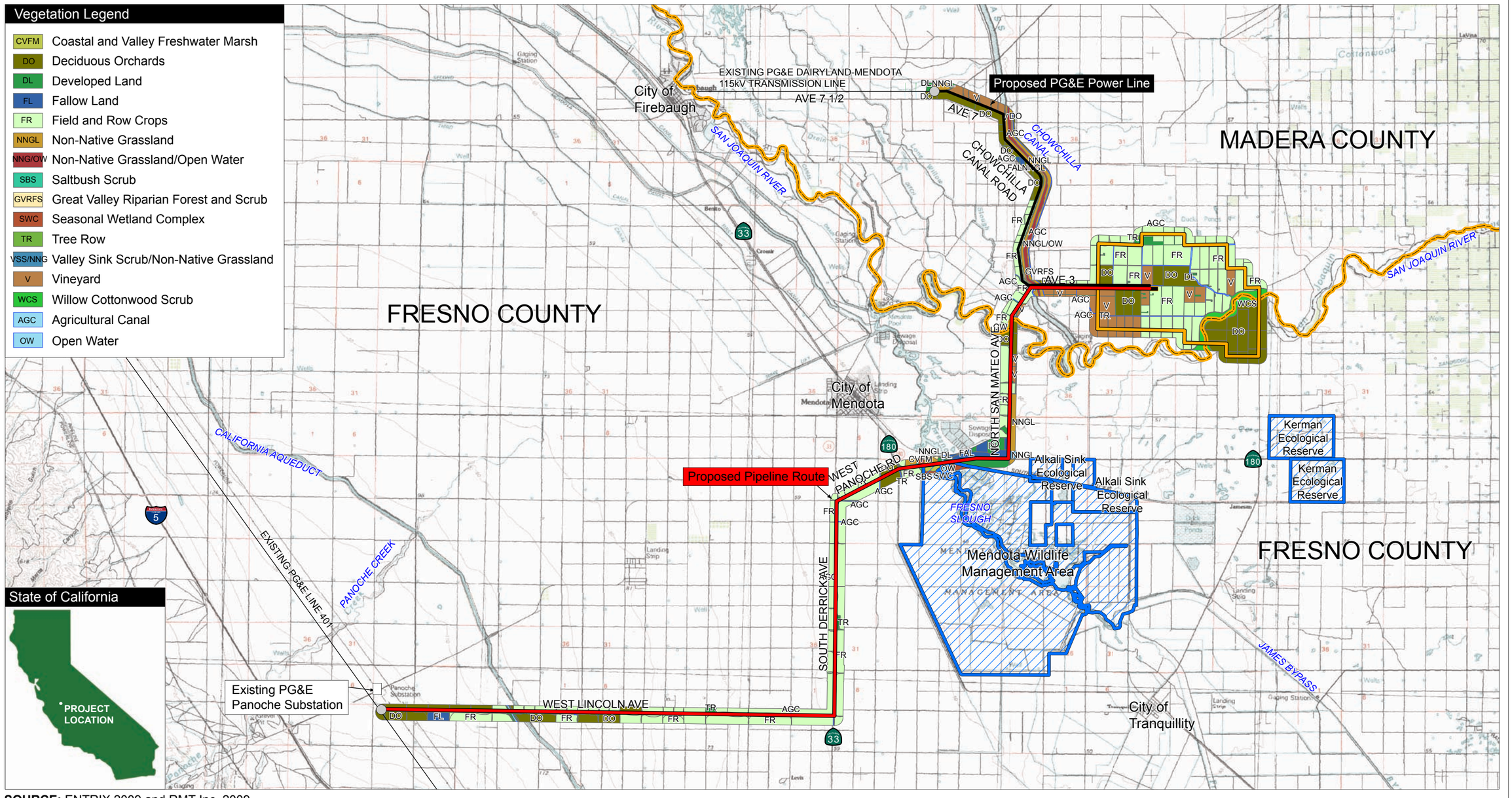
Vegetation

The vast majority of the Project Area is comprised of areas being actively farmed. The natural vegetation communities of the Project Area are primarily associated with the various waterways such as the San Joaquin River, Fresno Slough, and Lone Willow Slough. Other communities, such as the valley sink scrub/non-native grassland, occur within the surrounding area (Figure 3.5-1).

Natural Vegetative Communities. A number of vegetation communities were identified in the Project Area by Entrix and confirmed by LOA. The natural vegetation communities documented include:

- Coastal and valley freshwater marsh
- Non-native grassland
- Open water
- Valley sink scrub/non-native grassland
- Willow cottonwood scrub
- Great Valley riparian forest and scrub
- Non-native grassland/open water
- Saltbush scrub
- Seasonal wetland complex

Figure 3.5-1: Vegetation Map of the Project Area Vicinity



SOURCE: ENTRIX 2009 and RMT Inc. 2009

LEGEND

Proposed Pipeline Route; Proposed PG&E Power Line; Gill Ranch Gas Storage Field Area; Wildlife Area; County Boundary; Tie-In Point

0 1 2 3 4 5 Miles 10

* Please note that the Proposed Pipeline corridor does not intersect the Mendota Wildlife Management Area.

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Coastal and Valley Freshwater Marsh. This wetland community is typically dominated by perennial, emergent monocots including bulrush *(Scirpus* spp*.)* and cattail *(Typha* spp*.)* (Holland 1986 as cited in Entrix 2008). This community typically occurs in permanently flooded freshwater sites that lack a significant current. Prolonged saturation permits accumulation of deep, peaty soils. This community is most extensive in the upper portion of the Sacramento-San Joaquin River Delta and is common in the Sacramento and San Joaquin valleys in river oxbows and other areas on the flood plain (Holland 1986 as cited in Entrix 2008). Freshwater marsh was observed on the western bank of the Fresno Slough along the south side of Highway 180 (milepost [MP] 17.5 to MP 18.0) as well as portions of the Mendota Wildlife Management Area. Wetlands, along with riparian habitat, may have the biggest overall wildlife value of available habitats in the San Joaquin Valley for birds. Thousands of geese, cranes, ducks, herons, egrets, shorebirds and raptors depend on these habitats during winter and migration for both roosting and foraging. They serve as nesting sites for ducks, rails, and blackbirds in the summer. Amphibians and reptiles such as giant garter snake, bullfrog *(Rana catesbeiana)* and western pond turtle *(Actinemys marmorata)* are dependent on wetland habitats as well.

Great Valley Riparian Forest and Scrub/Willow Cottonwood Scrub. Riparian areas in the Project Area are primarily dominated by Fremont cottonwood *(Populus fremontii)* and various willow species *(Salix* spp*.*) with variable subdominants and understory species. These communities are typically found on floodplains and low-gradient depositional areas along the banks of rivers, seeps, and streams, where soils are intermittently flooded. Site conditions generally include fine-grained alluvial soils near perennial or nearly-perennial streams that provide subsurface irrigation even when the channel is dry (Holland 1986 as cited in Entrix 2008). Dominant species in these communities may include:

- Box elder (*Acer negundo var. californica*)
- California black walnut (*Juglans californica* var*. hindsii*)
- California sycamore (*Platanus racemosa*)
- Gooding's willow (*Salix gooddingii*)
- Red willow (*Salix laevigata*)
- Shining willow (*Salix lucida*)

Understories consist of shade-tolerant shrubs like button willow *(Cephalanthus occidentalis)* and Oregon ash *(Fraxinus latifolia)*. Great Valley Willow Scrub generally occurs closer to the water in more flood prone areas and is characterized by an open to dense, broad-leafed, winter-deciduous shrubby streamside thicket dominated by any of several willow species. Great Valley Riparian Forest and Scrub and Willow Cottonwood Scrub are found on the banks of the San Joaquin River (MP 25.1), intermittently around the Fresno Slough (MP 18.0), and along the Lone Willow Slough (electric power line MP 7). These areas were relatively poorly developed and had sparse overstories.

Dominant overstory species included Fremont cottonwood and various willow species, with an understory of stinging nettle *(Urtica dioica)*, button willow, and elderberry. Cottonwood and willow were also observed along some agricultural drainages and along the length of the Chowchilla Canal; these occurrences were relatively isolated and scattered and were not large enough to warrant mapping as a defined riparian community. Riparian communities have a high value for wildlife. They provide nesting habitat for a large number of birds, including woodpeckers, flycatchers, vireos and warblers. Bats forage and roost in riparian areas. Other wildlife such as western skink *(Eumeces skiltonianus)*, desert cottontail *(Sylvilagus audubonii)*, mice, and gray fox *(Urocyon cinereoargenteus)* are also found in riparian habitats.

Non-Native Grassland. Non-native grassland communities are a heterogeneous mix of non-native grasses, annual forbs, and wildflowers. At the onset of the late fall rains growth, flowering, and seed-set occur from winter through spring resulting in a dense cover of annual grasses and forbs reaching up to one meter in height. Most dominants are dead through the summer-fall dry season with a few late season exceptions. Dominant species within the Project Area include various species of:

- Barley (*Hordeum* spp.)
- Brome (*Bromus* spp.)
- Fescue (*Vulpia* spp.)
- Fiddle neck (*Amsinckia* spp.)
- Common goldfields (*Lasthenia californica*)
- Shortpod mustard (*Hirschfeldia incana*)
- Saltgrass (*Distichlis spicata*)
- Common tarweed (*Centromadia pungens* spp. *pungens*)
- Filaree (*Erodium* spp.)

Non-native Grassland was mapped in the central portion of the pipeline alignment from MP 17.0 to MP 18.0 and from MP 19.5 to MP 21.6. Non-native grasslands are used by a high diversity of wildlife, with species composition depending on precipitation, successional stages, grazing activities and other factors. Special-status species that rely on these habitats include the:

- Blunt-nosed leopard lizard *(Gambelia sila)*
- California tiger salamander *(Ambystoma californiense)*
- Cackling goose *(Branta hutchinsii leucopareia)*
- Swainson's hawk *(Buteo swainsoni)*
- American badger *(Taxidea taxus)*

Open Water. Lacustrine habitats are inland lakes or dammed riverine channels containing standing water, including near-shore (limnetic) and deepwater (littoral) habitat. Regulation of surface waters downstream at Mendota Pool determines water levels at the Fresno Slough. The Mendota Pool is drained each winter in order to conduct facility inspections at Mendota Dam, which reduces the Slough from a large still-water impoundment to a narrow stream of water (S. Brueggemann, Manager pers. comm. as cited in Entrix 2008). The slough maintains about 10 ft of water depth in the vicinity of Whitesbridge Road for the remainder of the year (SR 180) within the proposed pipeline corridor. The San Joaquin River is a perennial river; however, the river is losing reach in the vicinity of the Project Area (i.e., surface water goes subsurface in this area) and only conveys water during flood flows. Riverine and Lacustrine areas support a wide variety of aquatic and terrestrial wildlife. The animals that can be found in open water include:

- Crappie
- Bluegill
- Black bass
- Grebes
- Egrets
- Muskrats
- Raccoons
- Catfish
- Carp
- Striped bass
- Herons
- Ducks
- Beavers

Saltbush Scrub. The Valley Saltbush Scrub community is typically found on sandy to loamy soils without surface alkalinity in locations of low topographical relief such as alluvial fan formations and stream floodplain areas (Holland 1986 as cited in Entrix 2008). Valley Saltbush Scrub is characterized by open, gray or blue-green chenopod scrubs including spinescale saltbush *(Atriplex spinifera)* and/or allscale saltbush *(Atriplex polycarpa)*. Shrub cover varies from 10 to 40 percent, and the understory includes species typically found in non-native grassland (Holland 1986 as cited in Entrix 2008). Saltbush scrub has been largely extirpated from the Project Area by agricultural conversion, flood control, and groundwater pumping. A few small remnant patches can be found along agricultural canals and roadsides from MP 17.0 to MP 17.5 and at MP 18.0. Common wildlife species that utilize this habitat include black-tailed jackrabbit, coyote, several raptor species and many sparrows. Special-status wildlife that use Valley Saltbush Scrub, but not necessarily present in the Project Area vicinity, include:

- Western spadefoot *(Spea hammondii)*
- Burrowing owl (*Athene cunicularia*)
- Nelson's antelope squirrel (*Ammospermophilus nelsoni*)
- Fresno kangaroo rat *(Dipodomys nitratoides exilis)*

Seasonal Wetland Complex. This community is represented by several distinct (Holland 1986 as cited in Entrix 2008) vegetation types, none of which were represented in pure form within the Project Area. Vegetation in the Project Area is best described as a combination of intergrating:

- Riparian woodland
- Marsh
- Vernal wetland
- Meadow
- Grassland communities

These communities were present in very small units and did not warrant mapping as separate units, therefore, these areas are mapped as one unit under Modified Wetland Complex/Disturbed Wetland/Transitional Wetland. This community type is mapped within the Project Area at MP 17.5 where it is dominated by exotic tamarisk (*Tamarix* sp.). Seasonal wetland complex is prevalent throughout the Mendota Wildlife Management Area located adjacent to the Project Area, just south of SR 180 near MP 18.0.

Valley Sink Scrub. Valley Sink Scrub is a low, open to dense succulent shrubland dominated by alkali-tolerant species in Chenopodiaceae family, especially iodine bush *(Allenrolfea occidentalis)* or several Sueda (seablite) species. Understories are usually lacking, although sparse herbaceous cover dominated by red brome *(Bromus rubens)* develops occasionally. Soil surfaces often have a brilliant white salty crust over dark, sticky clay. Valley Sink Scrub remains extant at a few protected sites in the project vicinity including the Alkali Sink Ecological Reserve, which is located on the south side of Highway 180 approximately between MP 20.0 and MP 21.6. The community located between MP 19.5 and MP 21.6 is a very degraded form of Valley Sink Scrub. This area is mapped as a transition community occupied by Non-native Grassland and Valley Sink Scrub. This area also hosts vernal (i.e., seasonal) pools that have the potential to support vernal pool fairy shrimp *(Branchinecta lynchi)* and vernal pool tadpole shrimp *(Lepidurus packardi)*.

This vegetation community also hosts two California Native Plant Society (CNPS) List 1b species, heartscale *(Atriplex cordulata)* and Lost Hills crown scale *(Atriplex vallicola)*. The pure form of Valley Sink Scrub does not occur within the Project ROW; however, species occurring in this habitat have the potential to occupy adjacent habitat within the Project Area. The species

assemblage for Valley Sink Scrub is similar to that described for Valley Saltbush Scrub. It was in this habitat, within the Alkali Sink Ecological Reserve, where the Fresno kangaroo rat was last documented in 1992.

Non-natural Vegetative Communities. Man-modified areas documented include:

- Agricultural canal
- Deciduous orchards
- Developed land
- Fallow land
- Field and row crops
- Tree row
- Vineyard

Agricultural Canal. This vegetation community includes man-made impoundments (i.e., agricultural ponds) and linear canal features that may also seasonally support wetland vegetation. These water conveyance structures are man-made and range from a drainage swale a few feet wide to a 30-ft wide irrigation canal. Water levels fluctuate often, and are dependent on crop rotations and irrigation schedules. Some canals and ponds appear to hold water perennially, and may support wetland vegetation, fish or amphibians, while others remain relatively devoid of vegetation because of long-term inundation or dry periods. Vegetation in these areas is variable and depends on bank materials, season and recent management actions. Dominant species are:

- Dock *(Rumex* sp.*)*
- Willow herb *(Epilobium* sp.*)*
- Rabbitfoot grass *(Polypogon monspeliensis)*
- Other forb species

Cattails are often present in areas with more permanent water. These features are found intermittently throughout the Project Area.

Deciduous Orchards. Deciduous orchards producing various fruit and nut crops are common throughout the Project Area. All orchard crops grown within the Project Area are deciduous in winter. Deciduous orchards in California are typically open, single species tree-dominated habitats, with an open understory (Schultze 1994 as cited in Entrix 2008). Typical orchards found in the Project Area include pistachio and almond trees; pomegranates are less commonly grown. Orchards are typically even aged and range from very young sapling sized trees, to mature trees reaching up to 20 ft in height. Most are irrigated, usually with sprinklers or drip irrigation, although some may be flood irrigated. In one case, a small citrus orchard (an evergreen tree) was observed near MP 4.0 on the proposed pipeline route, and is mapped under this community. Deciduous orchards do provide habitat for some wildlife species, primarily for foraging. Birds such as yellow-billed magpie *(Pica nuttalli)*, American robin *(Turdus migratorius)*, and other passerines can be found in orchards, usually outside of the breeding season. Some raptors may forage in orchards, particularly barn owls *(Tyto alba)*. Small rodents and rabbits may utilize deciduous orchards, as well as some bats.

Developed Land. Developed land within the Project Area includes low-density residential, industrial, and commercial development including houses, barns, equipment/tank storage, developed recreational areas, exotic plant landscaping, and limited industrial infrastructure. The Storage Field includes several developed well pads. A commercial property is found on the north side of the proposed pipeline alignment, adjacent to the Fresno Slough from MP 18.0 to MP 19.5.

Other developed areas include limited residential properties. Rural home sites often host large mature trees which provide potential roosting and nesting sites for raptors such as the great horned owl *(Bubo virginianus)* and the barn owl. Urban areas may be used by a variety of wildlife that are opportunistic feeders such as raccoon *(Procyon lotor)*, striped skunk *(Mephitis mephitis)*, or other species that can tolerate human disturbance, such as mourning dove *(Zenaida macroura)*, white-crowned sparrow, and brush rabbit *(Sylvilagus bachmani)*. Bats may roost in manmade structures.

Fallow Land. Agricultural lands that have been retired from production for an extended period of time (i.e., greater than 1 year) are considered fallow. These lands are similar to Non-native Grassland in plant species assemblage, but tend to be highly dominated by agricultural weeds and remnant row crop or cover crop species. Several fallow fields are found near the Spreckels Sugar Plant at MP 19.0 and along portions of Lincoln Avenue. Pasture and fallow fields can provide quality habitat for a number of wildlife species. A wide variety of rodents may use these fields. Raptors such as red-tailed hawk *(Buteo jamaicensis)*, Swainson's hawk and prairie falcon *(Falco mexicanus)* forage on squirrels, mice, insects, and a variety of birds in these fields. Coyotes and foxes hunt in these fields as well. Long-billed curlews *(Numenius americanus)*, mountain plovers *(Charadrius montanus)*, western meadowlark *(Sturnella neglecta)*, and several sparrow species may use this habitat as well.

Field and Row Crops. Agricultural land producing field and row crop types are the dominant land cover type in the Project Area. Vegetation in this land-cover type includes a variety of sizes, shapes, and growing patterns. Most are grown in rows and require irrigation (Schultze 1994 as cited in Entrix 2008). The major row and field crops occurring within the Project Area include:

- Cotton
- Cantaloupe
- Other melons
- Tomatoes
- Safflower
- Sugar beets
- Broccoli
- Onions

Land covered by production crops is generally of little use to wildlife, due to monotypic vegetation, pesticide and herbicide application, and frequent human disturbance. These areas can provide value to wildlife if the area has been tilled or has a cover crop. Killdeer *(Charadrius vociferous)*, American pipits *(Anthus rubescens)*, and California horned lark *(Eremophila alpestris actia)* frequently can be found in these fields, and raptors will hunt for insects, small rodents and birds in these areas as well. Geese and cranes forage in these areas in winter. Migrant species such as the white-faced ibis *(Pelagadis chihi)* and the tricolored blackbird *(Agelaius tricolor)* often congregate when irrigation practices create ponded conditions. Some mammalian predators, such as fox and coyote *(Canis latrans)*, will forage in this habitat.

Tree Row. This vegetation community is commonly associated with agricultural land and developed land. This community includes trees planted or retained for landscape values including shade, screening and aesthetics. Tree rows in agricultural areas are generally linear communities primarily planted as a windbreak, visual screen, or landscape feature or can be a remnant of an abandoned orchard. Tree rows are generally composed of large exotic tree species such as:

- Eucalyptus *(Eucalyptus globulus)*

- Poplar *(Populus* sp.*)*
- Tamarisk *(Tamarix* sp.*)*
- Pine *(Pinus* sp.*)*

Various species of palm are also quite common. These species were observed in the Project Area and are distributed intermittently in agricultural and developed communities. Tree rows can provide roosting and nesting habitat for raptor species when the tree row is mature. Large rows may also provide habitat for wintering and migrant passerines, including:

- White-crowned sparrow *(Zonotrichia leucophrys)*
- Yellow-rumped warbler *(Dendroica coronata)*
- Ruby-crowned kinglet *(Regulus calendula)*
- House wren *(Troglodytes aedon)*
- House finch *(Carpodacus mexicanus)*

Vineyard. Vineyards are composed of single species planted in rows, usually supported on wood and wire trellises. Rows under the vines are usually sprayed with herbicides to prevent growth of herbaceous plants. Grasses and other herbaceous plants may be planted or allowed to grow as a cover crop between rows of vines in order to control erosion. The vineyard type within the Project Area is dominated by grapes. Vineyards are typically found on flat alluvial soils in valley floors, in rolling foothill areas, or on relatively steep slopes. All are irrigated, usually with sprinklers or drip irrigation, although some may be flood irrigated. Vineyards may provide better habitat for reptiles and mammals, including:

- Broad-footed mole *(Scapanus latimanus)*
- Pallid bat *(Antrozous pallidus)*
- Longeared myotis *(Myotis evotis)*
- Western spotted skunk *(Spilogale gracilis)*

Wildlife

The majority of the Project Area is comprised of land influenced by agricultural practices. Compared to natural habitats, managed agricultural lands provide relatively low habitat value for wildlife due to the lack of understory vegetation that would typically provide food and cover for these species. Annual management practices, such as discing and harvesting, eliminates breeding and foraging habitat for many small birds and mammals native to the region. The application of chemical pesticides may also pose a threat to such species at various times of the year.

It is unlikely that amphibians would occur in the agricultural lands of the Project Area; however, there are a number of aquatic features with associated natural vegetation communities in the Project Area. When inundated or conveying water, the various aquatic features in the Project Area may provide breeding habitat for amphibians.

There are a number of reptiles that may potentially occur in the agricultural fields. The sparse cover, rodent burrows likely to occur in this habitat, and the presence of fluctuating populations of invertebrate and rodent prey make the site suitable for at least one native species of lizard and several species of snake. A variety of reptiles would also be expected to be associated with the onsite aquatic features.

Resident avian species are likely to forage over agricultural lands of the Project Area. Winter avian migratory birds may be found in the Project Area during migratory season. Waterbirds may utilize the aquatic features for breeding or foraging.

Small mammals occur in agricultural lands such as those present at the Storage Field; however, populations would be highly variable depending on the condition of the fields. Freshly plowed or cultivated fields barren of vegetation provide little cover for most terrestrial vertebrates. Small fossorial mammals may establish burrows in the agricultural fields. Common mammalian predators attracted to small mammals could include species are well-adapted to human disturbance.

The common wildlife species that can be found in the Project Area are listed in Table 3.5-1.

Special Status Plant Species

The 6 US Geological Survey (USGS) quadrangles (Firebaugh, Mendota Dam, Gravelly Ford, Tranquillity, Coit Ranch, and Chaney Ranch) in which the Project Area occur and the 16 surrounding USGS quadrangles were searched for documentation of special status plant species using the:

- California Natural Diversity Database (CDFG 2008b),
- CNPS' Inventory of Rare and Endangered Vascular Plants of California1 (CNPS 2008),
- Endangered and Threatened Wildlife and Plants (USFWS 2008),
- Annual Report on the Status of California State Listed Threatened and Endangered Animals and Plants (CDFG 2008a),
- Documents provided by Entrix (2008).

Appendix C, Table 1 lists the special status plant species that have been documented in the project region and could potentially be considered as occurring in the Project Area. The Appendix also identifies the regulatory status, habitat, blooming period, and likelihood of occurrence for the plants. All species queried in the database searches were included in the Appendix with the exception of species occurring well below or above the elevations of the Project Area or species that had never been observed in Madera or Fresno Counties. All special status plant species were deemed absent from the Project Area. Entrix conducted floristic plant surveys in April, May, and August 2008 to identify sensitive species and determined that no sensitive plant species occur along the pipeline corridor (Entrix 2009); the Storage Field facilities are in already disturbed areas, and the electric power line would be along an existing road and existing utility corridor that has already been disturbed.

Special Status Wildlife Species

The 6 USGS quadrangles (Firebaugh, Mendota Dam, Gravelly Ford, Tranquillity, Coit Ranch, and Chaney Ranch) in which the Project Area occurs as well as the 16 surrounding USGS quadrangles were searched for documentation of special status wildlife species occurrences in the:

- California Natural Diversity Database (CDFG 2008b),
- California's Wildlife, Volumes I, II, and III (Zeiner 1988a; Zeiner 1988b; Zeiner 1988c),
- Endangered and Threatened Wildlife and Plants (USFWS 2008),
- Annual Report on the Status of California State Listed Threatened and Endangered Animals and Plants (CDFG 2008a),
- Documents provided by Entrix (2008).

[1] The mission of the CNPS Rare Plant Program is to develop current, accurate information on the distribution, ecology, and conservation status of California's rare and endangered plants, and to use this information to promote science-based plant conservation in California. The Program has developed a reputation for scientific accuracy and integrity and its data are widely accepted as the standard for information on the rarity and endangerment status of the California flora. The CNPS *Inventory of Rare and Endangered Plants of California* tracks the conservation status of hundreds of plant species

Table 3.5-1: Species Likely to Occur in Project Area

Common Name	Scientific Name
Resident Avian Species	
Northern harrier	*Circus cyaneus*
Red-tailed hawk	*Buteo jamaicensis*
Killdeer	*Charadrius vociferus*
Western kingbird	*Tyrannus verticalis*
American crow	*Corvus brachyrhynchos*
Northern mockingbird	*Mimus polyglottos*
European starling	*Sturnus vulgaris*
Western meadowlark	*Sturnella neglecta*
Winter Avian Migrants	
Ferruginous hawk	*Buteo regalis*
Rough-legged hawk	*Buteo lagopus*
Merlin	*Falco columbarius*
White-crowned sparrow	*Zonotrichia leucophrys*
Small Fossorial Mammals	
California ground squirrels	*Spermophilus beecheyi*
Botta's pocket gophers	*Thomomys bottae*
Deer mice	*Peromyscus manrculatus*
California meadow voles	*Microtus californicus*
Common Mammalian Predators	
Coyotes	*Canis latrans*
Red foxes	*Vulpes vulpes*
Other Small Mammals	
Black-tailed jackrabbits	*Lepus californicus*
Waterbird Species	
American coot	*Fulica Americana*
Mallard	*Anas platyrhynchos*
Northern shoveler	*Anas clypeata*
Cinnamon teal	*Anas cyanoptera*
Reptiles	
Western fence lizard	*Sceloporus occidentalis*
Gopher snake	*Pituophis melanoleucus*
California kingsnake	*Lampropeltis getulus californiae*
Amphibians	
Pacific treefrog	*Hyla regilla*
Western toad	*Bufo boreas*

Appendix C, Table 2 includes a table that lists the special status animal species, along with their status and habitat that has been documented in the project region and could potentially be considered as occurring in the Project Area. All species queried were included in the Appendix with the exception of species falling well outside of the established Project Area. A few additional species have also been incorporated into the table. These species have not been documented as occurring within the USGS quadrangles queried, but are either commonly accepted as occurring in the project region or the Project Area is within the known range of the species. The species described in Table 3.5-2 are those that could possibly occur in the Project Area; species that were deemed absent or unlikely to occur are not listed, but are included in Appendix C.

3.5.2 REGULATORY SETTING

Federal

Clean Water Act of 1977

The U.S. Army Corps of Engineers (USACE) and the USEPA have jurisdiction over "Waters of the United States". Waters of the United States are classified as Wetlands, Navigable Water, or Other Waters and include marine waters, tidal areas, stream channels, and associated wetlands. Under federal regulations, wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Policies regulating the loss of wetlands generally stress the need to compensate for wetland acreage losses by creating wetlands from non-wetland habitat on at least an acre-for-acre basis. Projects that cause the discharge of dredged or fill materials in Waters of the United States require permitting by the USACE. Actions affecting small areas of jurisdictional Waters may qualify for a Nationwide Permit, provided conditions of the permit are met (such as avoiding impacts to threatened or endangered species or to important cultural sites). Projects that do not meet the Nationwide Permit conditions or projects that disturb a larger area require an Individual Permit. The process for obtaining an Individual Permit requires a detailed alternatives analysis and development of a comprehensive mitigation/monitoring plan.

Federal Endangered Species Act

The federal Endangered Species Act (ESA) provides legislation to protect federally listed plant and animal species. Impacts to listed species resulting from the implementation of a project would require the lead agency to consult the US Fish and Wildlife Service (USFWS). Section 7 of the ESA requires that all federal agencies must, in consultation with the USFWS or National Marine Fisheries Service (NMFS), ensure that the lead agency's actions do not jeopardize the continued existence of a listed species, or destroy or adversely modify the listed species' "critical habitat." Section 10 of the ESA describes the process by which take permits are issued by USFWS/NMFS for take of listed species incidental to an otherwise lawful activity.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act makes it unlawful to "take" (kill, harm, harass, shoot, etc.) any migratory bird listed in 50 Code of Federal Regulations 10, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and seabirds.

Bald Eagle Protection Act

The Bald Eagle Protection Act of 1940 as amended in 1959, 1962, 1972, and 1978 prohibits the "taking" (pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb) or commerce of bald eagles and golden eagles. Limited exceptions are listed in 50 Code of Federal Regulations 22.

Table 3.5-2: Special Status Species Occurring or Potentially Occurring in the Project Area

Scientific Name Common Name	Status (Federal/ State)	Description	Potential for Occurrence
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FED: Threatened STATE: None	Exists within California's Central Valley and Sierra Foothills. Elderberry shrubs are suitable habitat for this species. These shrubs are present in the Project Area.	Possible
Giant garter snake (*Thamnophis gigas*)	FED: Threatened STATE: Threatened	It requires adequate water supplies during spring through mid-fall, emergent herbaceous wetland vegetation, grassy banks and openings in waterside vegetation, and higher elevation uplands during winter. Suitable habitat is present within the San Joaquin River and Fresno Slough for this species. Marginally suitable habitat is present with the remaining aquatic habitat of the site, particular those features hydrologically connected to the San Joaquin River and Fresno Slough.	Possible
Swainson's hawk (*Buteo swainsoni*)	FED: None STATE: Threatened	Mostly found in the grasslands and agricultural lands of California's Central Valley during spring and summer. It breeds in Juniper-sage flats, riparian areas, and oak savannahs. Suitable nesting and foraging habitat is present within project boundaries. A Swainson's hawk nest was observed along Fresno Slough immediately adjacent to the Project Area.	Possible
American Peregrine Falcon (*Falco peregrinus anatum*)	FED: None STATE: Endangered/ Protected	It resides in wetlands, river, or near other bodies of water. It nests on cliffs, banks, dunes, mounds, or manmade structures. Nests consist of a scrape on a depression or a ledge in an open site. It is possible this species would occur in the Project Area due to the presence of suitable foraging habitat; however, no suitable nesting habitat is present.	Possible
Greater sandhill crane (*Grus canadensis tabida*)	FED: Protected State: Threatened	It can be found in or near wet meadows, shallow lacustrine, and fresh emergent wetlands in the summer. It is found in grasslands, croplands, and open emergent wetlands in winter. There is suitable foraging habitat in the Project Area; however, there is no suitable nesting habitat present in the Project Area.	Possible
Bank swallow (*Riparia riparia*)	FED: None STATE: Threatened	The bank swallow nests in large colonies, excavating nest burrows in steep riverbank cliffs, gravel pits, and highway cuts. There is suitable foraging habitat in the Project Area; however, there is no suitable nesting habitat present in the Project Area.	Possible
Nelson's antelope squirrel (*Ammospermophilus nelsoni*)	FED: None STATE: Threatened	This animal is known to frequent open shrublands, annual grasslands, gullies, and washes with sparse vegetation on loamy soils. Suitable habitat is present within the project boundaries and the dry uncultivated areas of the site could support a population of this species; however, no individuals have been observed in the Project Area to date.	Possible

Table 3.5-2 *(Continued)*: Special Status Species Occurring or Potentially Occurring in the Project Area

Scientific Name Common Name	Status (Federal/ State)	Description	Potential for Occurrence
San Joaquin kit fox (*Vulpes macrotus mutica*)	FED: Endangered STATE: Threatened	The San Joaquin kit fox makes its home in desert alkali scrub and annual grasslands. It may forage in adjacent agricultural habitats. Suitable habitat is present within the project boundaries. Areas already supporting burrowing activity are more likely to support a kit fox population, such as the more natural vegetation communities and the properties near the PG&E tie-in point.	Possible
Sacramento splittail (*Pogonichthys macrolepidotus*)	FED: None STATE: Species of Special Concern	This species is typically found in the delta of the San Joaquin and Sacramento Rivers, as well as some distance upstream. It may have historically occurred in the upper San Joaquin watershed. The Sacramento splittail has not been documented in onsite waterways. Remnant populations may be present or individuals may have been imported in water pumped into nearby Mendota Pool from the Sacramento Delta.	Possible
Western pond turtle (*Actinemys marmorata*)	FED: None STATE: Species of Special Concern	This turtle occurs in ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. The Western pond turtle needs basking sites and sandy banks or grassy open fields for egg laying. There is suitable habitat in the Project Area to support the presence of this animal.	Possible
Silvery legless lizard (*Anniella pulchra pulchra*	FED: None STATE: Species of Special Concern	This species' habitat consists of loose sandy soils where overhanging plants, logs, and rocks can provide cover. Sporadic occurrences of this species have been noted on the floor of San Joaquin Valley. Suitable habitat is present in the natural vegetation communities within the project boundaries but, no individuals were observed during surveys.	Possible
California (Coast) horned lizard (*Phrynosoma coronatum frontale*)	FED: None STATE: Species of Special Concern	Occurs in the grasslands, scrublands, and oak woodlands of Central California. It is commonly found in sandy washes with scattered shrubs. Suitable habitat is present in the natural vegetation communities within the project boundaries; however, no individuals were observed during surveys.	Possible
San Joaquin Whipsnake (*Masticophis flagellum ruddocki*)	FED: None STATE: Species of Special Concern	This animal is found in open, dry habitats with little to no tree cover as well as valley grasslands and saltbush scrub in the San Joaquin Valley. Suitable habitat is present in the natural vegetation communities within the project boundaries but, no individuals were observed during surveys.	Possible
Tule Greater White-fronted goose (*Anser albifrons elgasi*)	FED: None STATE: Species of Special Concern	Spends the winters in marshes, bays, lakes, and agricultural fields. It prefers to forage in marshes. It is possible this species would occur in the Project Area due to the presence of suitable foraging habitat.	Possible
Redhead (*Aythya americana*)	FED: None STATE: Species of Special Concern	Winters in a wide variety of saltwater and freshwater wetland habitats. Large freshwater wetlands with emergent vegetation are suitable breeding habitat for the redhead. It is possible this species would occur in the Project Area due to the presence of suitable foraging habitat; however, no suitable nesting habitat	Possible

Table 3.5-2 *(Continued)*: Special Status Species Occurring or Potentially Occurring in the Project Area

Scientific Name Common Name	Status (Federal/ State)	Description	Potential for Occurrence
		is present.	
American white pelican (*Pelecanus erythrorhynchos*)	FED: None STATE: Species of Special Concern	This species of pelican is a colonial nester on large interior lakes, usually islands or peninsulas, isolated from mammalian predators. It uses rivers, lakes, reservoirs, estuaries, bays, marshes, and other inshore marine habitats. It is possible this species would occur in the Project Area due to the presence of suitable foraging habitat; however, no suitable nesting habitat is present.	Possible
Northern harrier (*Circus cyaneus*)	FED: None STATE: Species of Special Concern	The northern harrier frequents meadows, grasslands, open rangelands, freshwater emergent wetlands. It is uncommon in wooded areas. It is possible this species would occur in the Project Area due to the presence of adequate foraging habitat throughout the project boundaries and suitable breeding habitat along the aquatic features supporting banks that are not regularly maintained or cleared.	Possible
White-tailed kite (*Elanus caeruleus*)	FED: None State: Protected	It is found in open grasslands and agricultural areas throughout central California. Suitable breeding habitat is present within onsite trees and foraging habitat is found throughout the Project Area. It is possible the white-tailed kite would occur within the project boundaries.	Possible
Golden eagle (*Aquila chrysaetos*)	FED: None STATE: Species of Special Concern/ Protected	This bird is known to frequent foothill or coastal ranges where grassland turns to scattered oak, sycamores, and pine forests. Cliff-walled canyons and large trees in open areas provide suitable habitat for nesting. It is possible this species would occur in the Project Area due to the presence of suitable foraging habitat; however, suitable nesting habitat is marginal to absent.	Possible
Lesser sandhill crane (*Grus Canadensis canadensis*)	FED: None STATE: Species of Special Concern	The species winters in the Central Valley and southern California. It frequents annual and perennial grasslands, moist croplands, and open emergent wetlands. It prefers treeless plains. It is possible this species would occur in the Project Area due to the presence of suitable foraging habitat; however, no suitable nesting habitat is present.	Possible
Mountain plover (*Charadrius montanus*)	FED: None STATE: Species of Special Concern	The mountain plover forages in short grasslands and freshly plowed fields of the Central Valley. It prefers grazed areas and areas with burrowing rodents. It is possible this species would occur in the Project Area due to the presence of suitable foraging habitat; however, no suitable nesting habitat is present.	Possible
Black tern (*Chlidonias niger*)	FED: None STATE: Species of Special Concern	This species breeds and forages in fresh emergent wetlands, lakes, ponds, and rice fields of the Central Valley and northeastern California. It is possible this species would occur in the Project Area due to the presence of adequate foraging habitat throughout the project boundaries and suitable breeding habitat along the aquatic features supporting banks that are not	Possible

Table 3.5-2 *(Continued)*: Special Status Species Occurring or Potentially Occurring in the Project Area

Scientific Name Common Name	Status (Federal/ State)	Description	Potential for Occurrence
		regularly maintained or cleared.	
Burrowing owl (*Athene cunicularia*)	FED: None STATE: Species of Special Concern	The burrowing owl frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Suitable habitat is present throughout the project boundaries and areas already supporting burrowing activity are the most likely to support burrowing owls, such as the more natural vegetation communities and the properties near the PG&E tie-in point. It is possible the burrowing owl would occur within the project boundaries even though none have been observed during survey conducted for this Project to date.	Possible
Short-eared owl (*Asio flammeus*)	FED: None STATE: Species of Special Concern	The short-eared owl is a transient or occasional breeder in grasslands, marshes, and in some agricultural lands of the San Joaquin Valley. Suitable breeding habitat is present along the aquatic features supporting banks which are not regularly maintained or cleared and suitable foraging habitat is found throughout the Project Area.Entrix biologists have observed this species occurring within the project boundaries.	Confirmed
Loggerhead Shrike (*Lanius ludovicianus*)	FED: None STATE: Species of Special Concern	This species frequents croplands and open habitats with sparse shrubs, trees, suitable perches, bare ground, and low herbaceous cover. Entrix biologists have observed this species occurring within the Project Area. Its presence is likely due to the presence of foraging habitat throughout the project site and breeding habitat within onsite trees and large shrubs.	Confirmed
Tricolored blackbird (*Agelaius tricolor*)	FED: None STATE: Species of Special Concern	This species breeds near fresh water and primarily emergent wetlands with tall thickets. Suitable foraging habitat consists of grassland and cropland habitat. Suitable breeding habitat is present along the aquatic features supporting banks which are not regularly maintained or cleared and suitable foraging habitat is found throughout the Project Area; therefore, it is possible this species would occur within the project boundaries. No breeding colonies have been detected during surveys for this Project to date.	Possible
Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)	FED: None STATE: Species of Special Concern	This bird occurs amongst emergent vegetation of fresh water marshes. It commonly forages in fields and open country and breeds in freshwater sloughs and marshy lake borders. Suitable breeding habitat is present along the aquatic features supporting banks that are not regularly maintained or cleared. Suitable foraging habitat is present throughout the Project Area.	Possible
Pallid bat (*Antrozous pallidus*)	FED: None STATE: Species of Special Concern	The pallid bat roosts in rocky outcrops, cliffs, and crevices with access to open habitats for foraging. It may also be found in caves, mines, hollow trees and buildings. It is possible this species would occur within the Project Area due to the presence of foraging habitat throughout the project site and roosting habitat	Possible

Table 3.5-2 *(Continued)*: Special Status Species Occurring or Potentially Occurring in the Project Area

Scientific Name Common Name	Status (Federal/ State)	Description	Potential for Occurrence
		in large trees and in the crevasse beneath the bridges within the project boundaries.	
Western mastiff bat (*Eumops perotis* spp. *californicus*)	FED: None STATE: Species of Special Concern	This species of bat frequents open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral and urban areas. The Western mastiff bat roosts in cliff faces, high buildings, trees, and tunnels. It is possible this species would occur within the Project Area due to the presence of suitable foraging habitat throughout the Project Area.	Possible
Western red bat (*Lasiurus blossevillii*)	FED: None STATE: Species of Special Concern	Suitable roosting habitat for this species consists of trees approximately 2 to 40 ft above the ground from sea level up through mixed conifer forests. The western red bat prefers habitat edges and mosaics with trees that are protected from above with open areas for foraging. It is possible this species would occur within the Project Area due to the presence of foraging habitat throughout the project site and roosting habitat in large trees found within the Project Area.	Possible
Townsend's big-eared bat (*Corynorhinus townsendii*)	FED: None STATE: Species of Special Concern	This species of bat is primarily a cave-dwelling bat but may also roost in buildings. It occurs in a variety of Californian habitats. It is possible this species would occur within the Project Area due to the presence of foraging habitat throughout the Project Area and roosting habitat in large trees and in the crevasse beneath the bridges within the Project boundaries.	Possible
Ringtail *(Bassariscus astutus)*	FED: None STATE: Species of Special Concern	This species occurs in dry, rocky, and mountainous areas with oaks and conifers present. Suitable habitat is present for this species within the wooded habitat found within the Project Area along the San Joaquin River and Fresno Slough; therefore, the ringtail could occur within the Project boundaries.	Possible
American Badger (*Taxidea taxus*)	FED: None STATE: Species of Special Concern	This animal can be found in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Suitable habitat is present in the natural vegetation communities with little anthropogenic impacts. Such habitat does occur within project boundaries therefore; it is possible this species would occur in the Project Area; however, no individuals were observed during surveys for this Project.	Possible

SOURCE: Entrix 2008

State

California Department of Fish and Game Code

The California Department of Fish and Game (CDFG) Code governs state-designated wetlands, including riparian and stream habitat and mandates that mitigation be implemented to replace

wetland extent and value lost to development. Sections 1600-1607 of the CDFG Code regulates activities that would affect rivers, streams, or lakes by altering the flow, substantially change or use any materials from the bed, channel or bank of any river, stream or lake, or disposing of debris. Activities that affect these areas, as well as associated riparian habitats, would require a Streambed Alteration Permit from the CDFG. Section 3503 of the CDFG Code prohibits impacts to actively nesting birds, their nests, or their eggs.

California Endangered Species Act

The California Endangered Species Act provides legal protection for plants or wildlife species listed as rare, threatened, or endangered. The California Code of Regulations Title 14 Section 670.5 lists animal species considered endangered or threatened by the state and the CDFG maintains lists of plant and animal species designated endangered, threatened, and rare. The CDFG also maintains a list of "Species of Special Concern" based on limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. The CDFG is empowered by state law to review projects for their potential to impact state-listed species and Species of Special Concern, and their habitats.

Porter-Cologne Water Quality Control Act and Section 401 of the Clean Water Act

The Regional Water Quality Control Board (RWQCB) administers both the Porter-Cologne Water Quality Control Act and Section 401 of the CWA. The Porter-Cologne Water Quality Control Act, Water Code Section 13260, requires that "any person discharging waste, or proposing to discharge waste, within any region that could affect the 'waters of the State' to file a report of discharge" with the RWQCB. Waters of the state as defined in the Porter-Cologne Act (Water Code Section 13050 [e]) are "any surface water or groundwater, including saline waters, within the boundaries of the state."

The RWQCB consider waters of the state to include but are not limited to rivers, streams, lakes, bays, marshes, mudflats, unvegetated seasonally ponded areas, drainage swales, sloughs, wet meadows, natural ponds, vernal pools, diked bay lands, seasonal wetlands, and riparian woodlands pursuant to Section 401 of the CWA. The RWQCB has also claimed jurisdiction and exercised discretionary authority over "isolated waters".

Regional and Local

Madera County General Plan

Madera County has adopted a number of general plan policies related to the protection of biological resources. The goals of these policies are as follows:

- Goal 5.B: To conserve Madera County's forest resources, enhance the quality and diversity of forest ecosystems, reduce conflicts between forestry and other uses, and encourage a sustained yield of forest products.
- Goal 5.C: To protect and enhance the natural qualities of Madera County's streams, creeks, and groundwater.
- Goal 5.D: To protect wetland communities and related riparian areas throughout Madera County as valuable resources.
- Goal 5.E: To protect, restore, and enhance habitats that support fish and wildlife species so as to maintain populations at viable levels.
- Goal 5.F: To preserve and protect the valuable vegetation resources of Madera County.
- Goal 5H: To preserve and enhance open space lands to maintain the natural resources of the County.

There are a number of policies and implementation programs established for each of the above goals to ensure they are executed appropriately. Projects within the County should be in compliance with these goals, policies, and implementation programs.

Fresno County General Plan

The Natural Resource element of the Fresno County General Plan addresses policies related to wetland and riparian areas, fish and wildlife habitat, and vegetation. The goals of these policies are as follows:

- Goal OS-D: To conserve the functions and values of wetland communities and related riparian areas throughout Fresno County while allowing compatible uses where appropriate. Protection of these resources functions will positively affect aesthetics, water quality, floodplain management, ecological function, and recreation/tourism.
- Goal OS-E: To protect, restore, and enhance habitats in Fresno County that support fish and wildlife species so that populations are maintained at viable levels.
- Goal OS-F: To preserve and protect the valuable vegetation resources of Fresno County.
- Goal OS-H: To designate land for and promote the development and expansion of public and private recreational facilities to serve the needs of residents and visitors.

There are a number of policies and implementation programs established for each of the above goals to ensure they are executed appropriately. Projects within the County should be in compliance with these goals, policies, and implementation programs.

San Joaquin River Parkway Master Plan

The San Joaquin River Parkway Master Plan's has been adopted to "provide for a harmonious combination of low-impact recreational uses, education, and natural resource protection." The fundamental goals of the plan are as follows:

- FG1: Preserve and restore a riparian corridor of regional significance along the San Joaquin River from Friant Dam to the Highway 99.
- FG2: Protect wildlife species that depend on or prefer the river environment for at least part of their existence.
- FG3: Provide for conservation, education, and recreation, particularly a continuous trail, in a cooperative manner with affected landowners.
- FG4: Protect irreplaceable natural and cultural resources in a way that will also meet recreational and educational needs.
- FG5: Protect existing undeveloped areas of the riverbottom, which should remain non-urbanized and be retained in open space or agriculture if feasible.
- FG6: Provide land use and management policies for the San Joaquin River and areas of the riverbottom included in the Parkway that will enhance the attractiveness of the Fresno-Madera metropolitan area and enhance the quality of life of its residents.

There are a number of objectives, policies and programs established for each of the above goals to ensure they are executed appropriately. The plan also provides the following recommendations on size of buffers that should be established along the San Joaquin River (Table 3.5-3).

Table 3.5-3: Recommended Buffer Zones for the Protection of Wildlife Habitat (Natural Reserves and Wildlife Corridors)

Buffer Zone Width (ft)	Adjacent Land Use						
	Passive Recreation *	***Intensive Recreation *****	***Agriculture/ Pastureland***	***Sand & Gravel***	***Low Density Housing <1/20 ac***	***High Density Housing >1/ac***	***Business/ Industry***
100			X				
150	X				X		
300		X		X			
600						X	X

* Hiking, Biking, Horseback Riding, or Golf
** Large Concentrations of People Camping, Picnicking, or Fishing; Boat Launch Areas

SOURCE: San Joaquin River Conservancy 2000

3.5.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on biological resources if the proposed Project would:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

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

c) Have a substantial adverse effect on 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.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

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

f) Conflict with the provisions of an adopted Habitat Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Discussion

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Construction

General Mitigation Measures. The following mitigation measures are general and not specific to any one species, and would be applied to mitigate impacts to various species during construction. Times at which these mitigation measures would be applied are specified in the impacts analysis section that follows the mitigation measures.

Mitigation Measure Biology-1 (APM Biology-1): Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)

The Applicants shall develop a BRMIMP in advance of any Project-related ground disturbance activities, to fully disclose the required mitigation measures with which the Project must comply during Project construction and operation. The BRMIMP shall be developed in consultation with the CPUC and biological resource agencies and include the protection measures identified in this IS/MND.

The BRMIMP shall include, but not be limited to:

a) Species impact avoidance and minimization measures
b) Habitat compensation strategy
c) Environmental compliance reporting requirements
d) Pre-construction survey methods
e) Construction monitoring procedures
f) Worker Environmental Awareness Program
g) Frac-out contingency plan
h) Post-construction clean-up plan
i) Restoration plan

The BRMIMP shall identify:

j) All biological resources mitigation, monitoring, and compliance conditions specified in any acquired permits for the Project;
k) All sensitive biological resources that may be impacted by the Project, or that will be avoided or mitigated by the Applicants;
l) All required mitigation measures/avoidance strategies for each sensitive biological resource;
m) All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction;
n) Pre- and post-construction site photographs of all natural areas disturbed during Project construction activities;
o) Duration of biological, cultural resource, and paleontological monitoring and a description of monitoring methodologies and frequency;
p) Success criteria;
q) Remedial measures to be implemented if success criteria are not met; and

r) A discussion of biological resource-related facility closure measures.

Mitigation Measure Biology-2 (APM Biology-2a): The following measures shall be applied during construction:

a) All construction activities shall be limited to the Project right of way (ROW), designated staging areas, and access roads.

b) No pets or firearms shall be permitted on the Project site.

c) In sensitive habitat areas (i.e., habitats that potentially support listed species or sensitive habitat), orange construction fencing shall be installed to delineate the work area and prevent equipment from entering sensitive areas. All site workers shall be informed about the importance of maintaining any designated protection or exclusion areas. Sensitive resource areas shall be identified by a qualified biologist to reduce the potential for degrading existing habitat and attracting sensitive wildlife species and their predators to the area, and all trash shall be properly contained and removed from the work site and disposed of regularly.

d) All construction debris and trash shall be disposed of properly, and food-related trash shall be removed from the site when work activities are complete at the end of each day.

During construction, all Project-related vehicle and equipment traffic shall be restricted to established roads or access routes, and shall observe a maximum 15 miles per hour speed limit within the work areas, except on County roads and highways.

Mitigation Measure Biology-3 (APM Biology-2b): The vehicle and equipment access routes and work area shall be delineated in the field (e.g., by staking, flagging, or fencing, as appropriate) prior to initiating pipeline construction.

Mitigation Measure Biology-4 (APM Biology-3): The Applicants shall develop and implement a Worker Environmental Awareness Program (WEAP) pursuant to which each of their employees, as well as employees of contractors and subcontractors who work on the Project site or related facilities during construction and operation, are informed about the sensitive biological resources potentially occurring in the Project Area. A copy of the WEAP shall be submitted to the CPUC at least 30 days prior to construction. An employee training session shall be conducted before groundbreaking to explain any sensitive biological resource and special-status species concerns as well as applicable regulations. The WEAP shall:

a) Provide for on-site or classroom presentation in which supporting written material is made available to all participants;

b) Discuss the locations and types of sensitive biological resources within the Project area and adjacent areas;

c) Present the reasons for protecting these resources;

d) Present the meaning of various temporary and permanent habitat protection measures;

e) Present what to do if previously unidentified sensitive resources are encountered; and

f) Identify whom to contact if there are further comments and questions about the material discussed in the program.

The program shall be administered by a field contract representative or qualified biologist with knowledge of the local area and associated sensitive resources. Each participant in the on-site WEAP shall sign a statement declaring that the individual understands and shall abide by the guidelines set forth in the program materials. The Designated Biologist or Field Representative administering the program shall also sign each statement.

Mitigation Measure Biology-5 (APM Biology-4): The Applicants shall select a Designated Biologist prior to the start of any ground disturbance activities. The Designated Biologist shall meet the following minimum qualifications:

a) A bachelor's degree in wildlife biology, zoology, botany, ecology, or a closely related major;

b) Three years of experience in field biology;

c) One year of field experience with resources found in or near the Project Area; and

d) Additional education and experience appropriate for the biological resource tasks that must be addressed during Project construction and operation.

The Designated Biologist shall be present onsite during all ground disturbing activities that have the potential to impact plants, wildlife or sensitive habitat (i.e., habitats that potentially support listed species or sensitive habitat). The Designated Biologist shall:

e) Ensure compliance with environmental permits and approvals as summarized in the BRMIMP;

f) Ensure implementation and compliance with the WEAP; and

g) Have the authority to halt construction at any time if biological resources are in being negatively impacted.

Mitigation Measure Biology-6 (APM Biology-5): Wildlife entrapment prevention measures shall be employed during construction, operation and maintenance of the Project in order to prevent wildlife entrapment. Such measures shall include but shall not be limited to the following:

a) Stored piping shall be temporarily capped in order to prevent wildlife from taking up residence within construction materials.

b) Well cellars and other cavities associated with the Project shall be appropriately designed and managed to prevent entrapment.

c) Potential entrapment of ground dwelling and burrowing species in open trenches during construction shall be avoided by providing covers over short spans of open trench or providing escape ramps at regular intervals in long spans.

d) Trenches shall be inspected on a daily basis by a biological monitor prior to onset of construction or backfilling.

Mitigation Measure Biology-7 (APM Biology-7): No fewer than 14 days and no more than 30 days prior to the onset of any Project-related ground or vegetation disturbing activity during the life of the Project, qualified biologist shall survey the impact area for presence of special-status animals as identified in Table 3.5-2. In the event that special-status animals are detected during these surveys, appropriate impact avoidance, protection, and/or compensation measures shall be developed in consultation with the California Department of Fish and Game (CDFG) and the US Fish and Wildlife Service (USFWS). Proof of consultation shall be submitted to the CPUC within 30 days of the beginning of construction. Examples of measures to be considered and implemented based on agency consultations include, but are not limited to:

a) Project scheduling to avoid active nesting/breeding/aestivation/refugia sites

b) Project modifications to avoid active nests or burrows of protected species

c) Inspection or observation of burrows (e.g., with tracking medium or using a fiber-optic endoscope) to determine occupancy

d) Hand excavation and collapsing of burrows to allow animals to escape and avoid subsequent occupancy during construction

e) Capture and relocation of animals from affected areas

f) Installation of exclusionary fencing

Vegetation

Marginally suitable habitat for a number of special status plant species is present in the non-native grasslands to the west of and on the banks of the Fresno Slough, and along the banks of the San Joaquin River. Entrix conducted floristic plant surveys in April, May, and August 2008 to identify sensitive species and determined that no sensitive plant species occur along the pipeline corridor (Entrix 2009); the Storage Field facilities are in already disturbed areas, and the electric power line would be along an existing road and existing utility corridor that has already been disturbed. The proposed project would result in no impact to special status plant species, and no mitigation would be necessary

Wildlife

There are a number of special status wildlife species that could occur within the project boundaries. Ten of the fifty-nine wildlife species identified in Table 2 of Appendix C are deemed absent for the Project boundaries while fifteen are deemed unlikely to occur within the Project boundaries due to a lack of suitable habitat.

The species that have the possibility to occur are listed in Table 3.5-2. Nine avian species may occur within the project boundaries as transients, migrants, or foragers. These species are:

- Golden eagle
- Lesser sandhill crane
- Mountain plover
- American peregrine falcon
- Greater sandhill crane
- Bank swallow
- Tule Greater white-fronted goose
- Redhead
- American white pelican

Suitable breeding habitat is absent for these 10 species, and there is significant nearby land for foraging. Any species breeding offsite in the vicinity of construction would not be impacted as a result of this project with implementation of Mitigation Measure Noise-1, which would require the preparation and implementation of a Noise Control Plan. The Project, therefore, would have a less than significant impact on these species.

The remaining 24 special-status species of the 59 documented in the project region may occur on the site regularly as residents and/or breeders. The federally listed species that may be present include the following species, as listed in Table 3.5-2:

- Valley Elderberry Longhorn Beetle
- Giant Garter Snake
- San Joaquin Kit Fox

State Species of Special Concern and/or Protected Species include the following species, as listed in Table 3.5-2:

- Sacramento Splittail
- Western Pond Turtle
- Silvery Legless Lizard
- California (Coast) Horned Lizard
- San Joaquin Whipsnake
- Ground Nesting Avian Species (Northern Harrier, Burrowing Owl, Short-eared Owl, Black Tern, Tricolored Blackbird, and Yellow-headed Blackbird)
- Large Shrub/Tree Nesting Avian Species (White-tailed Kite and Loggerhead Shrike)
- Roosting Bat Species (Pallid Bat, Western Mastiff Bat, Western Red Bat, and Townsend's Big-eared Bat)
- Ringtail
- American Badger

Riparian-Associated Species. Three of the sensitive species would be strongly associated with the large waterways that would be avoided by boring activities during pipeline construction. The species near waterways that could be affected include:

- **Sacramento splittail:** The Sacramento splittail would only occur in the San Joaquin River and/or Fresno Slough. The gas pipeline would be bored under both of these waterways and sensitive habitat would be avoided.
- **Black tern:** The black tern may forage throughout the Project Area, but breeding would be restricted to the portions of the large waterways supporting emergent vegetation; a loss of a minimal amount of foraging habitat would not be considered significant.
- **Ringtail:** The ringtail would be restricted to the riparian habitat associated with the San Joaquin River and Fresno Slough.

The Project was designed to avoid effects to sensitive habitats along waterways. Avoidance of waterways by boring and the implementation of Mitigation Measure Hydrology-5 would ensure protection of the sensitive riparian habitat.

These species could also be affected by the noise and activity that would occur during pipeline construction, which could cause the species to leave the area or could upset nesting activities. Mitigation Measure Biology-8 would require nesting surveys and nest avoidance. Mitigation Measure Noise-1 would also ensure that no indirect impacts due to construction noise would occur. Impacts to the above five species would be less than significant with implementation of mitigation.

> **Mitigation Measure Biology-8 (APM Biology-15):** Areas subject to ground or vegetation disturbance shall be surveyed for active nests by a qualified biologist within 15 days of the start of construction when construction is scheduled to occur during the bird nesting season (February 1 to September 30). If an active nest of protected bird species is observed, the location shall be recorded with a Global Positioning System (GPS) unit and the avoidance area shall be delineated at the required distance from the nest (e.g., with staking and flagging), and awareness of the avoidance area shall be included in the regular construction briefings. The nest shall be avoided (no construction activities or surface disturbance within 200 ft, or the distance specified in the BRMIMP) until no longer occupied (as determined by the biological monitor) unless a special purpose permit for removal of the nest is obtained from the USFWS.

Nesting Avian Species and Wintering Burrowing Owls. A number of avian species could breed in the immediate vicinity of the Project Area, with burrowing owls potentially breeding and wintering. The Swainson's hawk, white-tailed kite, and loggerhead shrike could nest in the large

shrubs or trees of the Project Area. The northern harrier and short-eared owl could also breed along the banks of the aquatic features where suitable vegetation is present. The burrowing owl could breed, as well as winter, in the burrows at the site. More common raptors and migratory birds could also nest onsite. The non-listed raptors and migratory birds are protected by the Migratory Bird Treaty Act and CDFG Code. Any Project activities that could result in impacts to active nests of the Swainson's hawk, white-tailed kite, northern harrier, burrowing owl, short-eared owl, loggerhead shrike, or more common raptors and migratory birds would be considered significant. Impacts could include damage, destruction during vegetation removal, or noise disturbance during construction. Impacts to wintering burrowing owls would also be considered significant. Individuals could be harmed, injured, or killed if construction were to occur in the immediate vicinity of an active avian nest or a wintering burrowing owl.

The Applicants would be required to implement Mitigation Measures Biology-8, -9, and -10 prior to construction of the gas Storage Field and its facilities. The Applicants shall implement Mitigation Measures Biology-1, -2, -3, -4, -5, and -6 with the nesting avian species as a target species to be protected In the event that an active nest is found. Additional mitigation measures (Mitigation Measures Biology-11, -12, and -13) would be required to reduce impacts to a less than significant level for the burrowing owl and nesting avian species other than the Swainson's hawk. The following mitigation measures would reduce impacts to the Swainson's hawk to less than significant levels. Compensation mitigation would not be required for the loss of habitat for any of these species, with the exception of burrowing owls, because most of the Project's impacts would be temporary in nature.

Mitigation Measure Biology-9 (APM Biology-13): Preconstruction surveys for nesting Swainson's hawks shall be performed within 0.5 mi of the Project Area according to established protocol (Entrix 2008). Surveys shall be timed to allow for full completion as specified in the protocol, before the onset of construction, using the CDFG-endorsed protocol in effect at that time. If any nests are located in the survey area, no construction activities shall occur within 500 ft of the nest until such time that the young have fledged or the nest has been abandoned as determined by a qualified biological monitor.

Mitigation Measure Biology-10 (APM Biology-16): Areas subject to ground disturbance shall be surveyed for nesting burrowing owls prior to start of construction according to established guidelines (CDFG 1995). Appropriate avoidance, minimization, or protection measures shall be determined in consultation with CDFG in the event an active nest is located in an area subject to disturbance, or within the typical setback (i.e., occupied burrows or nests within 150 feet of an area subject to disturbance during the non-breeding season, or within 250 ft of an area subject to disturbance during the breeding season).

Mitigation Measure Biology-11 (Addendum to APM Biology-15): An appropriate buffer shall be established around active avian nests in consultation with CDFG if an active avian nest is identified during nesting season (February 1 through September 30). The buffer will vary by species, but raptors typically require a 250-ft buffer whereas smaller migratory birds may only require a 50-ft buffer.

Mitigation Measure Biology-12 (Addendum to APM Biology-16): A protocol-level pre-construction burrowing owl survey shall be conducted within 250 ft of areas subject to disturbance. The survey shall occur between February 1 and September 30. Appropriate avoidance, minimization, or protection measures shall be determined in consultation with CDFG in the event that construction is located within 150 feet of occupied burrows or nests during the non-breeding season, or within 250 ft of an area subject to disturbance during the breeding season.

> **Mitigation Measure Biology-13:** A protocol-level pre-construction burrowing owl survey shall be conducted within 250 ft of areas subject to disturbance during the non-breeding season (October 1 through January 31). Appropriate avoidance, minimization, or protection measures shall be determined in consultation with CDFG in the event that an active burrow is located within 150 feet of occupied burrows or nests during the non-breeding season, or within 250 ft of an area subject to disturbance during the breeding season. This may require the passive relocation of the owls and the purchase of compensation mitigation at a ratio of 6.5 ac per pair or unpaired individual.

Blunt-Nosed Leopard Lizard. The CDFG confirmed the need for a full protocol survey for blunt-nosed leopard lizard in suitable habitat and approved M.H. Wolfe and Associates to perform the surveys. Surveyors walked transects of the pipeline ROW in July 2008 identifying suitable habitat and recorded their findings with photos and GPS. The survey did not identify blunt-nosed leopard lizards in the Project Area; therefore, there would be no effects to the lizards and no mitigation would be required.

Valley Elderberry Longhorn Beetle. Elderberry shrubs that provide suitable habitat for the valley elderberry longhorn beetle (VELB) occur in scattered locations throughout the Project Area. There are a few shrubs along Lone Willow Slough and there are believed to be shrubs along the San Joaquin River and throughout the gas Storage Field. Individual elderberry shrubs would not be directly impacted as a result of this Project with the implementation of Mitigation Measure Biology-14. The VELB could be indirectly impacted due to dust and noise from construction activities within 100 ft of suitable elderberry shrubs.

The Applicants would be required to implement Mitigation Measure Biology-14 (below) if an elderberry shrub is present within 100 ft of any construction activity associated with the Storage Field and at its facilities. The applicant proposed measures would reduce impacts to the VELB to a less than significant level. Impacts to the VELB would be less than significant with implementation of mitigation.

> **Mitigation Measure Biology-14 (APM Biology-12):** A 100-ft diameter buffer shall be established and maintained around all elderberry plants with a stem diameter of 1.0 in or greater at ground level as described in *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999a). These buffers shall be delineated using construction fencing. In the event that complete avoidance of elderberry shrubs, including a 100 ft buffer, is not possible, surveys for beetle exit holes shall be performed on all elderberry plants with a stem diameter of 1.0 in or greater at ground level and all minimization, protection, and compensation measures shall be implemented as described in the Conservation Guidelines.

The Applicants would also implement Mitigation Measures Biology-1, -2, -3, -4, and -5 with the VELB as a target species to be protected. Mitigation Measure Biology-1 requires the Applicant to prepare a BRMIMP. The plan is defined above. A draft version of the plan required by Mitigation Measure Biology-1 is provided in Appendix D).

Giant Garter Snake. The giant garter snake could occur in the onsite reaches of the San Joaquin River and Fresno Slough. There is also the possibility that individuals could occur in the other aquatic features that support relatively continuous flows, particularly those hydrologically connected to the San Joaquin River and Fresno Slough. The Project has been designed to avoid the large onsite waterways, thereby minimizing the potential for encountering a giant garter snake. There is still a possibility that a giant garter snake could be impacted during construction activities. There is a possibility that boring activities could create vibrations that disturb snakes, which hear primarily by detecting vibrations on the ground, rather than be receiving input from airborne sound (Hartline 1971 as cited in Entrix 2008). The distance at which giant garter snakes can detect vibrations is unknown, as is the magnitude of vibrations that might result in disturbance to foraging,

hibernating, or breeding activities. Impacts are expected to be less than significant because of the placement of construction work and HDD areas in upland habitats at considerable distance from potentially suitable giant garter snake habitat. Giant garter snake could also be damaged or killed by construction activity or equipment.

The Applicants would be required to implement Mitigation Measure Biology-15 if construction activities associated with the gas Storage Field and its facilities occur in suitable habitat as described in Appendix C of the USFWS Programmatic Consultation with the USACE for 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo Counties, California (1997). The Applicants shall implement Mitigation Measures Biology-1, -2, -3, -4, -5, -6, and -7 with the giant garter snake as a target species to be protected. Impacts would be less than significant with the implementation of these mitigation measures. Compensation mitigation would not be required for the loss of habitat for the giant garter snake because most of the Project's impacts would be temporary in nature. There would be no significant impacts to giant garter snake from construction activities with implementation of Mitigation Measure Biology-15 and the before mentioned Mitigation Measures.

Mitigation Measure Biology-15 (APM Biology-20): Giant Garter Snake Impact Avoidance and Minimization. Standard avoidance and minimization measures shall be implemented in suitable habitat as described in Appendix C of the USFWS Programmatic Consultation with the US Army Corps of Engineers (USACE) for 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo Counties, California (1997). These measures include, but are not limited to:

a) Schedule construction activity within suitable habitat to occur during the active period for giant garter snake (between May 1 and October 1). The USFWS shall be consulted to determine if additional measures are necessary to minimize and avoid take if activities cannot be avoided in suitable habitat between October 2 and April 30.

b) Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the Project area as Environmentally Sensitive Areas. This area shall be avoided by all construction personnel and equipment.

c) Construction personnel shall receive USFWS approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).

d) Suitable habitat shall be surveyed for giant garter snakes within 24 hours prior to construction activities and repeated if a lapse in construction activity of 2 weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Any sightings or incidental take shall be reported to the USFWS within 24 hours.

e) Any dewatered habitat shall be left dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.

f) After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

Western Pond Turtle. The western pond turtle could occur in the various aquatic features of the Project Area. Where construction occurs through or in the immediate vicinity of an aquatic feature, western pond turtles could be impacted by construction activities and equipment.

The Applicants would be required to implement Mitigation Measures Biology-1, -2, -3, -4, -5, -6, and -7 with the western pond turtle as a target species to be protected if construction activities associated with the gas Storage Field and its facilities occur within 100 ft of an aquatic feature. The mitigation measures would reduce impacts to the western pond turtle to a less than significant level. Compensation mitigation would not be required for loss of habitat for this species as most of the Project's impacts would be temporary in nature.

Silvery Legless Lizard, California Horned Lizard, and San Joaquin Whipsnake. The silvery legless lizard, California horned lizard, and San Joaquin whipsnake could presumably occur throughout the Project Area, but the upland areas providing natural vegetation communities with little human influence are the most suitable. These three reptile species could be significantly impacted during construction activities. Individuals could be harmed or killed by vehicles or construction equipment.

The Applicants would be required to implement Mitigation Measures Biology-1, -2, -3, -4, -5, -6, and -7 with the silvery legless lizard, California horned lizard, and San Joaquin whipsnake as target species to be protected during construction activities associated with the gas Storage Field and its facilities. The Mitigation Measures would reduce impacts to these three species to a less than significant level. Compensation mitigation would not be required for the loss of habitat for these species because most of the Project's impacts to these species would be temporary in nature because construction areas would be recontoured and revegetated according to Mitigation Measure Biology-16.

> **Mitigation Measure Biology-16 (APM Biology-8):** Following the completion of construction in natural areas, the ROW shall be recontoured to pre-Project contours, and sequestered top soil shall be replaced in such a manner that historic drainage patterns are maintained. All graded areas shall be revegetated with an appropriate native seed mix specific to the surrounding vegetation community. Revegetation of all disturbed sites shall be maintained and monitored for an appropriate period of time to ensure successful restoration.

Nelson's Antelope Squirrel. The Nelson's antelope squirrel may occur in the dry, uncultivated habitats of the project, such as the non-native grasslands west of the Fresno Slough, the onsite areas of Lone Willow Slough, the Eastside Bypass, and the area near the PG&E electric power line tie-in point. There is the possibility that Nelson's antelope squirrels could be impacted during construction activities. Impacts could include injury or temporary displacement of the species during trenching and grading activities. Construction equipment also has the potential to kill or injure individuals.

The Applicants would be required to implement Mitigation Measure Biology-17 (Nelson's Antelope Ground Squirrel Surveys) if construction activities associated with the gas Storage Field and its facilities occur in areas supporting burrowing rodent activity. The Applicant would additionally implement Mitigation Measures Biology-1, -2, -3, -4, -5, and -6 with the Nelson's antelope squirrel as a target species to be protected.

> **Mitigation Measure Biology-17 (APM Biology-18):** Qualified biologists shall survey the area to be directly impacted by construction in order to determine presence of potentially suitable habitat for Nelson's antelope ground squirrel. Pre-construction surveys shall be performed at appropriate times and under appropriate environmental conditions, in consultation with CDFG during the life of the Project. Potentially suitable habitat is defined as non-cultivated areas with sandy loam soils, widely-spaced alkali scrub vegetation, and dry washes. Appropriate measures shall be determined and implemented in consultation with CDFG to avoid impacts if surveys indicate presence of Nelson's antelope squirrel in the Project Area.

Impacts would be less than significant with the implementation of mitigation. Compensation mitigation would not be required for the loss of habitat for this species because most of the Project's impacts would be temporary in nature. Impacts would be less than significant with implementation of mitigation.

Roosting Bat Species. The pallid bat, western mastiff bat, western red bat, and Townsend's big-eared bat could roost under the existing bridges and the larger trees supporting suitable crevasses. More common colonial bats may roost onsite in addition to the special status bats. Non-listed bat species are protected by the CDFG Code. Construction noise or dust in the immediate vicinity of a suitable bridge or tree could disturb a colony of roosting bats.

The Applicants would be required to implement Mitigation Measures Biology-1, -2, -3, -4, -5, -6, and -7 with roosting bats as target species to be protected if construction activities associated with the gas Storage Field and its facilities occur in the immediate vicinity of a bridge or tree suitable for bat roosting. Impacts would be less than significant with the implementation of mitigation. Compensation mitigation would not be required for the loss of habitat for these species because most of the Project's impacts would be temporary in nature and bat habitat would not be lost.

American Badger. The American badger could presumably occur throughout the Project Area, but the upland areas providing natural vegetation communities with little anthropogenic influence are the most suitable. This species could be significantly impacted during construction activities.

The Applicants would be required to implement Mitigation Measures Biology-1, -2, -3, -4, -5, -6, and -7 with the American badger as a target species to be protected during construction activities associated with the gas Storage Field and its facilities. The mitigation measures would reduce impacts to the American badger to a less than significant level. Compensation mitigation would not be required for the loss of habitat for this species because most of the Project's impacts would be temporary in nature.

San Joaquin Kit Fox. The San Joaquin kit fox could presumably occur throughout the Project Area; however, the upland areas providing natural vegetation communities with little human influence are the most suitable. There is the possibility that the San Joaquin kit fox could be impacted by vehicles or construction equipment during construction activities.

The Applicants would be required to implement Mitigation Measure Biology-18 during construction activities associated with the gas Storage Field and its facilities. The Applicants would additionally implement Mitigation Measures Biology-1, -2, -3, -4, -5, and -6 with the San Joaquin kit fox as a target species to be protected. Impacts would be less than significant with the implementation of mitigation. Compensation mitigation would not be required for the loss of habitat for this species because most of the Project's impacts would be temporary in nature.

> **Mitigation Measure Biology-18 (APM Biology-19):** Pre-construction/pre-activity surveys for San Joaquin kit fox active dens shall be conducted no fewer than 14 days and no more than 30 days prior to the onset of any ground-disturbing activity. Surveys will identify and characterize all potential den sites. Pre-construction surveys for active dens of San Joaquin kit fox shall follow CDFG and/or USFWS approved protocols currently in effect at the time of the survey and standardized recommendations for protection of the species prior to or during ground disturbance. Appropriate mitigation measures shall be implemented as specified in any USFWS Biological Opinion/Incidental Take Statement and the CDFG 2081(b)-(c) Incidental Take Permit and associated mitigation plan that may be issued for the Project if active dens are located in the Project Area. Documentation shall be submitted to the CPUC to confirm compliance.

Operation and Maintenance

Operation and maintenance of the proposed project would cause limited disturbance in the Project Area. Future pad construction and well drilling activities are described under Construction (above). The operation and maintenance activities would result in disturbances in the Project Area that are similar to current residential, farming, maintenance, and traffic activities. Operation and maintenance activities would not result in significant impacts to any sensitive species. Mitigation would not be required.

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

Construction

The construction of the proposed Project would not impact any riparian habitat or other sensitive natural community. All onsite waterways and their riparian habitat would be avoided using boring techniques. Entry and exit pits would be setback greater than 100 ft from the edge of the riparian habitat. The Applicants would be required to obtain appropriate authorization from the relevant regulatory agencies with direction on what should be done in the case of a frac-out[2] where riparian habitat is present as required by Mitigation Measure Hydrology-5. No other sensitive natural community is present within the project boundary and will thereby not be impacted as a result of the project. Impacts to wetlands are discussed below.

Operation and Maintenance

Operation and maintenance of the proposed project would cause limited disturbance. Impacts would include vehicle traffic, and potentially well drilling and reworking activities. These activities would result in disturbances to the Project Area similar to current residential, farming, maintenance, and public traffic activities. There would be no impact to the riparian habitat or other sensitive natural community in the project region. Operation and maintenance activities would not result in significant impacts to any sensitive plant or wildlife community with implementation of these Mitigation Measures.

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?

Construction

Gas Storage Field and Facilities. The construction of the gas Storage Field and facilities would avoid direct effects to wetlands. All waterways would be avoided using boring and HDD techniques, and wetlands have not been identified in the Storage Field areas of surface disturbance. Impacts would be less than significant and no mitigation would be required.

Gas Pipeline. The majority of onsite wetlands or Section 404 waters would be avoided due to the location of the project footprint and by boring under major waterways during pipeline construction. The construction of the gas pipeline would temporarily impact a seasonal wetland complex dominated by *(Tamarisk chinensis)* near MP 17.5 and a number of agricultural canals and ponds. Impacts to this wetland would be mitigated by Mitigation Measures Biology-16, -19, -20, and -21.

[2] Frac-out occurs when drilling mud and fluid escapes through fractures in rock and is discharged. This occurs when insufficient preventative measures are not taken.

The Applicant would be required to obtain appropriate authorization from the relevant regulatory agencies for impacts to wetlands (such as the USACE and the CDFG), and shall submit documentation of the authorization to the CPUC prior to the start of construction. The authorization would address direct impacts to wetlands as well as direction on what should be done in the case of a frac-out during HDD for the pipeline installation. Mitigation Measure Hydrology-5 would also be implemented to minimize impacts from frac-out. Impacts would be less than significant with the implementation of mitigation.

Impacts to the agricultural canals and ponds would be less than significant as they support low quality habitat and are continually disturbed or maintained as part of normal farming practices. Any fill of jurisdictional wetlands and other waters of the United States, including agricultural canals and ponds, would be permitted by the USACE under Section 404 of the CWA, and impacts would be compensated. Impacts to agricultural canals and ponds that are not jurisdictional features would not require compensatory mitigation. Impacts to the agricultural canals and ponds would be less than significant with compensatory mitigation.

Mitigation Measure Biology-19 (APM Biology-10): Vehicle movements and ground-disturbing activities in biologically sensitive areas along the gas pipeline and electric power line shall be conducted in such a way as to avoid or minimize the mobilization of sediment. Appropriate Best Management Practices (BMPs) shall be employed. The BMPs shall be presented in the Erosion and Sediment Control Plan, which would be reviewed and approved by the CPUC, as described in Mitigation Hydrology-4.

This mitigation shall apply to construction in the following areas, at a minimum:

a) Wetlands feature on west side of Fresno Slough at MP 17.5
b) Power line alignment across Chowchilla Bypass Canal

Mitigation Measure Biology-20: An onsite restoration program shall be developed for the wetland near MP 17.5 and submitted to the responsible agency (i.e., including but not limited to the USACE, CDFG, and the Regional Water Quality Control Board [RWQCB]) and the CPUC at least 45 days prior to the start of Project activities in this area. The objective of this mitigation measure is to replace the habitat impacted as a result of gas pipeline construction at a 1:1 ratio. The restoration plan shall include but shall not be limited to the following information:

a) Designate locations onsite to restore lost habitat. Appropriate habitat shall be created in the exact project footprint of areas temporarily impacted or in suitable areas with similar characteristics to those areas impacted.
b) Describe the methods by which the restoration will occur, including area to be restored, species to be planted, and plant installation guidelines.
c) Develop a timetable for implementation of the restoration plan. All plantings shall be installed at the beginning of the year's rainy season, between November and January, to maximize natural watering and optimal temperatures.
d) Develop a monitoring plan and performance criteria. The mitigation site shall be monitored for a 5-year period.
e) Describe remedial measures to be performed in the event that initial restoration measures are unsuccessful in meeting the performance criteria, including the resetting of the five year monitoring period if established criteria are not satisfied.
f) Describe activities to follow restoration activities. These shall include weed control, removal of tamarisk, irrigation, and control of herbivory by livestock and wildlife.

Mitigation Measure Biology-21 (APM Biology-6): The following measures shall be implemented during construction to minimize the incidence of sediment mobilization:

a) Clearing of vegetation shall be confined to the minimal area needed to conduct the construction activities;

b) All excavated material shall be sidecast in upland habitat areas within the work area;

c) Drainages and wetlands shall be protected from potential impacts from construction activities through installation of orange construction fencing backed by silt fencing. This shall prevent all excavated material, Project equipment, and sediment from impacting sensitive habitat adjacent to or downslope from construction sites; and

d) At completion of the construction work all disturbed soils shall be stabilized by compaction and the entire construction site shall be recontoured to preconstruction grades.

Electric Power Line

The construction of the electric power line would avoid wetlands because the electric power line would be sited mostly in corridors already used for overhead utility lines, and the remaining portion of the electric power line would be located along existing roadway. Sedimentation into all onsite aquatic features would be avoided through the implementation of Mitigation Measures Biology-21, -16, and -19.

Operation and Maintenance

Operation and maintenance of the proposed Project would not affect protected wetlands within the Project Area. Operation and maintenance activities would result in disturbances to the Project Area similar to current residential, farming, maintenance, and public traffic activities. Operation and maintenance activities would not result in significant impacts to any protected wetlands. No mitigation would be required.

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?

Construction

Many species move within and through the Project Area, particularly in the waterways of the area. The Project would primarily result in temporary impacts to upland habitats or disturbed land from trenching for the pipeline and installation of the electric power line. Minor permanent impacts would result from the construction of the gas Storage Field facilities; however these areas are currently agricultural fields providing low quality habitat for wildlife.

There are no known CDFG-run fish hatcheries near the Project Area. There would be no impacts to fish and snake movement through waterways because boring methods would be used to install the pipeline under these Project components. Avoidance of waterways by boring and the implementation of Mitigation Measure Hydrology-5, which would prevent frac-out, would ensure protection of the fish and snake migration through Project Area waterways.

Operation and Maintenance

The construction, operation, and maintenance associated with this Project would have little to no effect on home range and dispersal movements of native wildlife using onsite habitats. Those species that currently move through the site are likely to do so following construction and during operation and maintenance activities. The gas pipeline would be underground, the electric power line would be in the location of existing PG&E poles, and the new facilities in the gas Storage Field would occur in agricultural areas that are not utilized as regular movement corridor. Therefore, this Project would result in a less than significant effect on regional wildlife movements, and no mitigation would be required.

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

The proposed Project would abide by the policies and ordinances that are set forth by the Madera County and Fresno County General Plans and the San Joaquin River Parkway Master Plan. Project components have also been sited to avoid the removal of trees that are protected under local ordinances and policies. There is the potential that protected trees could be damaged or lost in the unlikely event that the Project alignment is changed such that a protected tree cannot be avoided. Mitigation Measures Biology-1 through Biology-8 would provide adequate measures to protect trees to the extent feasible. Relevant County ordinances regarding tree removal and replacement would be adhered to, and impacts would be less than significant with the implementation of mitigation.

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?

Construction

Gas Storage Field and Facilities and Electric Power Line. The proposed gas Storage Field and facilities, electric power lines would not conflict with any applicable habitat conservation plan or natural community conservation plan. No plans of this nature apply to these portions of the Project Area and there are no habitat conservation plans in effect along the Project ROWs for the gas Storage Field or the electric power line.

Gas Pipeline. The gas pipeline would be aligned to the north of the existing Mendota Wildlife Management Area and has been planned so that it would not intrude into the area. A short segment of the proposed pipeline would traverse an area identified as a candidate area for potential future protection in the *Recovery Plan for the Upland Species of the San Joaquin Valley, California* (USFWS 1998), which includes goals to survey, acquire, and manage natural lands within the historical range of several federally-listed species .The area of the proposed disturbances on these parcels is presently used for grazing and a 30- to 40-ft-wide area within the proposed pipeline alignment (adjacent to the roadway fence line) is maintained clear of vegetation as a part of normal agricultural operations.

There is no conflict with the *Recovery Plan for the Upland Species of the San Joaquin Valley, California* at this time because the subject parcels are privately owned and there is no habitat conservation plan currently in place on these parcels. The pipeline would be constructed using biological monitoring (Mitigation Measure Biology-5), other required Mitigation Measures, and Applicant Proposed Measures; therefore, it would not conflict with the plan, should the plan be implemented in the future Construction of the gas pipelines would not conflict with any existing habitat conservation plan or natural community conservation plan.

Operation and Maintenance

The Project Area is in the area addressed by the *Pacific Gas and Electric Company San Joaquin Valley Operations and Maintenance Habitat Conservation Plan* (PG&E 2007) This plan covers 23 wildlife species and 42 plant species for 33 routine operation and maintenance activities for PG&E's electric and gas transmission and distribution systems within nine counties in the San Joaquin Valley. Operation and maintenance activities would comply with all aspects of the habitat conservation plan and the project would not conflict with the habitat conservation plan.

The Project would not conflict with the *Recovery Plan for Upland Species of the San Joaquin Valley, California* because the disturbed area would be restored subsequent to construction as required by Mitigation Measure Biology-15. There would be no impact, and no mitigation would be required.

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3.6 Cultural Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

3.6.1 ENVIRONMENTAL SETTING

Regional Setting

Prehistoric Background

Archaeological excavations in the southern San Joaquin Valley have generally taken place around ancient lakes. Gifford and Schenk (1926 as cited in Entrix 2008) found evidence of flexed burials, pottery, obsidian points, milling stones, mortars, and intricately modified steatite artifacts near Tulare and Kern Lake. Frederickson and Grossman (1977 as cited in Entrix 2008) and Sampson (1991 as cited in Entrix 2008) suggested that the area could have been occupied as early as 11,000 years ago. Artifacts, including fluted projectile points as well as later types, found in the vicinity of southwest Tulare Lake indicated occupation until historical contact (Fenenga 1993 as cited in Entrix 2008; Moratto 1984 as cited in Entrix 2008). Multiple sites yielded artifacts suggestive of long term occupation from the Pleistocene-Holocene transition through the Early, Middle, and the Late Holocene.

Rosenthal et al. (2007) recently acknowledged that the chronological framework for the California Central Valley was based on the unpublished work of David Fredrickson and James Bennyhoff from the 1960s. They updated the Central Valley framework to include five periods using modern radiocarbon calibration curves within the context of Frederickson's (1974) three-period scheme. Their updated periods and temporal spans are as follows: Paleo-Indian (11,550 to 8550 cal[1] B.C.); Lower Archaic (8850 to 5550 cal B.C.); Middle Archaic (5550 to 550 cal B.C.); Upper Archaic (550 cal B.C. to cal A.D. 1100); and, Emergent (cal A.D. 1100 to Historic) Periods.

[1] Calibrated BC (cal B.C.) dates are based on uncalibrated radiocarbon dates that have been converted to calendar dates.

Historic Background

Initial explorations in the southern San Joaquin Valley started with the expedition of Pedro Fages in 1772, followed by Francisco Gorges 4 years later, and finally Moraga's expedition in 1806 (Baloian and Monastero 2008). Moraga is thought to have named the Kings and San Joaquin Rivers. Mexican exploration resulted in the awarding of several large Mexican land grants and the establishment of the Old Los Angeles Trail on the eastern side of the valley. Several fur trapping expeditions, headed by Jedediah Smith and Kit Carson entered the Central Valley in the early 1800s. An influx of settlers came with the Gold Rush of 1848, as mining claims and settlements were established along the west slope of the Sierra Nevada Mountain Range. Cattle ranching and other agricultural interests were established by the mid-1850s as transportation routes (roads and the railroads) connected many of the small towns and opened up land to homesteaders along the railroad lines.

Fresno County was established in 1856. Millerton was the first county seat, though Fresno later became the county seat in 1874. Madera County, originally part of Fresno County, was established in 1893 with Madera serving as the county seat. Agricultural and lumber products could be shipped to the East Coast following construction of the Central Pacific Railroad in Sacramento in the early 1870s. The construction of levees and rechanneling of water further spurred large-scale agrarian development in what was an otherwise arid climate. The present economy of the southern San Joaquin Valley is highly dependent on agriculture. The dominant crops of hay, rice, cotton, and fruit have contributed substantially to the local economies since the early 1970s.

Native American Concerns

The southern area of the San Joaquin Valley lies within the region associated with the Northern Valley Yokuts. The Yokuts' area includes southern valley and foothills groups, as well as western foothills of the Sierra Nevada from the Fresno River to the Kern River in the south (Kroeber 1976 as cited in Entrix 2008). This specific area is generally ascribed to the Pitkachi band of Northern Valley Yokuts, so named for the salt or alkali they collected within the San Joaquin Valley. The Yokuts were nutritionally well supplied by plentiful resources including shellfish, mammals of all sizes, grasses, seeds and roots in their riverine habitat. The Yokuts lived in round or oval houses that were semi-subterranean. The houses were conical in shape utilizing pole frames covered in Tule mats. Tule was widely used in the production of a variety of necessities including clothing, sun shades, boats, skirts, baby cradles, and mats (Latta 1977 as cited in Entrix 2008).

The Yokuts familial unit was the prototypical nuclear family. The political unit was the tribe or tribelet within a single village or several settlements. Most Yokuts tribes were governed by two chiefs who led cooperatively (Kroeber 1976 as cited in Entrix 2008). The arrival of the Spanish, Mexican and ultimately the northern European settlers forever changed Yokuts' ways of life. Mission San Juan Bautista was founded in 1797. Nearly all the Yokuts living west of the San Joaquin River were forced to serve the mission or were forcibly removed to the missions. Many that survived into the Mexican Period (1821-1846) died in an 1833 epidemic (Latta 1999 as cited in Entrix 2008).

Paleontological Resources

Fresno County is home to many fossil localities. Fossils found in Fresno County include plant finds, invertebrates, mammals, and reptiles. The fossils range in age from Cretaceous to Pleistocene. The Panoche Hills and Panoche Creek have been the source of numerous Cretaceous and Tertiary vertebrate fossils. Nineteen vertebrate fossil specimens from the Panoche Hills/Panoche Creek localities are listed in the University of California Museum of Paleontology (UCMP) fossil index. The Project Area is within several miles of these fossil localities (Entrix 2008).

Local Setting

Archeological and Historic Resources

A cultural resources study has been completed for the Gill Ranch Gas Storage Project (Baloian and Monastero 2008). The study was undertaken to document cultural resources within the ROW for proposed gas storage facilities, a gas pipeline, and a gas transmission line. The study included an archival review of relevant literature; a record search at the Southern San Joaquin Valley Information Center, a consultation with Native American stakeholders, and a pedestrian survey of the staging areas, the electric power line, the gas storage field, the proposed pipeline route, and two pipeline route alternatives. Table 3.6-1 lists the resources that were discovered or noted during the pedestrian survey and/or literature.

The determination and development of treatment measures for CEQA compliance require information about spatial extent, nature, depth, and information potential of each site along with the decision as to eligibility for listing on the National Register. Crucial to the argument of eligibility is the "integrity" of the site. Several prehistoric sites were noted within the proposed Project Area, but no surface manifestations of the resources were observed during the archaeological survey. The lack of surface evidence may be due in part to periodic flooding episodes, which would otherwise obscure resources through alluvial deposition, historic period agricultural activities such as leveling fields, and other activities that result in ground disturbance. The archaeological survey noted that the Project Area lies in a zone of Holocene alluvial deposition, especially along and adjacent to watercourses, and that the potential exists for the exposure of buried archaeological resources and the disturbance of subsurface archaeological deposits during construction activities.

Gas Storage Field and Facilities

An archaeological survey and literature review was conducted for the proposed 10-ac central compression station, candidate locations for the IW and OM wells, and the gas-gathering and handling lines from the compressor station to the IW wells. An approximately 38-ac site was inspected for the compressor station and, depending on the size of the proposed and alternate wells site locations, a 5- or 8-ac area was inspected around each. A 30-meter-wide survey corridor was inspected for the approximately 10 mi of proposed gathering lines. Three prehistoric archaeological sites and three isolated finds were noted during the literature search or archaeological survey (Table 3.6-1). The location of CA-MAD-301, a large prehistoric site, was not confirmed during the archaeological survey, although the site had been previously documented. AE-GL-Site 2 was discovered during survey and is characterized as sparse lithic and groundstone deposit. AL-GL-Site 1 is a redeposited collection of ground and flaked stone piled adjacent to a storage shed. Three handstone fragments were also observed during the survey at different locales (GL-ISO-1, GL-ISO-5, and GL-ISO-7). Baloian and Monastero (2008) suggest that GL-ISO-1 and GL-ISO-7 may be associated with CA-MAD-301, though no other surface manifestations of the site were noted.

Table 3.6-1: Cultural Resources in the Project Area

Site	Site Type	Description
AE-GL-Site 1	Prehistoric	Numerous groundstone and flaked-stone artifacts piled in storage yard, note evaluated for California Register of Historical Resources/National Register of Historic Places (CRHR/NRHP)
AE-GL-Site 2	Prehistoric	Three groundstone items, not evaluated for CRHR/NRHP
CA-MAD-301	Prehistoric	Large site containing groundstone, burials, recorded in 4 sections, 1975, not relocated during survey, not evaluated for CRHR/NRHP

Table 3.6-1 *(Continued)*: Cultural Resources in the Project Area

Site	Site Type	Description
GL-ISO-1	Prehistoric	Granite handstone fragment, considered isolated find
GL-ISO-5	Prehistoric	Granite handstone, considered isolated find
GL-ISO-7	Prehistoric	Granite handstone, considered isolated find
CA-FRE-536	Prehistoric	Lithic scatter with obsidian debitage, faunal bone and shell, disturbed, not evaluated for CRHR/NRHP
CA-FRE-538	Prehistoric	Diffuse scatter of baked clay fragments, reported projectile points and bead, not evaluated for CRHR/NRHP
GL-ISO-2	Prehistoric	Basalt flake
GL-ISO-3	Prehistoric	Quartzite core fragment
GL-ISO-4	Prehistoric	Basalt Flake
Jack's Resort Complex	Prehistoric	Restaurant, cottages, and trailers (ca. late 1920's to recent), buildings determined not eligible for the NRHP
Watson's Ferry	Prehistoric	Location of Ferry Crossing over Fresno Slough, hotel and store (1968-1920s), buildings determined not eligible for NRHP.
CA-MAD-301	Prehistoric	Large site containing groundstone, burials, recorded in 4 sections, 1975, not relocated during survey
CA-MAD-4	Prehistoric	Large site with groundstone, obsidian projectile point fragments, one infant burial, site noted in sandy soil. Not relocated during Applied Earthworks survey
Chowchilla Canal	Historic	Irrigation canal built in 1872
GL-ISO-6	Prehistoric	Granite bifacial handstone

SOURCE: Baloian and Monastero 2008, Entrix 2008

Gas Pipeline

An archaeological survey and literature review were conducted for the proposed pipeline and two alternatives from the PEA. No cultural resources were previously documented or discovered along one of the pipeline route alternatives (Alternative E in the PEA, which was not chosen as the proposed route). A portion of the proposed route from the San Joaquin River north to the Chowchilla Canal Road was not inspected due to restricted access. Prehistoric site CA-MAD-301 was reported to be in the vicinity where the pipeline entered the Storage Field; however, no surface manifestations of the site were observed during the survey from the Chowchilla Canal to the proposed location of the gas storage facility.

Two prehistoric resources and two historic resources were reported within or adjacent to the proposed pipeline route in the general vicinity of the Whitesbridge Avenue Fresno Slough crossing. Two of the resources were associated with historic period activities dating from the late 1800s to the present. These included Watson's Ferry and Jack's Resort Complex (see Table 3.6-1). Mikesell (1989 as cited in Entrix 2008) determined that the extant buildings associated with Watson's Ferry and Jack's Resort were not eligible for the National Register of Historic Places (NRHP). Baloian and Monastero (2008) did not find any surface evidence of historical archaeological features associated with the two sites in the proposed pipeline corridor. The two prehistoric resources noted (CA-FRE-536 and CA-FRE-538) were sites containing faunal bone and shell, ground and flaked stone artifacts, and baked clay. These two sites were noted within the proposed gas pipeline corridor.

The proposed pipeline route traverses the California Aqueduct. Baloian and Monastero (2008) note that, while the aqueduct is not over 50 years old (and hence not eligible for the NRHP), it should be considered a sensitive resource due to it prominent role in California's water transportation system history. Three other finds were noted during archaeological survey; these consisted of prehistoric isolates that included two basalt flakes (GL-ISO-2, GL-ISO-4) and a quartzite core (GL-ISO-3).

HDD methods would be used to cross under the Fresno Slough, and trenching would be used on either side of the HDD (west of the Slough, and east of the UPRR rail spur). A potentially sensitive cultural resource area has been identified near the new trenching area west of Fresno Slough.

Electric Power Line

An archaeological survey and literature search was conducted for the proposed electric power line. The literature review revealed that two prehistoric resources were identified within the electric power line route. Field inspection did not result in the identification of constituents associated with either of these two resources. The Chowchilla Canal, dating to 1872, was located within the electric power line route and is considered a historic resource, although it is not listed. One bifacial granite handstone was also recorded within the proposed electric power line route.

Staging Areas

Four staging areas were identified for the proposed Project, and a literature review was conducted for all of them. Included in this review were two staging areas north of SR 180 on Spreckel's property, one staging area in the Project Area at the Storage Field, and a staging area at the Mendota Railyard. No cultural resources were noted during the literature review. An archeological survey was conducted at the two Spreckels locations and the Storage Field; no cultural resources were noted during the surveys. The Mendota Railyard was not subjected to a surface examination due to the considerable amount of ground alteration that had already taken place there.

Native American consultation revealed that human remains were recovered approximately 1 meter below ground surface (bgs) in the vicinity of the Spreckels Sugar Plant.

Native American Concerns

The Native American Heritage Commission (NAHC) was contacted in July of 2007 in order to perform a sacred lands inventory review for the gas Storage Field and gas pipeline routes. No sacred lands on file with the NAHC were documented within or adjacent to the Project Area. The NAHC provided a list of potential Native American stakeholders who were contacted by Applied Earthworks in November of 2007. Follow-up phone calls were conducted in January of 2008. Contacts included:

- Clarence Atwell, Santa Rosa Rancheria
- Carol Bill, Cold Springs Rancheria of Mono Indians
- Jerry Brown, Chaushiha Tribe
- Ron Goode, North Fork Mono Tribe
- John Goodfellow, Table Mountain Rancheria
- Lee Ann Walker Grant, Table Mountain Rancheria
- Karin Kirkendal, Dumna Tribal Government
- Connie Lewis, Big Sandy Rancheria of Mono Indians
- James Redmoon, Dumna Tribal Government
- Keith F. Turner, Dumna Wo-Wah Tribal Government
- Kenneth Woodrow, Foothill Yokuts, Mono

The NAHC was again contacted in June of 2008 to conduct a sacred lands search for the proposed and alternative electric power line routes identified in the PEA, and the staging areas. The findings of the search were negative. An updated Tribal list was obtained and supplementary material was mailed to previously contacted stakeholders and to John Davis of the Kings River Choinumni Farm Tribe and Lorrie Planas of the Choinumni Tribe. Follow-up telephone calls to the various contacts were conducted in August 2008.

The sacred lands file review by the NAHC failed to identify any sacred sites in the Project Area, though three Native American stakeholders did respond to requests for further information. Robert Marquez (Cold Springs Rancheria) expressed concerns regarding Native American sites (e.g., gathering areas) along the waterways in the Project Area. He requested information on prior construction of roads and dams within the project area. Mr. Marquez's letter also included a request for additional information on construction procedures traversing waterways and environmental safeguards for plant life in the event of an emergency.

Lalo Franco (Santa Rosa Rancheria) offered that the Fresno Slough area is archaeologically sensitive for village sites and human burials. He further stated that a surface only inspection of the project area was inadequate for determining the presence of buried sites. He recommended subsurface testing to determine the vertical and horizontal boundaries of known archaeological sites in the study area. He also recommended that a Native American monitor be present during construction adjacent to active and remnant waterways, and that a burial agreement be negotiated prior to any subsurface disturbance.

Jim Redmoon (Dumna Tribal Government) replied that Native American human remains were found in the vicinity of the Spreckel's staging area. The remains were found approximately one meter below the ground surface. He recommended that all construction work along San Mateo Road between the San Joaquin River and Whitesbridge Avenue/SR 180 be monitored if that alternative was chosen.

Paleontological Resources

The Project Area is within several miles of known paleontological resources; however, the pipeline alignment and surface facilities lie entirely within agricultural or otherwise disturbed areas (e.g., along roadways) over Holocene to modern Patterson Alluvium on the valley floor. Relatively high stream energy has reworked the alluvium, resulting in the probable disturbance and transport of any paleontological resources. Preservation of fossil remains, particularly high-value vertebrate fossils, is dependent upon in-situ burial and preservation processes that do not exist in the recently deposited alluvium. The nature of alluvial deposition is such that reworking of fragile specimens would almost certainly not be preserved. Further disturbance of the upper several feet of alluvial deposits within the gas pipeline corridor has occurred for decades as a result of agricultural tilling and other construction practices, thus further reducing the likelihood of preservation of fossil remains. The UCMP paleontological database also does not show that any fossils have been found in the Patterson Alluvium. The potential for the presence of articulated skeletons or undisturbed fossils in the Project Area is low (Entrix 2008).

3.6.2 REGULATORY SETTING

Federal

National Historic Preservation Act

Federal legislation requires that federal agencies consider environmental effects to historical and cultural resources prior to authorizing any activity. The National Historic Preservation Act (NHPA) of 1966 specifies that environmental evaluations of proposed projects consider historic and cultural resource effects. This review process is referred to as *Section 106 review*. The Advisory Council on Historic Preservation (ACHP) is responsible for administering the Section 106 review process.

The NRHP provides a method for preserving and maintaining cultural resources that meet certain eligibility criteria. The President's Executive Order 11593 (1971) requires that all federal agencies initiate procedures to preserve and maintain cultural resources by nomination and inclusion on the NRHP.

State

State legislation requires the protection of historical and cultural resources. The Governor's Executive Order B-64-80 (1980) requires that state agencies inventory all "significant historic and cultural sites, structures, and objects under their jurisdiction which are over 50 years of age and which may qualify for listing on the National Register of Historic Places."

CEQA Guidelines §15064.5 are used to determine the significance of impacts to archeological and historical resources. The guidelines state that a substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired (Herson et al. 1999).

A historical resource still may be considered significant in the absence of a federal, state, or local listing if substantial evidence demonstrates its significance (discretionary significance). This includes any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource generally is historically significant if it:

1) Is associated with events which made a significant contribution to the broad patterns of California's history and cultural heritage;
2) Is associated with the lives of people important in our past;
3) Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
4) Has yielded or may be likely to yield information important in prehistory or history.

The guidelines state that CEQA applies to effects on archaeological sites and direct that, when a project would impact an archaeological site, the lead agency should first determine whether the site is an historic resource as defined immediately above or whether it meets the definition of a "unique archaeological resource" contained in Section 21083.2 of the Public Resources Code. "Unique archaeological resource" refers to an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability it:

1) Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
2) Has a special and particular quality such as being the oldest or best available example of its type; or
3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Local

Fresno County General Plan

The Fresno County General Plan Open Space and Conservation Element Section J contains the following policies related to cultural resources:

Goal OS-J To identify, protect and enhance Fresno County's important historical, archeological, paleontological, geological, and cultural sites and their contributing environment.

Policy OS-J.1. The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archeological, paleontological, and cultural sites and their contributing environment from damage, destruction, and abuse to the maximum extent feasible. Project-level mitigation shall include accurate site surveys, consideration of project alternatives to preserve archeological and historic resources, and provision for resource recovery and preservation when displacement is unavoidable.

Policy OS-J.2. The County shall, within the limits of its authority and responsibility, maintain confidentiality regarding the locations of archeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

Policy OS-J.3. The County shall solicit the views of the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or sites of cultural importance.

Policy OS-J.4. The County shall maintain an inventory of all sites and structures in the County determined to be of historical significance (Index of Historic Properties in Fresno County).

Policy OS-J.5. The County shall support the registration by property owners and others of cultural resources in appropriate landmark designations (i.e., NRHP, California Historical Landmarks, Points of Historical Interest, or Local Landmark).

Policy OS-J.6. The County shall provide for the placement of historical markers or signs on adjacent County roadways and major thoroughfares to attract and inform visitors of important historic resource sites. If such sites are open to the public, the County shall ensure that access is controlled to prevent damage or vandalism.

Policy OS-J.7. The County shall use the State Historic Building Code and existing legislation and ordinances to encourage preservation of cultural resources and their contributing environment.

Policy OS-J.9. In approving new development, the County shall ensure, to the maximum extent practicable, that the location, siting, and design of any project be subordinate to significant geologic resources.

Madera County General Plan

The Madera County General Plan Section 4: Recreational and Cultural Resources include a goal and policies related to cultural resources. The goal and policies include, but are not limited to, the following:

Goal 4.D. To identify, protect, and enhance Madera County's important historical, archaeological, paleontological, and cultural sites and their contributing environment.

Policy 4.D.1. The County shall solicit the views of the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

Policy 4.D.2. The County shall coordinate with the cities and advisory councils in the county to promote the preservation and maintenance of Madera County's paleontological, archaeological, and historical resources.

Policy 4.D.3. The County shall require that discretionary development projects identify and protect from damage, destruction, and abuse, important historical, archaeological, paleontological, and cultural sites and their contributing environment.

Policy 4.D.4. The County shall, within its power, maintain confidentially regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts. If significant archaeological and cultural resources are open to the public, the County shall control public access to prevent damage or vandalism.

Policy 4.D.5. The County shall provide for the placement of historical markers or signs on adjacent county roadways and major thoroughfares to attract and inform visitors of important historic resource sites.

Policy 4.D.6. The County shall encourage the preservation of the original architectural character of significant historic structures and district. To this end, the County shall use the State Historic Building Code.

Policy 4.D.7. The County will use existing legislation and propose local legislation for the identification and protection of cultural resources and their contributing environment.

Policy 4.D.8. The County shall support the registration of cultural resources in appropriate landmark designations (i.e., NRHP, California Historical Landmarks, Points of Historical Interest, or Local Landmark). The County shall assist private citizens seeking these designations for their property.

3.6.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on cultural resources if the Project would:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5:

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

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

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

Impact Discussion

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

Construction

Gas Storage Field and Facilities. The construction of the proposed project may include ground disturbing activities that could result in the loss of integrity of cultural deposits, the loss of cultural

and/or historic information, and the alteration of site setting to a historical resource as defined in §15064.5, a cultural resource considered "important" per CEQA, and eligible for the CRHR or the NRHP. Degradation of the cultural resource would thus be considered a significant impact as the resource is considered eligible for the CRHR or NRHP. None of the resources noted within the various project components have been evaluated for eligibility for the CRHR or the NRHP with the exception of the built environment at Watson's Ferry and Jack's Resort. Documented cultural resources not evaluated for CRHR or NRHP eligibility would be evaluated for eligibility for the CRHR or the NRHP if they cannot be avoided, per Mitigation Measure Cultural-1. Mitigation Measures Cultural-2 through -4 would also be implemented to reduce impacts to less than significant.

Mitigation Measure Cultural-1 (APM Cultural-1)

a) Additional studies shall be conducted in areas where cultural resources were previously identified prior to construction to determine potential Project-specific direct and indirect impacts on historical resources and develop appropriate mitigation measures in order to comply with federal and state laws. Any cultural resources that will be directly affected by the Project shall be evaluated for significance according to the criteria of the National Register of Historic Places (NRHP) and/or California Register of Historic Resources (CRHR), as appropriate. Boundary definition using more detailed surface and subsurface investigations shall be required at each previously documented site because the boundaries of these resources and their spatial relationship to the impact area are unclear. Significance evaluations shall be conducted to determine whether it qualifies as a historical resource or if it is determined that a site occurs within the Project Area boundaries. The Applicants shall coordinate with the CPUC and the California State Lands Commission with respect to lands under its jurisdiction to determine the disposition of any artifacts or resources that may be collected.

b) Subsurface testing shall be conducted at each isolate location to determine if buried cultural deposits are associated with it because of the high potential for buried cultural deposits. An isolated artifact does not qualify as a historical resource under the California Environmental Quality Act (CEQA). Further management of the isolate shall not be required if no buried cultural deposits are observed during subsurface testing at the isolate locations. The site shall be evaluated and its significance determined if subsurface testing reveals that the isolate is associated with a larger buried deposit.

c) Significance evaluations may require additional archival and background research, additional field documentation, or other studies. Evaluation of archaeological properties may require test excavations, backhoe trenching, or other forms of subsurface investigation; laboratory processing and analysis of recovered remains; and a variety of special technical studies. These evaluations will define the qualities of the resource that make it significant and assess site integrity as a means for judging the nature and extent of Project impacts. Significance evaluations and impact assessments shall be performed by appropriately qualified specialists meeting the Secretary of Interior's Professional Qualifications Standards (CFR 190: 44740–44741). Any artifacts and other remains that may be collected from the field, along with field records and other documentation, shall be curated at an institution capable of providing secure, long-term storage, care, and access to the public.

d) A technical report documenting the results of isolate testing, subsurface boundary definition, resource evaluations, and other studies shall be prepared and provided to the relevant professional at the County, the State Historic Preservation Officer (SHPO), and the CPUC. The confidential technical report sections shall discuss the importance of historical and archaeological resources identified during the study, identify the potential for significant impacts, and discuss adequate and feasible mitigation measures. The report shall adhere to professional standards outlined by SHPO in Archaeological Resource Management Reports (ARMR): Recommended Contents and Format (Jackson 1990 as cited in Entrix 2008).

e) Additional impact mitigation shall be required if the Project cannot be redesigned to avoid the resource if studies determine that "historic properties', or "unique archaeological resources" will be affected by the proposed Project. Impact mitigation may take a variety of forms depending on the nature of the site and the nature and extent of impacts. Site avoidance is the preferred mitigation measure. Portions of the resources outside the impact area may be preserved in an exclusion zone—a fenced area where construction equipment and personnel are not permitted – if historical or unique archaeological resources cannot be avoided entirely.

One or a combination of the following measures shall be implemented where avoidance is infeasible and historical and unique archaeological resources will be jeopardized by the Project:

1) Data recovery excavation
2) Additional analysis of existing collections
3) Additional archival/historical research
4) Photographic documentation
5) Archaeological monitoring during construction, followed by data recovery excavation or other appropriate measures if significant archaeological remains are exposed

Final decisions regarding impact mitigation shall be made in consultation with the Applicants, regulatory agencies, the county involved, technical specialists, Native American tribes, and other interested parties.

e) A Data Recovery Plan shall be prepared and implemented if data recovery is the recommended mitigation, and shall detail how mitigation will be conducted, procedures for protection and avoidance for cultural resources, and curation of cultural materials collected during the project. The plan, if required, shall be submitted to the CPUC for CPUC staff review and approval at least 30 days prior to ground-disturbing activity. Data recovery performed in association with the Project shall be supervised by appropriately qualified specialists meeting the Secretary of Interior's Professional Qualifications Standards (CFR 190: 44740–44741).

f) Artifacts and other remains collected from the field, along with field records and other documentation shall be curated at an institution capable of providing secure, long-term storage, care, and access to the public.

Mitigation Measure Cultural-2 (APM Cultural-2): A buried site testing (BST) plan shall be prepared and implemented prior to construction in Project areas sensitive for buried archaeological sites. The plan shall be submitted to the CPUC at least 60 days prior to construction for CPUC staff review and approval. The plan shall specify the areas to be tested, the methods and procedures to be used, and the protocols to follow upon discovery of cultural materials. Highly sensitive areas for buried archaeological sites that will require BST include those portions of the project that are adjacent to the San Joaquin River, Fresno Slough, and other active and remnant waterways within the Project boundaries. The BST shall utilize the combination of controlled mechanical sampling of sediments and the manual screening of those sediments in an effort to locate buried archaeological deposits. The following procedures and measures shall be followed:

a) Mechanized sampling shall be accomplished principally by using a backhoe to excavate trenches approximately 15 ft long at standard intervals within the target area.

b) Sampling of the backhoe trenches shall be controlled by mechanically excavating the sediments in standard levels, and in the process, setting aside one backhoe bucket load of sediment from each level for manual screening through 0.25-inch mesh.

c) Test units (1 by 1 meter) shall be excavated by hand to further explore the site's depositional history, cultural and natural stratigraphy, and to gather data for site evaluation when intact cultural deposits are uncovered during the exploratory backhoe trenching.

d) Further investigations or mitigation shall not be necessary if BST indicates that a cultural resource does not meet established significance criteria, lacks integrity, or will not be impacted by the Project.

e) Mitigative treatment shall be required if significant buried cultural resources will be impacted by construction.

f) The BST shall be performed by appropriately qualified specialists meeting the Secretary of Interior's Professional Qualifications Standards (CFR 190: 44740–44741).

g) Significance evaluation and treatment measures will follow protocols described in Mitigation Measure Cultural-1.

Mitigation Measure Cultural-3 (APM Cultural-3)

a) The Applicants shall retain the services of a qualified professional archaeologist (as defined above) to monitor trenching, grading, or other ground disturbance within Project areas that were not subject to the subsurface investigations proposed in Mitigation Measures Cultural-1 and -2. The archaeologist shall have the authority to halt construction should a potential historic resource be located during construction activities.

b) The Applicants shall educate all contractors and subcontractors employees about the potential for archaeological discoveries during construction. An archaeologist shall provide a brief training session to all construction personnel on the appropriate responses to such discoveries. The orientation shall include a description of the kinds of cultural resources that might be encountered during construction and the steps to be taken if such finds are unearthed.

c) All excavation, construction, and related development work shall cease in the vicinity of a find if buried or concealed cultural resources are discovered during excavation, construction, or related development work until a qualified archaeologist properly investigates the find using the identification and evaluation procedures discussed in Mitigation Measure Cultural-1. Appropriate mitigation or protective measures will be taken following any procedures described in Mitigation Measure Cultural-1 if the discovery is determined to be a significant historical resource that will be affected by the Project.

Mitigation Measure Cultural-4: The Applicants shall continue Native American consultation to identify those areas that may be culturally sensitive. The report required under Mitigation Measure Cultural-1(f) shall report on specific measures taken in order to avoid, minimize, mitigate, and compensate for any disruption of cultural resources.

Staging Areas. No cultural resources were reported within the staging areas. Native American consultation suggested the potential for human remains in the vicinity of the Spreckels staging area. Mitigation Measure Cultural-1 would be applied to determine, if possible, the exact location of the remains.

Gas Pipeline. There is a potentially sensitive cultural resource area near the trenching area to the west of Fresno Slough. Mitigation Measure Cultural-2 would be implemented to investigate the area and mitigate any potential impacts. Impacts would be less than significant with implementation of this mitigation.

Operation and Maintenance

No ground disturbing activities are proposed for the operation and maintenance phase of the proposed Project. There would be no impact, and no mitigation would be required.

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

Construction

The construction of the proposed project may include ground disturbing activities which could result in the loss of integrity of cultural deposits, the loss of information, and the alteration of site which could result in a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5. Degradation of a significant prehistoric or historic archaeological resource would thus be considered a significant impact if the resource is considered eligible for the CRHR or the NRHP. None of the identified archaeological resources noted within the various project components have been evaluated for eligibility for CRHR or the NRHP. Documented cultural resources should be evaluated for eligibility for the CRHR or the NRHP if they cannot be avoided per Mitigation Measure Cultural-1. The potential for disturbing subsurface archaeological deposits exists within each of the project areas. Impacts to significant archaeological resources would be similar as impacts to significant historical resources as discussed under (a), and the same mitigation would be used to reduce impacts to less than significant.

No cultural resources were reported within the staging areas. Native American consultation suggested the potential for human remains in the vicinity of the Spreckels staging area. Mitigation Measure Cultural-2 would be applied to determine, if possible, the exact location of the remains.

Operation and Maintenance

No ground disturbing activities are proposed for the operation and maintenance phase of the proposed Project. There would be no impact, and no mitigation would be required.

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

Construction

Gas Storage Field and Facilities and Gas Pipeline. Although located within several miles of known fossil localities, the proposed pipeline alignment and surface facilities lie entirely within agricultural or otherwise developed areas and over Patterson Alluvium. The UCMP database also does not show a record of fossil finds in the Patterson Alluvium, and the presence of fossils in this material is low.

Direct impacts to undiscovered paleontological resources could occur wherever there are ground-disturbing activities, however. Impacts could occur during well drilling, construction of well pads, and the construction of and excavation for the gas pipeline. Direct impacts can occur within a 2-ac area around each well pad as a result of grading, equipment and vehicular staging, and drilling operations. These activities could damage, compromise, or destroy paleontological resources. Destroying a paleontological resource would be a significant impact. Mitigation Measure Cultural-5 would require the preparation of a Paleontological Resources Discovery and Management Plan in order to mitigate impacts to less than significant.

> **Mitigation Measure Cultural-5:** The Applicants shall prepare and implement a Paleontological Resources Discovery and Management Plan. The plan shall include guidelines for recognition of high value fossil remains for site employees. The plan shall be submitted to the CPUC for CPUC staff review and approval at least 30 days prior to the start of construction. The plan shall include, but is not limited to, the following measures:

a) Employees shall undergo, as a part of their site-specific training, a short class (less than 1 day) on recognizing paleontological resources in the area, and on how to report their findings.

b) The on-site environmental monitor shall have the authority to stop excavation in the event of discovery of a suspected paleontological resource. The following steps shall be taken if a suspected high-value fossil (such as a vertebrate) is found:

   1) The environmental inspector shall be notified of the potential find, its location and time of finding. The find shall initially be documented in a daily field report.
   2) All construction activity related to excavation in the area shall cease until further notice.
   3) A qualified paleontologist shall be contacted to arrive on-site to inspect the potential find.
   4) If the suspected find is deemed a unique paleontological resource, the area shall then be excavated under the direction of a qualified paleontologist, and remains shall be catalogued and removed from the site to an appropriate facility (a local university, museum, or other institution dedicated to the preservation of paleontological artifacts).
   5) Further construction at the site may begin at the discretion of the qualified paleontologist.

c) Security measures shall be enacted during the course of a paleontological excavation to protect the resource from vandalism and theft.

Electric Power Line. Most of the electric power line would be located in a corridor that is already used for this purpose; the remaining portion of the electric power line would be located along an existing road. It is very unlikely that, considering the minimal ground disturbance, paleontological resources would be encountered during construction of the electric power line. Mitigation Measure Cultural Resources-5 would ensure that impacts from construction of the electric power line would be less than significant.

Operation and Maintenance

Operation and maintenance of the proposed facilities would have no impacts to paleontological resources because no additional ground disturbance would occur during operation and maintenance of the proposed facilities.

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

Construction

Historic or prehistoric human remains identified at previously documented archaeological sites or discovered during construction may be impacted by the project. Human burials, in addition to being potential historical resources have specific treatment found in the California Public Resources Code Section 5097 and California Health and Safety Code Sections 7050.5, 7051, and 7054. Disturbing human remains could violate these provisions. This would be a considered a potentially significant impact but can be mitigated to less-than significant levels.

No known human remains have been documented within the Project Area; however, the possibility cannot be precluded that human remains are present below the ground surface and could be damaged during land alteration activities. Construction of the facilities would include ground disturbing activities that have the potential to uncover human remains. The discovery of human remains would be considered a potentially significant impact, but can be mitigated to less-than-significant levels with the implementation of Mitigation Measure Cultural-6.

Mitigation Measure Cultural-6 (APM Cultural-4): State Health and Safety Code Section 7050.5 requires that work stop immediately if human remains are found. No further disturbance shall occur until the Fresno or Madera County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code 5097.98. The coroner has 24 hours to notify the NAHC if the remains are determined to be of Native American descent. The commission shall then contact the most likely descendent (MLD) of the deceased Native American, who will then serve as a consultant on how to proceed with the remains (e.g., avoidance, reburial). Work at the site shall not resume until such remains have been treated in the manner agreed upon by all interested parties. The Applicants shall ensure that a burial agreement has been drafted prior to construction, and shall submit a copy to the CPUC prior to construction. A burial agreement is a signed agreement between the Project Applicant and the Native American party designated by the NAHC as the MLD to specify the procedures and protocols to follow upon discovery of aboriginal human remains and associated funerary objects during construction or Project related activities.

Operation and Maintenance

No ground disturbing activities are proposed for the operation and maintenance phase of the proposed Project. There would be no impact, and no mitigation would be required.

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3.7 Geology and Soils

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the 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 issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

3.7.1 ENVIRONMENTAL SETTING

Regional Setting

The Project Area is located in the San Joaquin Valley, approximately 25 mi west of Fresno. The San Joaquin Valley is located in central California and extends from Bakersfield in the south to Sacramento in the north. It is bound by the Sierra Nevada on the east, and by the Coast Range on the west. The relatively steep eastern slopes of the California Coast Range are approximately 5 mi west of the western margin of the Project Area. The Project Area itself is situated on the flat to very gently sloping floor of the San Joaquin Valley. The elevation of the Project Area ranges from approximately 155 to 400 ft above mean sea level (amsl), as shown in Table 3.7-1.

Stratigraphy

The Project Area is located in the San Joaquin Valley portion of the Great Valley Geomorphic Province, which covers an area approximately 60 mi wide by 400 mi long extending from Bakersfield to Red Bluff, California (Bartow 1990 as cited in Entrix 2008). The Great Valley

Table 3.7-1: Elevations at Key Locations in the Project Area

Project Area	Elevation amsl (ft)
PG&E Line 401 Tie-in (Pipeline MP 0.0)	400
Intersection of Lincoln Avenue and Highway 33	190
Fresno Slough Crossing	160
San Joaquin River Crossing	175
Central Compressor Station	175
PG&E Electrical Tie-in Point (Electrical MP 0.0)	155

SOURCE: Entrix 2008

contains the Great Valley Sequence, a thick (approximately 6 to 8 mi deep) deposit of Late Jurassic to Cretaceous sediments shed from the Sierra Nevada volcanic arc and deposited along the continental margin into the offshore basin during the late Mesozoic to early Tertiary (Bartow and Nilsen 1990 as cited in Entrix 2008). Fine grained shale and turbidites of marine origin characterize the central areas of the Central Valley (Peters et al. 2007 as cited in Entrix 2008).

The Great Valley Sequence is in conformable contact with the underlying coastal Franciscan assemblage in at least two exposures, and overlies the Sierran basement rock along the eastern margin of the Central Valley. Geophysical evidence indicates the Sierran basement rock extends westward to at least as far west as the Coast Ranges. Stratigraphy of the valley ranges from coarse deltaic deposits on the eastern edge of the basin to finer basin plain sediments to the west, and overlying fan deposits (Bartow and Nilsen 1990 as cited in Entrix 2008). A map of the geologic units in the Project Area and the Project Area vicinity is provided in Figure 3.7-1.

Figure 3.7-2 is a generalized stratigraphic column for the Gill Ranch Gas Field. The age of the rocks ranges from the Upper Cretaceous (~80 million years) to Recent. Depleted reservoirs in the First Starkey and Second Starkey would be developed and utilized as Project storage reservoirs.

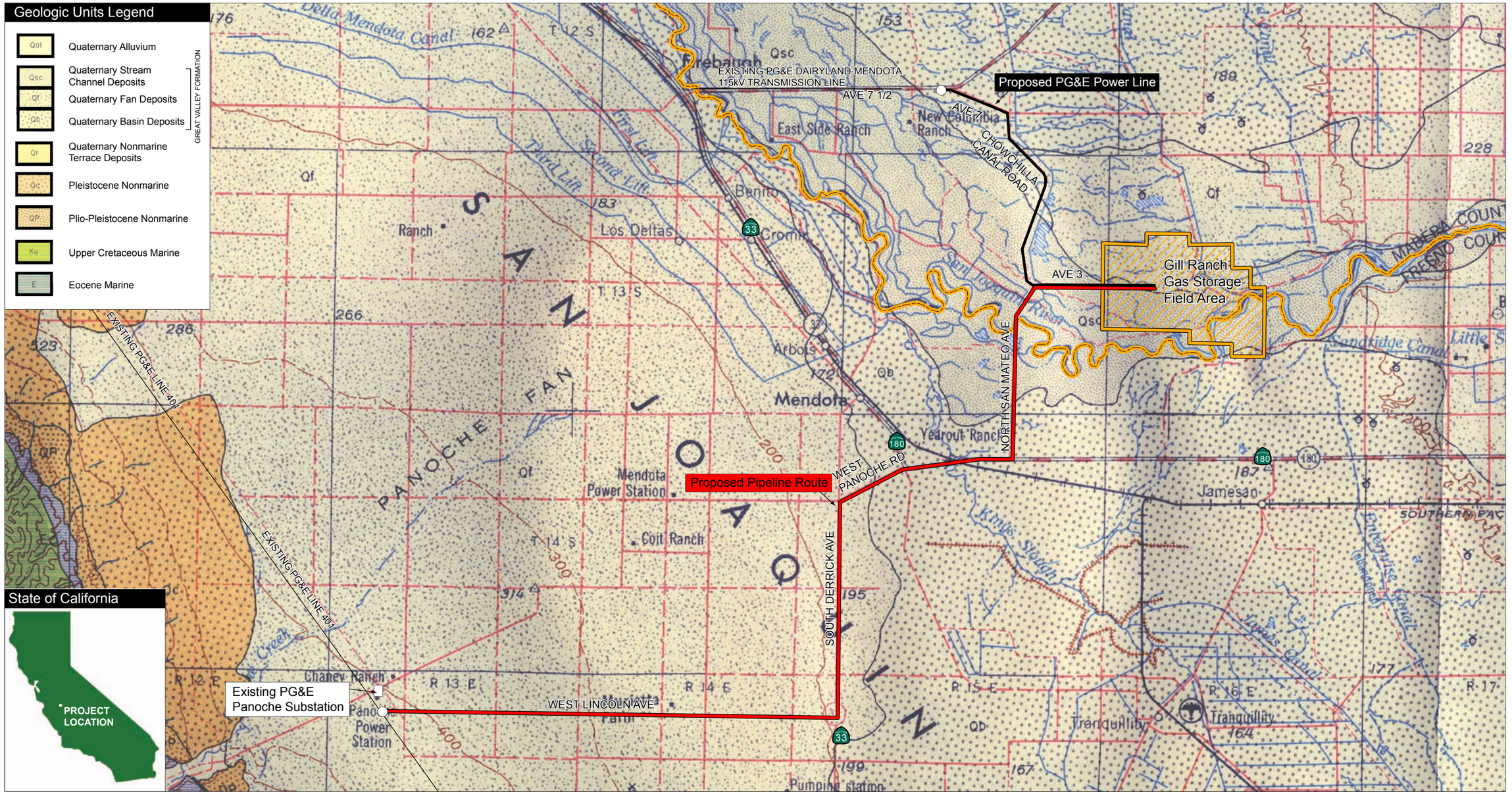
Tectonics

Uplift of the Coast Ranges occurred at the same time as the change of the tectonic regime from a convergent margin[1] to a transform[2] boundary (Peters et al. 2007 as cited in Entrix 2008).Several major plate tectonic events dominated the regional geologic history of the Central Valley. These tectonic events include a convergent plate margin; the eventual change of the convergent margin to a transform boundary beginning when the San Andreas Fault was created; the resulting crustal extension and volcanism from the changing plate motions; and, an increase in compression of the Earth's crust east of the San Andreas Fault beginning about 5 million years before present (Bartow 1991 as cited in Entrix 2008). The Franciscan-aged coastal rocks were positioned against Sierran basement rocks as a result of these events. These events also led to the creation of the Basin and Range geomorphic province east of the Sierra Nevada, and the subsequent rapid uplift and mountain-building of the Sierran batholith (Bartow 1991 as cited in Entrix 2008).

Faulting. The State of California considers a fault segment historically active if it has generated earthquakes accompanied by surface rupture during historic time (i.e., approximately the last 200 years). A fault that shows evidence of movement within Holocene time (approximately the last 11,000 years) is defined as active. A fault segment is considered potentially active if there is

[1] A convergent boundary is a boundary between two plates, at which the two plates are moving toward one another.
[2] A transform boundary is a boundary between two plates, at which the two plates are moving horizontally in relation to each other with minimal vertical movement.

Figure 3.7-1: Geologic Units in the Project Area Vicinity



SOURCE: State of California, Division of Mines and Geology 1959 (5th printing 1991) and RMT Inc. 2009

LEGEND

Proposed Pipeline Route | Proposed PG&E Power Line | Gill Ranch Gas Storage Field Area | County Boundary | Tie-In Point

0 1 2 3 4 5 10 Miles

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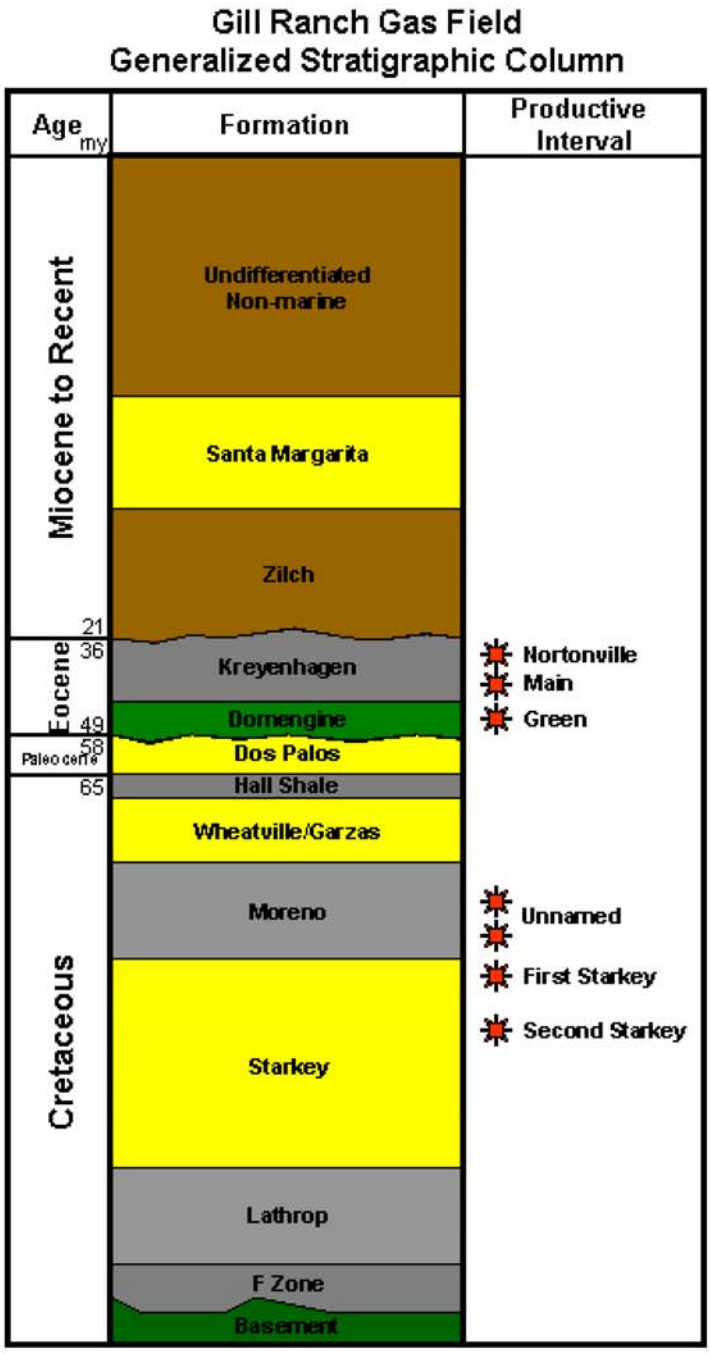
Figure 3.7-2: Gill Ranch Gas Field Generalized Stratigraphic Column



SOURCE: ENTRIX, Inc. 2008

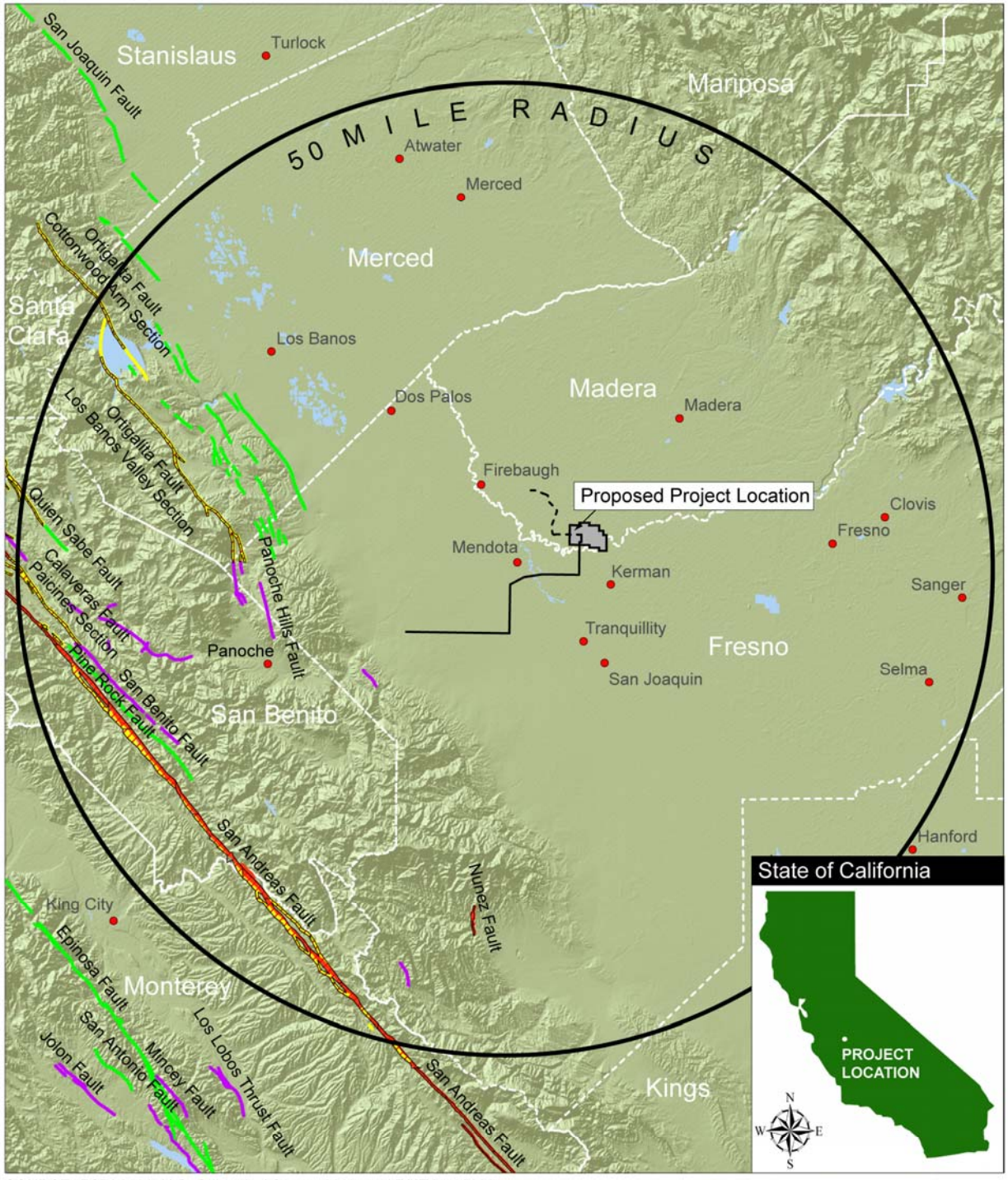
evidence of displacement during Quaternary time (approximately the last 2 million years) (Hart and Bryant 1997 as cited in Entrix 2008). Project Area faults are shown on Figure 3.7-3.

The active faults closest to the Project Area are several northwest-trending, strike-slip fault zones to the west. Beginning in the foothills of the Diablo range and continuing east to west, these are the Ortigalita fault zone, the Quien Sabe fault zone, the Calaveras fault zone, and the San Andreas fault zone. The Nunez Fault, which is one of the Great Valley Thrust faults, lies to the south of the Project Area. Each of these fault zones is described below and summarized in Table 3.7-2. There are two faults (Pine Rock and San Benito) to the west of the Project Area that are classified as unknown in regards to potential activity.

- **Ortigalita Fault Zone**: Lies approximately 16 mi west of the western margin of the Project Area (i.e., at the tie-in to PG&E Line 401). The fault zone is a major dextral strike-slip boundary, extending from the Panoche Valley to about 19 mi northwest of the San Luis Reservoir. At least 3 mi of dextral slip is known to have occurred along the Ortigalita Fault Zone. Vertical slip rate is estimated at 0.01 to 0.04 millimeter (mm) per year, though the horizontal slip rate is not known.
- **Calaveras Fault Zone**: Next westernmost fault zone, and lies approximately 32 mi west of the western margin of the Project Area. The Calaveras Fault Zone is linked to the San Andreas Fault zone. The Calaveras Fault Zone is divided into four segments, with increasing slip rates northward along the zone (up to 14 mm per year on the northernmost end and up to 9 mm per year at the southernmost tip of the fault). The fault zone ranges from tens of feet to greater than 1 mi in width.
- **Quien Sabe Fault Zone**: Lies approximately 35 mi west of the western margin of the Project Area. It is a dextral strike-slip fault with a reverse component of vertical displacement. Vertical slip rate is estimated between 0.22 and 0.67 mm per year; horizontal slip rate is estimated between 0.0 to 2.0 mm/yr.
- **San Andreas Fault Zone**: Lies approximately 35 mi southwest of the Project site. This section is the creeping section of the zone. The zone is an active 684-mi-long dextral, strike-slip fault. The San Andreas Fault Zone is the principal defining fault zone in the state of California, accommodating a large portion of the motion between the Pacific plate and the North American plate. The Pacific plate is moving northwestward relative to the North American plate. Highest slip rates along the San Andreas Fault Zone are estimated at 23 to 35 mm per year throughout the Quaternary along this section of the fault with an average fault creep along the entire length of the fault zone of 5 mm per year.
- **Great Valley Thrust Faults**: On the western edge of the Great Valley. The faults have been divided into 14 segments based on surface expression along the range front. The fault system extends from Willows, California in the Sacramento Valley south to just beyond Parkfield, a cumulative length of over 300 mi. The Great Valley Thrust faults are composed of blind thrusts, surficial fault breaks, and major piercements. An example of a high angle blind thrust fault is the Nunez fault, which ruptured during the Coalinga earthquake. The Nunez fault rupture had approximately 3 ft of displacement.

Seismicity. The Project would not be located in an active fault zone as defined by the Alquist-Priolo Fault Zoning Act, and no active faults are present within the Project Area; however, the Project Area is located within an area that is subject to effects of seismicity. The area has the potential to experience moderate ground shaking during earthquakes generated on faults at the western margin of the Central Valley and in the Sierra Nevada Foothills Fault System. The bedrock faults do not apparently displace the recent alluvial sediments of the San Joaquin Valley; the faults are buried by alluvium (Entrix 2008).

Figure 3.7-3: Active Faults in the Project Region



SOURCE: ESRI 2006, U.S. Geological Survey 2004, and RMT Inc. 2009

LEGEND

- Proposed Project Gas Field Area
- Proposed Pipeline Route
- Proposed PG&E Power Line
- Alquist-Priolo Zone
- Historic Fault
- Holocene Fault
- Late Quaternary Fault
- Quaternary Fault

Miles: 0 5 10 20 30 40

RMT

Table 3.7-2: Active Faults in the Project Region

Fault	*Historic Seismicity*[1]	*Slip Rate (mm/year)*	*Distance from Mendota, California (mi)*
Ortigalita Fault Zone (Los Banos Valley Section)	≥ 3 mi dextral slip	0.01 – 0.04 vertical Unknown horizontal	28
Quien Sabe Fault Zone	M 5.8, 1986	0.22 – 0.67 vertical 0.0-2.0 horizontal	47
Calaveras Fault Zone Central (Paicines) Section	M 5.8, 1979 M 6.3, 1984	9 – 14 horizontal	46
San Andreas Fault Zone	M 7.0, 1838 M 8.3, 1906 M 7.1, 1989	5 – 35 horizontal	46
Nunez Fault (Great Valley Thrust Fault)	M 6.5, 1983 (Coalinga) M 5.7, 1983 (aftershock)	Not available	35

NOTES:
Richter magnitude (M) and year for recent or large events. The Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave.

SOURCE: Bryant 1998, 1999, 2000, and 2002 as cited in Entrix 2008, USGS 2004

The fault zones listed in Table 3.7-2 have produced significant historical earthquakes. An earthquake along the Calaveras Fault Zone in July of 1861 produced an 8-mi-long surface crack. The Quien Sabe Fault Zone was the focal mechanism for a magnitude 5.8 earthquake on January 26, 1986. The San Andreas Fault Zone is capable of generating quakes with a magnitude greater than 8.0. There are numerous historical recorded earthquakes along the San Andreas Fault Zone, the largest of which was the 1906 San Francisco earthquake with a magnitude of 8.3. More recently, a magnitude 7.1 earthquake occurred along the San Andreas in 1989. The Great Valley thrust fault system includes faults that ruptured or transferred seismic energy during the 1983 Coalinga earthquake.

Local Setting

Appendix E contains supplementary details to support the information contained in this section describing local geologic conditions. Section 3.8: Hazards and Hazardous Materials provides additional discussion of storage field and pipeline issues related to geology. Section 3.9: Hydrology and Water Resources contains additional hydrology information related to geologic hazards, which is summarized below. Section 3.11: Minerals, contains a discussion of mineral resources (including natural gas) in the vicinity of the Project Area.

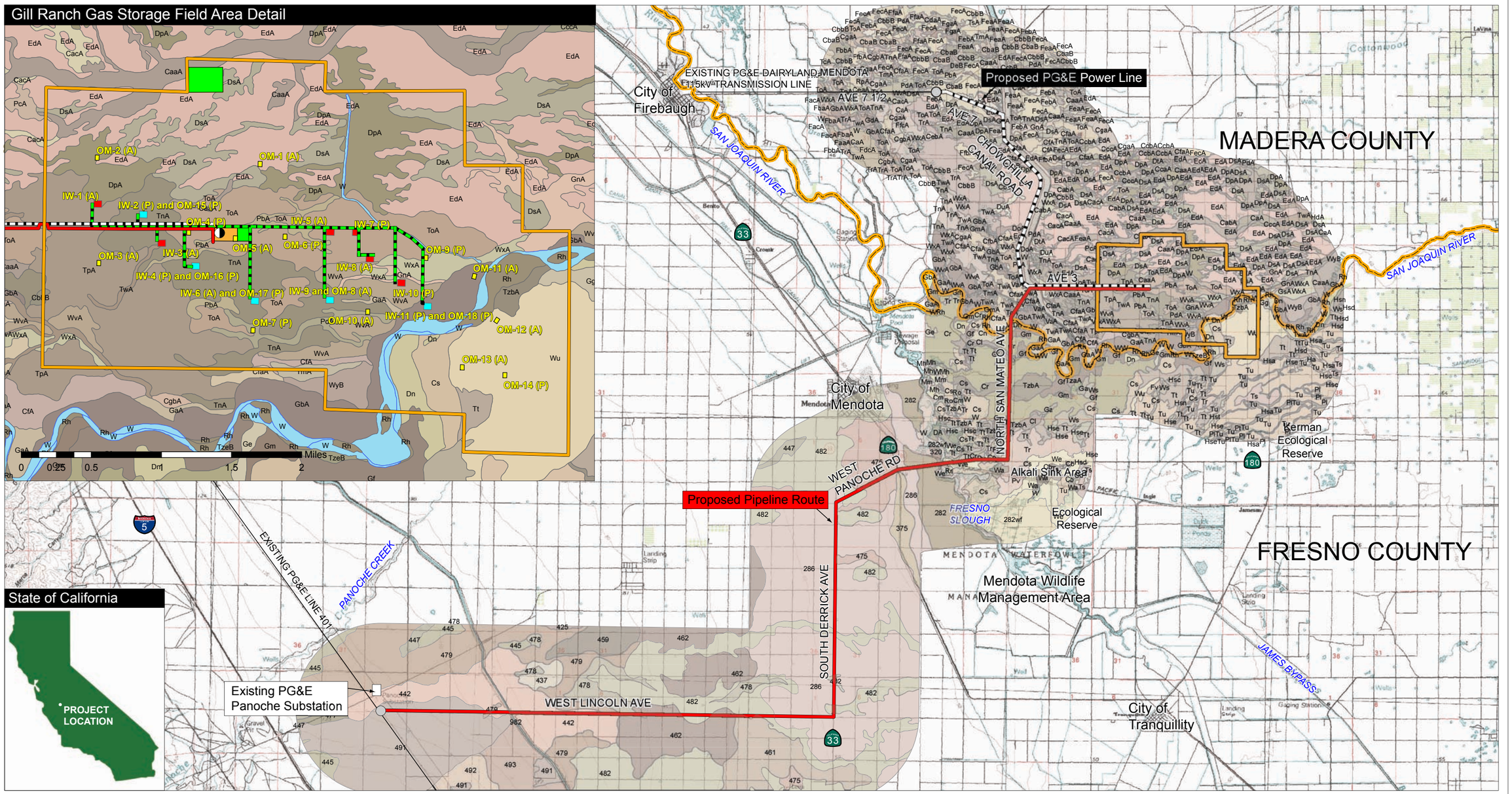
Surface Geologic Formations

Soils

Pipeline Alignment. Soil types underlying the pipeline alignment fall into three broad categories: clay loam, loam, and sandy loam. Clay loams, in general, are present along the western to middle portion of the pipeline alignment (approximately from MP 0.0 to 16.9), grading to loams through the middle portion, with sandy loams dominating the soils in the eastern portion, closer to the San Joaquin River. Soils underlying the pipeline alignment are listed in Appendix F. Figure 3.7-4 is a map showing the distribution of these soils in the Project Area.

Clay loam soils generally have moderate to high shrink/swell potential, low strength, and high plasticity. The risk of corrosion to steel is high; risk for corrosion of concrete is moderate (western area) to high (eastern area). The risk of caving in shallow excavations is generally low, and the

Figure 3.7-4: Soil Map of the Project Area Vicinity



SOURCE: U.S. Geological Survey, EROS Data Center, Sioux Falls, SD 2009, U.S. Department of Agriculture, Natural Resources Conservation Service 2003, and RMT Inc. 2009

LEGEND

- Proposed Pipeline Route
- Proposed PG&E Power Line
- Proposed Field Gathering Line

*Please refer to Appendix E for Soil Unit Legend

- Proposed (P) and Alternative (A) Injection / Withdrawl (IW) Well
- Proposed (P) and Alternative (A) Observation / Monitoring (OM) Well

**Please refer to the PEA for additional detail

- Alternative (A) Injection / Withdrawl (IW) and Observation / Monitoring (OM) Well Pad
- Central Compressor Station
- Construction Staging Area
- Gill Ranch Gas Storage Field Area
- County Boundary
- Tie-In Point
- Salt Water Disposal Well

0 1 2 3 4 5 10 Mile

N W E S

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erosion hazard is slight in cohesive soils such as clay loam. The sandy loams are less cohesive. Although the risk of corrosion to steel is also generally high in the sandy loams, the risk of corrosion to concrete is low. The shrink/swell potential is low to moderate for coarser texture soils, such as sandy loam (Entrix 2008).

Central Compressor Station. The soils underlying the central compressor station are primarily Traver and Traver-Chino loams and sandy loams. These soils are moderately well-drained, and their shrink-swell potential is low. The erosion hazard is moderate. Soils underlying the compressor station are listed in Appendix F. Figure 3.7-4 is a map showing the location of these soils in the Project Area.

Electric Power Line. Soils underlying the electric power line alignment are largely sandy loams with a smaller percentage of loams and loamy sands. Thirteen soil types occur. The most extensive soils along the alignment are the Fresno-El Peco fine sandy loams and the El Peco-Dinuba fine sandy loams. The Fresno-El Peco sandy loams are interfingered throughout much of the power line alignment with the Cajon loamy sand. The sandy loams are less cohesive than the loams or clay loams underlying other parts of the Project Area. The risk of corrosion to steel is high in these soils, the risk of corrosion to concrete is low, and the shrink-swell potential is low to moderate for these coarser textured soils. Soils underlying the electric power line are listed in Appendix F. Figure 3.7-4 is a map showing the location of these soils in the Project Area.

Deposits

It is important to understand and properly characterize the geologic materials that would be affected by construction activities because construction safety, construction techniques, and operational performance depend upon proper engineering consideration during planning and design phases.

The Project components are located on Quaternary basin deposits, Quaternary fan deposits, and Quaternary stream channel deposits. Quaternary basin deposits are sediment deposited during flood stages of major streams in the area between natural stream levees and fans. Quaternary fan deposits are sediments deposited from streams emerging from highlands surrounding the Great Valley. Quaternary stream channel deposits are river channel and major stream sediments, including adjacent natural levees.

Soil Engineering Characteristics

A geotechnical study (URS 2008) was prepared that describes soil conditions at the central compressor station. The study found variable soil conditions throughout the project site. Soils below topsoil to 20 to 25 ft bgs consist of medium dense, non-plastic silty sand to sandy silt, with some isolated dense layers. Soils behave like clayey silt to silty clay stratified with layers of sandy silt with some thin lenses of clay in the upper 18 ft. Deeper soils have substantial amounts of dense, clean sand layers as well as some discontinuous layers of dense to very dense silty sands to sandy silts, going down to at least 100 ft bgs (URS 2008).

As summarized in Table 3.7-3, approximately 55 percent of the area of Project components would be located on Quaternary fan deposits, 27 percent of the area of Project components would be located on Quaternary basin deposits, and 18 percent of the area of Project components would be located on Quaternary stream channel deposits.

Groundwater

The Storage Field overlies alluvial material consisting of glacial outwash, coast range alluvium, arkosic sands from the Sierra Nevada, pumice and ash overlying the Corcoran Clay. These upper unconsolidated to semi-consolidated sediments are 400 to 900 ft thick in the region and constitute the unconfined to semi-confined water bearing zone. The Corcoran Clay (also known as the E-

Table 3.7-3: Percent Area of Project Components and Geologic Unit

Geologic Unit	Percent of Project Components (approximate)
Quaternary fan deposits	55
Quaternary basin deposits	27
Quaternary stream channel deposits	18

clay) is underlain by further layers of arkosic alluvium shed from the Sierra Nevada. These lower layers make up the confined groundwater aquifer, which is characterized by water levels that typically are 200 to 400 ft bgs. The upper unconfined to semi-confined zone contains the Sierran and Coastal aquifers and the lower confined zone contains the Sub-Corcoran aquifer (Belitz and Heimes 1987 as cited in Entrix 2008). Within the aquifer there are as many as six notable clay layers at various depths, four of which overlie the Corcoran Clay. These separate, semi-confining clay layers create perched groundwater zones throughout the unconfined to semi-confined aquifer. Extending along the unconfined to semi-confined aquifer is a zone of shallow groundwater within the flood deposits that overlie the Sierran sands. This uppermost aquifer is recharged from irrigation return flows or "tail water" (Mitten, LeBlanc, and Bertoldi 1970 as cited in Entrix 2008).

A consequence of the irrigation of cropland has been the creation of an artificially raised shallow groundwater table throughout the region. Application of groundwater, and later imported water, to the surface of the San Joaquin Valley floor has created a shallow groundwater table which had previously not existed. Prior to aggressive irrigation in the early 1950s, the groundwater table was typically encountered at depths of 100 to 200 ft bgs, as measured in 1952 (Belitz and Heimes 1990 as cited in Entrix 2008). The uppermost groundwater table now is generally within 20 ft of the ground surface (Entrix 2008) and is estimated to average approximately 30 ft bgs in the central compressor area of the site (URS 2008). This shallow groundwater zone occurs in the alluvial and flood plain deposits overlying the Sierran Sands and Coast Range alluvium (Mitten et al. 1970 as cited in Entrix 2008).

Faulting and Other Tectonic Features

The regional tectonic setting for the San Joaquin Valley, including faults and historic earthquakes, was discussed above. It is important to understand the character of the faults, and potentially related active tectonic features, in the Project Area to determine if they may have an adverse impact on proposed Project components.

Faults within 50 mi of the Project Area are listed in Table 3.7-1. All faults are located to the west of the Project Area. All faults trend northwest-southeast with the exception of the Nunez Fault, which trends nearly north-south. None of the faults cross the Project alignment. Each of these structural features has the potential to impact the Project components through ground shaking.

Local Historic Seismicity and Potential Earthquake Sources

The historic seismicity for the region (for earthquakes greater than magnitude 5) within 50 mi of Mendota, California is presented in Table 3.7-2. The nearest earthquake over magnitude 5.0 was on the Nunez fault, 35 mi from Mendota, California. The earthquakes, which occurred in 1983, had a magnitude of 5.7 and 6.5 (the former was an aftershock to the latter).

Geology, Soils, and Groundwater Hazards

The Project Area is situated on the flat to very gently sloping floor of the San Joaquin Valley. Elevation through the Project Area ranges from approximately 155 to 400 ft amsl, as shown in Table 3.7-1. The likelihood of slope-related hazards such as landslides, slumps, and severe

erosion in gently sloping areas is minimal assuming standard engineering and construction practices are followed.

Subsidence

Subsidence is the settling of the ground surface due to compaction of underlying unconsolidated sediments. Subsidence is most common in uncompacted soil, thick unconsolidated alluvial material due to groundwater, or oil withdrawal, and improperly constructed (poorly compacted) artificial fill (CPUC 2002).

A large semi-confined aquifer developed below what is presently known as the Corcoran Clay member during the formation of the San Joaquin Valley. The Corcoran Clay member is a thick, extremely low permeability clay that separates the overlying unconfined aquifer of the San Joaquin Valley from the underlying semi-confined aquifer of the San Joaquin Valley (Ireland 1986 as cited in Entrix 2008). This semi-confined aquifer was the primary source of water tapped by numerous, deep (>1,000 ft) groundwater wells that were instrumental in the early agricultural development of the San Joaquin Valley (Ireland, Poland, and Riley 1984 as cited in Entrix 2008).

Groundwater pumping was the primary source of water for agriculture, beginning in 1920. Pumping of massive amounts of groundwater led to a decline in groundwater levels, which subsequently resulted in the compaction of the aquifer system (Ireland 1986 as cited in Entrix 2008). Groundwater pumping continued to be the primary source of agricultural water until surface water began to be imported into the San Joaquin Valley in 1950 (Ireland, Poland and Riley 1984 as cited in Entrix 2008). The resulting subsidence of the valley floor has affected roads, pipelines, stream gradients, farming fields, and some structures. More than 27 ft of subsidence was measured at USGS benchmark S661, located 10 mi southwest of Mendota, between 1943 and 1970 (Ireland, Poland and Riley 1984 as cited in Entrix 2008). Subsidence has decreased considerably or stopped in some areas with the increase in surface water availability via canals and aqueducts (Ireland 1986 as cited in Entrix 2008).

Another source of subsidence that is independent of aquifer compaction from groundwater extraction is known as hydrocompaction. It is associated with flood irrigation on previously uncultivated acreage (Galloway and Riley 1999 as cited in Entrix 2008). Hydrocompaction of soils in the Central Valley has led to post-construction damage to projects such as the San Luis Canal and several of its associated pipeline alignments (Prokopovich 1963 as cited in Entrix 2008). Subsidence problems in soils susceptible to hydrocompaction have been mitigated for by pre-wetting the soils prior to construction, thus causing the hydrocompaction to occur before loading the ground surface with critical structures (Galloway and Riley 1999 as cited in Entrix 2008).

Unstable Soils

Most of the soils in the area are susceptible to expansion, consolidation, chemical reactivity, and settlement. Fan and basin deposits are the most widespread unit. The soil types in the Project Area have low to high shrink-swell potential. Soils with a high shrink-swell potential can pose a threat to structures, because the soil changes volume with changes in the soil's water content. Some soil types in the Project Area also have a high risk of corrosion to steel.

Landslides

A landslide (also called mass movement) involves the downslope transport of soil, rock, and sometimes vegetative material en masse, primarily under the influence of gravity. Landslides occur when shear stress generated by downslope forces of overlying colluvial material or fractured rock material exceeds the shear strength of the underlying soil or rock. They may take several forms, including soil creep, earthflow, slump, debris slide, debris flow, and rockfall.

Shallow Groundwater

Three potential types of shallow groundwater may occur in the area that would potentially cause geologic hazards:

1) Water seepage that may collect within, around, or on a structure (e.g., foundations, slabs, cut/fill slopes, and utility trenches)
2) Water that may be intercepted in excavations causing potential dewatering and safety problems
3) Liquefaction potential (discussed below)

Storage Field and Gas Migration Pathways

Potential pathways for leaking gas are existing wells and dry holes, caprock layers over the storage zones, and faults with fractures that penetrate the storage zones. Other pathways could include production wells that leak gas along pathways such as well bores, pipelines, geologic formation boundaries, or other underground utilities. Information presented in Appendix E pertains to geologic conditions related to storage field containment.

The Storage Field facility would utilize depleted natural gas reservoirs in the Gas Field, located approximately 20 mi west of Fresno, near the town of Mendota, California. The Gas Field consists of several geologically separate sandstone formations. The Starkey Formation is a Late Cretaceous (approximately 83 to 65 million years old) sand-rich sequence of river and delta deposits (see Figure 2.3-1 for a geologic cross section). The First Starkey and Second Starkey sands lie at a depth of about 6,000 ft below sea level and contain the depleted reservoirs that would be developed. The sands are highly porous and are very permeable because the grains in these formations are relatively large and clean. The high permeability and porosity is suited to gas storage and withdrawal (Entrix 2008).

Natural gas is trapped in the formation by folding, faulting, changes in stratigraphy, or combinations thereof (Moore and Nilsen 1990 as cited in Entrix 2008). The First Starkey, Second Starkey, and Third Starkey sands are capped by shales and siltstones deposited when relative sea level rose and the ocean advanced landward. The fine-grained (clay), platy, laminated composition of the shales makes them an ideal sealing material to prevent gas migration from the Starkey Formation. The shales drape over the anticlinal structure that forms the eastside trap and provide the vertical and lateral seal to gas migration. Detailed well correlation in the Gill Ranch Gas Field area indicate these shales are continuous across the entire Gas Field and formed the seal that prevented vertical and lateral migration of the original gas in the Starkey Formation. The caprock is generally 75 to 80 ft thick over the First Starkey sand and 60 to 110 ft thick over the Second Starkey sand (Entrix 2008).

The Domengine Formation, located at an elevation of about 4,500 ft below sea level, is a regionally important hydrocarbon reservoir in the Central and Sacramento Valleys. The Domengine Formation is the middle Eocene member of the Kreyenhagen Megasequence, and ranges in age from 50.5 to 38 million years old (Johnson and Graham 2007 as cited in Entrix 2008). The Domengine Formation was deposited during a major sea level rise approximately 50 million years ago that submerged the Central Valley and coast of California (Johnson and Graham 2007 as cited in Entrix 2008).

The Kreyenhagen Formation overlies the Domengine Formation, and represents the same sea level rise. The Kreyenhagen Formation is dominantly shaley, with the fine-grained member ranging up to 1,000 ft in thickness. The fine-grained Kreyenhagen Formation encloses coarser grained Domengine Formation sandstone units at its base. The Kreyenhagen Formation has been a well known oil reservoir. The Kreyenhagen Formation includes the Point of Rocks Sandstone Member,

which is interpreted as a base of a submarine landslide fan. The cumulative thickness of the Kreyenhagen Formation, including the Point of Rocks Sandstone Member, is greater than 2 mi.

Earthquakes and Faults

Strong Groundshaking

The California Geological Survey and the USGS have evaluated the potential levels of seismic shaking caused by earthquakes on known or suspected active faults throughout the Project vicinity. Maps of the expected maximum level of seismic shaking caused by any of these sources have been developed for the Project vicinity. The expected maximum ground acceleration (10 percent probability of occurring in the next 50 years calculated using USGS application NSHMP_HazardApp) is a peak ground acceleration of 0.2g near the eastern portion of the Project Area, 0.4g over hard rock, and up to 0.4g over alluvium near the western portion of the Project Area. The geotechnical report (URS 2008) estimates a design peak ground acceleration of 0.22g at the central compressor station site, 0.22g at the east end of the pipeline, and 0.60g at the west end of the pipeline. It is it likely that the Storage Field will experience large ground motions generated by large earthquakes in the future (URS 2008).

Dynamic Compaction

Dry to partially saturated sediments that may not be susceptible to liquefaction may be susceptible to dynamic consolidation and local ground subsidence during strong earthquake shaking. This consolidation or densification occurs in loose cohesionless sediments as the void spaces are diminished due to intense seismic shaking. Hazard maps are not normally created for this condition, and there are no specific analyses available covering any of the Project Area.

Liquefaction. Liquefaction occurs when saturated, cohesionless (low relative density) materials (usually sand or silty sand) are transformed from a solid to a near liquid state due to the increase in pore-water pressure that can be caused by a moderate to severe seismic ground shaking.

Saturated, loose, granular deposits (e.g., sands and non-plastic silts) have the highest liquefaction potential. Young alluvial sediments can include deposits that are susceptible to liquefaction. Resistance to liquefaction increases in cohesive soils (e.g., clays, silty clays, and clayey sands), The alluvial deposits at the Project site include a wide range of sediment types and variable groundwater conditions. Resistance to liquefaction increases with increasing soil density, and soil density typically increases with depth. It appears that some liquefiable sediments are present in the Project Area, based on soil borings and cone penetrometer tests (Entrix 2008; URS 2008).

Lateral Spreading

Lateral spreading landslides (lateral displacement of soil and underlying alluvium) can occur on relatively shallow slopes due to liquefaction of shallow layers. Within the Project Area, this is most likely adjacent to any drainages where slopes are steepest and water may be more likely to accumulate. Away from the drainages, however, the Project Area is generally very gently sloping and therefore not prone to lateral spreading.

3.7.2 REGULATORY SETTING

Federal

The federal Water Pollution Control Act of 1972 and CWA of 1977 regulate the discharge of pollutants into waters of the United States, including the discharge of sediment to surface water as a result of erosion. The National Resource Conservation Service (NRCS) National Engineering Handbook presents standards for planning, design, and construction of soil conservation practices to be implemented during construction projects.

State

California Department of Industrial Relations, Occupational Safety and Health Regulations

Worker safety on construction projects, in particular where grading, trenching, and earthmoving are involved, is the responsibility of the California Department of Industrial Relations, Occupational Safety and Health Administration (CAL/OSHA). CAL/OSHA establishes and enforces regulations for excavation and trenching permits and for worker safety.

Seismic Hazard Mapping Act

Under the Alquist-Priolo Earthquake Fault Zoning Act, the State of California defines an active fault as one that exhibits evidence that surface rupture has occurred within the last 11,000 years (i.e., Holocene activity). Under the Act, the state has identified active faults within California and has delineated "earthquake fault zones" along active faults. This act restricts development of structures for human habitation within the earthquake fault zones to reduce the potential for injuries and damage caused by fault rupture.

The State of California passed the Seismic Hazard Mapping Act in 1990, following the 1989 Loma-Prieta earthquake. The act was passed to reduce the potential impacts on public health and safety and to minimize property damage caused by earthquakes. The act established a requirement for the identification and mapping of areas prone to the earthquake hazards of liquefaction, earthquake-induced landslides, and amplified ground-shaking. The act requires site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within the Zones of Required Investigation.

A Seismic Hazard Zone Map for the Project site has not yet been published. The geotechnical report (URS 2008) prepared for the central compressor station area assesses liquefaction risks at the central compressor station. However, the geologic conditions within the Project Area (e.g., Quaternary sediments susceptible to liquefaction) are similar to adjacent areas with published maps identifying seismic hazards. The topography within the Project Area is gently sloping to flat, and the potential for earthquake-induced landsliding is low.

California Building Code

The 2007 California Building Code (CBC) is based on the 2006 International Building Code with the addition of more extensive structural seismic provisions. The CBC was adopted by the California Building Standards Commission and became effective January 1, 2008. The CBC is contained in the Title 24 of the California Code of Regulations, California Building Standards Code, and is a compilation of three types of building standards from three different origins:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes.
- Building standards that have been adopted and adapted from the national model code standards to meet California conditions.
- Building standards authorized by the California legislature that constitute extensive additions not covered by the model codes that have been adopted to address particular California concerns.

Seismic sources and the procedures used to calculate seismic forces on structures are defined in Section 1613 of the CBC. The code requires that all structures and permanently attached nonstructural components be designed and built to resist the effects of earthquakes. The code also includes grading and other geotechnical issues, building specifications, and non-building structures. The Project would include these types of improvements, and therefore, the building code would be applicable.

The state fire marshal has authority to implement and enforce the provisions of the pipeline safety standards codified in Section 51010 to 51019 of the California Code of Regulations. These regulations require pipeline inspection and assessment for improvements, replacement, or construction of pipelines. The regulations additionally require that pipelines be designed and constructed in accordance with federal standards. The design of new pipelines shall accommodate the passage of instrumented internal inspection devices. Leak mitigation systems and emergency response plans are also required.

Local

Madera County General Plan

The Madera County General Plan identifies the following requirements (County of Madera 1995 as cited in Entrix 2008):

- Prior to development, the County requires a geologic-seismic and soils report covering hazards related to landslides, liquefaction, groundshaking or expansive soils.
- Flood-proofing is required for structures within 100-year flood zones.
- Limiting development on steep slopes/mitigating development on steep slopes is required to avoid or reduce landslide hazards.

Fresno County General Plan

Fresno County has established the following goals, policies, and programs regarding geologic hazards that are outlined in the Health and Safety Element (Seismic and Geologic Hazards chapter) of the County General Plan (County of Fresno 2000 as cited in Entrix 2008):

- Include appropriate recommendations for seismic strengthening and detailing to meet the latest adopted seismic design criteria.
- Apply policies regarding liquefaction to other ground failures which might result from ground shaking, but which are less well-defined.
- Require suitable design and construction measures in areas with soils of high shrink-swell or expansion potential.
- Give slope stability careful scrutiny in design, and in the adoption of conditions of approval and required mitigation measures.
- The County requires soils engineering and geologic-seismic analysis by a California registered engineer or engineering geologist prior to permitting development.
- Establish and enforce erosion control procedures for all construction and grading projects.

Madera County Grading and Erosion Control

The Madera County Code includes a chapter on grading and erosion control that sets forth regulations for control of erosion, sedimentation, and other environmental damage resulting from excavations and related activities. The regulations are meant to promote the public health, safety, and general welfare of the community.

Fresno County Grading Ordinance

The Fresno County Code includes a grading ordinance that sets forth regulations for control of excavating, grading, earthwork construction, including fills or embankments and related work.

3.7.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on geology, soils, and seismicity if the Project would:

a) Expose people or structures to potential adverse effects, including the risk of loss, injury or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault.

b) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death related to strong seismic ground shaking or seismic-related ground failure, including liquefaction or landslides.

c) Result in substantial soil erosion or the loss of topsoil.

d) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

e) Be located on expansive soil, as defined in the Uniform Building Code (International Code Council 1994 as cited in Entrix 2008) or identified by the NRCS as having moderate to high linear extensibility, creating substantial risks to life or property.

f) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Impact Discussion

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

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

The risk of fault rupture to the proposed gas pipeline, surface facilities, and electric power line would be less than significant. The risk of fault rupture is greatest in the immediate vicinity of active faults. No recognized active faults would underlie Project facilities, and the southern terminus of the nearest active fault and Alquist-Priolo Zone (Los Banos Valley Section of the Ortigalita Fault zone) is about 18 mi away from the closest portion of the proposed pipeline. There is also no evidence of past fault rupture in the Project Area. The Project would be designed, constructed and operated in compliance with the applicable seismic codes and other applicable regulations, further minimizing risks of damage from rupture of a known earthquake fault. Impacts related to the rupture of an earthquake fault during construction or during operation and maintenance of Project facilities would be less than significant, and no mitigation would be required.

ii) Strong seismic ground shaking?

Construction

Numerous regional active faults are capable of generating earthquakes that could cause strong seismic shaking in the Project Area. Project construction could expose construction workers to hazards from strong seismic ground shaking, should an earthquake capable of producing the needed level of ground acceleration occur during construction. It is unlikely that this would occur;

however, the Applicants would be required to prepare an Emergency Response Plan under Mitigation Measure Geology-1, and would be required to implement the Plan should an earthquake occur. This plan would address all phases of construction. Impacts of seismic shaking would not be significant with implementation of Mitigation Measure Geology-1, Mitigation Measure Hazards-11 (Gas Monitoring Plan), and Mitigation Measure Hazards-16 (well repair).

> **Mitigation Measure Geology-1:** At least 30 days prior to construction, the Applicants shall prepare and submit to the CPUC for CPUC staff review and approval an Earthquake Response Plan for responding to and reducing effects from earthquakes and earthquake-related hazards during construction and operations, such as increased pipe stress due to liquefaction, and landslides in trenches or effects to wells and well casing. Mitigation measures shall include shoring trenches, blowout prevention, and methods to complete, re-complete, abandon, or re-abandon wells to mitigate the impacts of a seismic event.

Operation and Maintenance

Gas Storage Field and Facilities. Potential impacts to the gas storage field and facilities resulting from strong ground shaking include the potential impacts to wells and facilities.

Ground shaking could additionally cause gas migration through the Storage Field caprock, and through rupturing wells and/or pipelines. The Wild Goose Storage Field, a gas storage field in northern California, operates at some level of elevated pressure above “normal” hydrostatic pressure from reviewing the available well and operational data in the Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR). The Wild Goose Storage Field routinely operates at reservoir pressures of approximately 1,650 pounds per square inch gauge (psig) (CPUC 2002). This equates to a pressure gradient of 0.67 pounds per square inch per ft (psi/ft) (0.433 psi/ft is considered to be a normal pressure gradient). The Wild Goose Storage Field is much shallower than the Gill Ranch Storage Field, in the range of 2,400 to 2,500 ft with significantly less overburden pressure. The increased depth at the Gill Ranch Storage Field and higher overburden pressure, compared to the Wild Goose Storage Field, translates into a more compacted and higher competency cap rock, with even less potential for a leak at pressure gradients similar to those used in operation of shallower storage reservoirs. Gas migration through caprock as a result of seismic ground shaking is unlikely, and no mitigation would be required for this pathway of gas migration. Potential gas migration due to well rupture, and mitigation for those impacts, is discussed further in Section 3.8: Hazards and Hazardous Materials.

Gas injection-induced seismicity is not expected to occur at the site. The gas injection pressures would be no more than 40% above the original (natural state) pre-development pressures, and lower if geothechnical testing indicates a lower pressure is needed (see Section 3.8: Hazards and Hazardous Materials, (b). A similar increase in gas pressures over original gas pressures was specified for the WIld Goose Gas Field, with no apparent adverse impact. The Project would not be located within an active fault zone as defined by the Alquist-Priolo Fault Zoning Act, and no active faults are present within the Project Area. The nearest active fault is located approximately 28 mi away. Gas pressures would have dissipated long before reaching any active fault zone. Impacts are highly unlikely, and no mitigation measures are required.

Gas Pipeline. Potential impacts to the gas pipeline resulting from strong ground shaking include rupture or displacement. This impact and associated mitigation measures are discussed in Section 3.8: Hazards and Hazardous Materials. The Emergency Response Plan and the Seismic Monitoring Plan would include measures to mitigate effects of strong seismic shaking on the pipeline. Effects would be less than significant with implementation of Mitigation Measures Geology-1 and Geology-2.

Mitigation Measure Geology-2: A Seismic Monitoring Plan shall be prepared by the Applicants and submitted to the CPUC for CPUC staff review and approval at least 30 days prior to construction. The Plan shall include, but is not limited to, the following measures:

a) Seismic shaking conditions shall be monitored in areas underlain by unconsolidated sediment, as mapped by pre-construction geotechnical studies.

b) Structures shall be routinely monitored, and shall be inspected as soon as possible after seismic events.

c) Monitoring shall utilize available instrumentation (e.g., accelerographs) monitored by the California Integrated Seismic Network, or accelerographs installed for the Project.

d) Reported observations shall be further inspected and any necessary corrective actions shall be taken to avoid, reduce, or remediate impacts to facilities, including, wells, pipelines, and public health and safety as soon as practicable.

e) Seismic monitoring results shall be compiled into an annual report and presented to the California Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR) and the CPUC within 60 days of the end of the reporting period. Results of monitoring after a significant seismic event, and any repairs required, shall be reported to the DOGGR and CPUC within 1 month of the event.

Electric Power Line. Proposed Project facilities could be affected if a significant seismic event occurs near the Project Area. The USGS estimates that there is a 10 percent chance that there will be an earthquake in the next 50 years that will be strong enough to produce ground acceleration from 0.16 to 0.43 g. Any ground shaking over 0.20g is considered significant.

Seismic shaking could potentially affect the stability of electric power line structures; however, construction of all phases of the project would be in accordance with all applicable state and county building and construction codes and ordinances. Current (CBC 2007) building code construction can accommodate substantially higher levels of shaking than 0.20g without structural collapse. Mitigation Measure Geology-2 would require the development and implementation of a Seismic Monitoring Plan with measures to reduce the impacts of strong ground shaking on Project components. The effects of seismic shaking would not be significant.

iii) Seismic-related ground failure, including liquefaction?

Construction

Strong seismic shaking, discussed under item (a)(ii), could induce liquefaction of soils during construction of the gas pipeline at the embankments of surface water crossings for the pipeline (URS 2008) and has the potential to impact pipeline integrity. Mitigation Measure Geology -3 would be implemented to reduce potential impacts due to liquefaction during construction. Mitigation Measures Geology-1 and Geology-2, Mitigation Measure Hydrology-4 (Grading and Drainage Plan) and Mitigation Measure Hazards-1 (Health and Safety Plan implementation), along with implementation of the Pipeline Integrity Management Plan (Mitigation Measure Hazards-19), would reduce the impacts to less than significant during Project construction.

Mitigation Measure Geology-3: Recommendations presented in the geotechnical report (URS 2008) shall be implemented, including but not limited to the following:

a) A geotechnical investigation shall be conducted for the HDD (horizontally directional drilling) crossings at the California Aqueduct and the San Joaquin River, to provide data for a liquefaction analysis for those locations.

b) The depth and setback of the HDD crossings shall be adjusted as necessary to avoid potential impacts to the pipeline caused by liquefaction.

Operation and Maintenance

Gas Storage Field and Facilities. The geotechnical study (URS 2008) performed for the central compressor station shows that widespread liquefaction is not likely to occur at the site, even with the historically highest groundwater level (5 ft bgs) for the chosen seismic event (producing a peak ground acceleration of 0.22g). The liquefaction analyses predicted localized, potentially liquefiable lenses with a thickness of 2 ft or fewer. The geotechnical report for the central compressor station documents encountering loose soils in soil borings (URS 2008). No liquefaction was predicted, even for the typical high water level. Resulting settlement would be negligible, and impacts would be less than significant.

Gas Pipeline. The geotechnical study (URS 2008) performed for the Kings Slough pipeline crossing indicated a loose sand layer at that location would liquefy during the design earthquake event. Data were not available to evaluate the liquefaction potential at the California Aqueduct or the San Joaquin River crossings. Mitigation Measure Geology-3 would reduce impacts to less than significant levels.

There would also be a risk of gas migration due to pipeline rupture caused by seismic-related ground failure. This impact, and associated mitigation measures, is discussed in Section 3.8: Hazards and Hazardous Materials.

Electric Power Line. Liquefaction can cause overlying structures to settle non-uniformly, and buried structures to float on their substrate. Severe damage to the structure is highly likely in either situation. Dynamic compaction can cause non-uniform settlement of several inches to over 1 ft depending upon sediment thickness and density. Estimates of liquefaction and dynamic compaction potential require specific data from geotechnical borings and groundwater level monitoring.

The estimated level of shaking for the Project Area could potentially result in liquefaction of sediments with a moderate to high susceptibility for liquefaction. The alluvial deposits in the Project Area are expected to include a wide range of sediment types and variable groundwater conditions. Liquefiable sediments may be present; however, widespread liquefaction was not reported within the valley sediments during the 1983 Coalinga earthquake (M 6.5). The level of expected shaking would be similar to the level generated during the Coalinga earthquake, and a similar magnitude earthquake is not anticipated to induce liquefaction in the Project Area. Impacts during operation and maintenance of the electric power line would be less than significant.

iv) Landslides?

Construction

Analysis of slope stability must consider the effects of construction (trench and HDD-related excavations) on both natural slopes and newly created cut slopes. Landslides occur in areas of elevated topography and steep slopes as a consequence of slope instability, either induced by seismic shaking, or a decrease in pore pressure of sediments due to elevated groundwater levels. The Project Area naturally contains gentle to horizontal slopes. Areas susceptible to landslides and slope failure are not present within the potential Project Area, with the exception of banks along the San Joaquin River, Fresno Slough, and Lone Willow Slough.

Gas Storage Field and Facilities. Excavation and development along the San Joaquin River (some I/W and O/M wells are proposed for just outside the banks of the San Joaquin River) could cause localized bank failures. Design and construction mitigation measures (e.g., shoring, retaining walls, reduced slope angles, earth reinforcement) in conformance with Madera County and Fresno County ordinances (e.g., Madera County Grading and Erosion Control and Fresno County Grading and Excavation ordinances) and California Building Code (2007) standards would

be utilized in order to prevent slope instability. Impacts related to landslides during construction would be less than significant with adherence to the applicable building codes.

Gas Pipeline. Pipeline trench excavation impacts related to landslides would be similar to those for the gas storage field and facilities. The pipeline would be constructed under the California Aqueduct, Fresno Slough, San Joaquin River, and Chowchilla Canal using HDD methods. The proposed pipeline would be directionally drilled well below the beds of the surface water bodies in accordance to the recommendations of the geotechnical study (URS 2008), as required by Mitigation Measure Geology-3, and the pipeline construction work area would be set back from the river banks. Impacts would be less than significant.

Electric Power Line. The new section of electric power line (where no line currently exists) would be located within established corridors that include PG&E facilities (electric distribution line corridors) and roadways. Approximately 1 mi of new power line would be constructed along county roads (Avenue 7) where there are currently no electric distribution facilities. The new 1-mile portion would not be located along an existing road, and would be designed according to CBC (2007) standards. The area is relatively flat with no areas subject to landslides. There would be no impact related to landslides from construction in the existing or new electric power line corridor.

Operation and Maintenance

The portions of the Project Area that would naturally be subject to the risk of landslides or slope failure would be areas along the San Joaquin River, Fresno Slough, and Lone Willow Slough, as discussed above. Excavation and development completed for above-ground elements in these locations would be done in accordance to applicable ordinances, as discussed above, and no mitigation would be necessary during operation and maintenance. There would be no impact due to landslides during operation and maintenance.

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

Construction

Gas Storage Field and Facilities and Electric Power Line. The Project-affected slopes with the potential for erosion would be the slopes bordering the San Joaquin River and Fresno Slough pipeline crossings, and cut slopes along trench alignments. Disturbance of the slopes may promote surface water infiltration that can lead to severe erosion and the promotion of surficial or rotational slope failures in the generally massive deposits. The flat gradient would not be prone to erosion.

The proposed Project would require excavation for installation of the proposed surface facilities at the gas storage field, and for the new 1-mile portion of the electric power line. The excavation would result in removal of vegetation and disturbance of soil structure. These activities could promote soil erosion; however, the relatively flat and uniform topography throughout the Project site and low annual rainfall naturally decreases the potential for a wide range of erosion hazards. Mitigation Measure Hydrology-4 would further reduce impacts by requiring the preparation and implementation of an Erosion and Sediment Control Plan, as required by Fresno and Madera County ordinances. The plan is further discussed in Section 3.9: Hydrology. Impacts would be less than significant with the implementation of Mitigation Measure Hydrology-4.

Gas Pipeline. The proposed Project would require trenching, excavation, and boring for installation of the proposed gas pipeline. Impacts would be similar to impacts discussed for the gas storage field and facilities. The soil disturbance involved in these activities would encourage erosion. Trees, shrubs and other vegetation would be chipped or stored along the edge of the construction ROW for later use as erosion control mulch. Temporary erosion control measures (e.g., silt fences, straw bales) would be installed where erosion could be a factor during pipeline ROW grading activities. A minimum of 6 in of topsoil, or as determined by the Project's

architectural specialist, would be stripped and stockpiled along the ROW and used for restoration following construction. HDD would be used to minimize the potential for soil erosion at major crossings of surface water bodies, where the erosion potential would otherwise be high. Slick boring would be used to minimize the potential for erosion at minor surface water body crossing. Impacts would be less than significant with the implementation of Mitigation Measure Hydrology-5.

Operation and Maintenance

Gas Storage Field and Facilities. The uniform topography throughout the Project Area and low annual rainfall naturally decreases the potential for a wide range of erosion hazards. No additional ground disturbance is proposed during maintenance and operation. The well pad sites would additionally be inspected by site personnel at least weekly during no-flow conditions and more frequently during flowing conditions. The inspection would include, among other aspects, erosion control, grading, and drainage facilities. The results of these weekly inspections would be summarized in a monthly report and maintained by the operator at the central compressor site. No additional ground disturbance is proposed during maintenance and operation, and no mitigation would be required.

Gas Pipeline and Electric Power Line. The uniform topography throughout the Project site and low annual rainfall naturally decreases the potential for a wide range of erosion hazards. No additional ground disturbance is proposed during maintenance and operation, and no mitigation would be required.

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

The Project is located on the flat topography of the Great Valley. Steep slopes within the Project Area are limited in extent to the banks of rivers, particularly the San Joaquin River. A slope failure requires a slope angle that exceeds the angle of internal friction of the materials composing the slope. The natural topographic conditions in the Project Area do not present this scenario, except for the banks of the San Joaquin River, Lone Willow Slough, and the Fresno Slough. Subsidence has been substantial in the region in the past, and is currently low, but could increase again if substantial groundwater extraction resumes at some time in the future.

Construction

Gas Storage Field and Facilities. The potential impacts of liquefaction during construction are discussed under (a)(iii). The potential for landslide impacts during construction of the gas Storage Field and facilities would be the same as discussed under (a)(iv), above, and the same measures would be followed in order to prevent impacts. There would be no impacts from subsidence or liquefaction during construction. Impacts would be less than significant.

Gas Pipeline. The potential impacts of liquefaction during construction of the gas pipeline are discussed under (a)(iii). The potential landslide impacts of construction of the gas pipeline would be the same as discussed under (a)(iv), above, and the same measures would be followed in order to prevent impacts. There would be no impacts from subsidence or liquefaction during construction. Impacts would be less than significant with the implementation of Mitigation Measures Geology-1, Geology-3, and Hazards-1.

Electric Power Line. The potential impacts of liquefaction during construction are discussed under (a)(iii). The potential landslide impacts of construction of the electric power line would be the same as discussed under (a)(iv), above, and the same measures would be followed in order to prevent impacts. There would be no impacts from subsidence or liquefaction during construction. Impacts would be less than significant.

Operation and Maintenance

Gas Storage Field and Facilities. Subsidence has the potential to affect the Storage Field facilities (see also the discussion of Gas Pipeline below); however, except for the wells, potential impacts would be substantially less significant for the Storage Field facilities. Storage Field facilities components would be designed to comply with the CBC (2007). New IW and OM wells would be required to adhere to DOGGR guidelines for construction, which are designed to minimize the potential for impacts due to subsidence. Mitigation Measure Hazards-2 would require that an alternative design proposed by the Applicants for unlanding[3] the wells must be approved by the DOGGR in order to avoid subsidence impacts. The well design would allow free movement for the casing in the wellbore if subsidence continues. Mitigation Measure Geology-4 would require monitoring of surface facilities for signs of subsidence impacts and actions to be taken if facilities are threatened with damage from subsidence. Mitigation Measure Geology-3 would also reduce these potential impacts. Impacts would be less than significant with the use of these design methods and the implementation of mitigation.

Potential hydrocompaction impacts to the Storage Field and facilities would be similar to those for the pipeline; however, except for the wells, impact significance for the Storage Field and facilities would be substantially less than for the pipeline. The same mitigation measure would be used, resulting in impacts that would be less than significant.

Impacts related to liquefaction during operation and maintenance are discussed under (a)(iii). Impacts would be less than significant and no mitigation would be required.

Gas Pipeline. Subsidence has the potential to damage the proposed gas pipeline. The potential for subsidence could increase in the event that increased reliance on groundwater as irrigation supply occurs in the future. Long-term subsidence could cause damage to the pipeline over the life of the Project. The pipeline could be stressed and potentially damaged if significant subsidence were to occur. The damage could result in pipeline rupture. The Applicants would implement a monitoring inspection, maintenance, and repair program for the pipeline, according to Mitigation Measure Geology-4. The pipeline would also be designed in accordance to the CBC (2007) requirements and the recommendations presented in the geotechnical report (URS 2008), as specified in Mitigation Measure Geology-3. Pipeline rupture and associated mitigation measures are further discussed in Section 3.8: Hazards. Any impacts related to subsidence would be less than significant with the implementation of the mitigation measures.

Hydrocompaction of soils in the Central Valley has led to post-construction settlement and damage of infrastructure and agriculture. Hydrocompaction in the Central Valley has been found to affect alluvial deposits derived from the Coast Ranges. The proposed alignment would lie over the Patterson Alluvium, which is Coast Range alluvium ranging to about 20 ft thick. Historical evidence indicates that hydrocompaction has the potential to damage or deform structures built upon the surface. Mitigation Measure Geology-3 would require the use of recommendations included in the geotechnical report (URS 2008), which include specifications for foundation design and fill type. Any impacts related to hydrocompaction would be less than significant with the implementation of this mitigation measure.

Impacts related to liquefaction during operation and maintenance are discussed under (a)(iii). Mitigation Measure Geology-3 would reduce impacts to less than significant.

> **Mitigation Measure Geology-4:** The Applicants shall implement a monitoring inspection, maintenance, and repair program for the pipeline, surface facilities (including wells), and

[3] When casing, which would be uncemented from the land surface to the base of the freshwater aquifer is detached from any surface fixtures and then re-attached in its new equilibrium position periodically, to allow for it to move upward if land subsidence occurs.

electric power line. The program shall include various methods to detect and measure potential effects of subsidence, such as deflections of the pipeline or wells due to differential settlement. The plan shall include actions the Applicants will take to correct or mitigate identified subsidence. Actions will include excavation and recompaction, as appropriate, of areas subject to subsidence that could result in damage to project facilities, or repairs to wells. The plan shall be submitted to the CPUC for CPUC staff review and approval at least 30 days prior to operation . For well repairs, the Applicants shall implement the appropriate remedial actions consistent with DOGGR procedures outlined in California Code of Regulations §1723 *et. seq.* in consultation with the DOGGR.

Electric Power Line. Subsidence and liquefaction has the potential to affect the electric power line for the reasons discussed for the gas pipeline above; however, potential impacts would be substantially less significant for the electric power line. Mitigation Measure Geology-4 would require monitoring of the electric power line for signs of subsidence impacts and specify corrective actions to be taken if facilities would be affected. Mitigation Measure Geology-3 would require the use of certain preventative design measures; impacts would be less than significant.

Potential hydrocompaction impacts to the electric power line would be similar to those for the pipeline; however, impact significance for the electric power line would be substantially less than for the pipeline. The same mitigation measure would be used, and impacts would be less than significant.

Impacts related to liquefaction during operation and maintenance are discussed under (a)(iii). Impacts would be less than significant and no mitigation would be required.

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?

Soils with properties of shrink-swell potential expand when saturated and contract when dried. Soils with high linear extensibility and high shrink-swell potential create a potentially hazardous condition for structures with foundations constructed within these soils. Structures placed on soils with high shrink-swell potential may be subject to differential movement as a result of soil volume changes caused by significant fluctuations in moisture content.

Construction

There would be no impacts during construction due to placement of Project facilities on expansive soils.

Operation and Maintenance

Gas Storage Field and Facilities. Several well pads would be located within the Storage Field, along with various structural foundations and pads for the central compressor station. Expansive soils could affect the stability of building and equipment foundations and well pads, causing them to settle or crack. Soils in the vicinity of the surface facilities generally have a low shrink-swell potential. A layer of crushed aggregate base would be added under the foundations of well pads. This impact would be considered less than significant because the building permit process, compliance with current regulations (e.g., CBC [2007]), and the implementation of Mitigation Measure Geology-3 would ensure adequate engineering for the foundations.

Gas Pipeline. Soils within the pipeline ROW having high clay content also tend to have a characteristic moderate to high shrink-swell potential. The soils with high shrink-swell potential include the Tranquillity clays and the Tachi clay, which generally occur between pipeline MP 11 and 18 of the pipeline alignment. No surface facilities are proposed in this pipeline segment except for a pipeline valve station, which would primarily be underground and would have only minor above-ground structures. Impacts related to soil expansion would likely not be significant because

the pipeline would be surrounded by soil below grade, and below the portions of the soils profile affected by changes in soil moisture, thus avoiding significant “shrink-swell” effects, and because Mitigation Measure Geology-3 would be implemented.

Electric Power Line. The electric power line would be constructed within corridors where there are existing electric power lines, except for a 1-mi segment that would parallel an existing road. The electric power line poles would be constructed using proper engineering and design methods and would not be affected by expansive soils.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?

Waste water would be collected in a buried tank that would be periodically pumped out and taken off-site for disposal, and no contact between wastewater and soils would occur. The Project would not require the use of septic tanks or alternative on-site waste water disposal systems. No impacts due to the use of septic tanks or alternative wastewater disposal systems would occur as a result of the proposed Project.

3.8 Hazards and Hazardous Materials

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
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?	☐	☒	☐	☐

3.8.1 ENVIRONMENTAL SETTING

Regional Setting

Fire Hazards

Structural and wildland fire hazards can threaten life and property. Wildland fires resulting from either natural or manmade causes occur in forests, brush, grasslands, fallow agricultural areas, and vacant lots. Such fires are capable of causing widespread damage to valuable range and forest lands, in addition to threatening the lives and personal property of persons residing in wildfire-prone areas. Wildfires can also exacerbate air quality problems, particularly during the

summer months when ambient air quality is already low. Structural fires generally result from manmade causes and can easily spread through densely settled urban areas, causing large-scale loss of personal property, personal injury, and, occasionally, fatalities.

The California Department of Forestry and Fire Protection (CAL FIRE) protects the people of California from fires, responds to emergencies, and protects and enhances forest, range, and watershed values providing social, economic, and environmental benefits to rural and urban citizens. CAL FIRE assesses areas within the state for fire hazard severity by examining:

- The history and intensity of wildfires in the area
- Size and type of vegetation in the area
- Proximity to fire extinguishing resources

CAL FIRE identifies five types of fire threat based on levels of severity of risk: (1) Extreme, (2) Very High, (3) High (4) Moderate, and (5) Little or No Threat. CAL FIRE identifies Federal Responsibility Areas (FRAs), State Responsibility Areas (SRAs), and Local Responsibility Areas (LRAs) (CAL FIRE 2008a). No part of the proposed Project Area is within an FRA or SRA. The nearest FRA and SRA to the proposed project is located to the west of Interstate 5.

The proposed Project Area is in an LRA. CAL FIRE has not rated the majority of the Project Area for severity of risk, and has designated these areas as “Unzoned.” Several small areas of the Project Area are rated as “Moderate” for fire hazard severity (CAL FIRE 2008b). Local fire departments would provide fire suppression services to these areas in the event of a fire. Fire protection agencies and responsibilities are discussed further in Section 3.14: Public Services.

Airports

The land in the proposed Project vicinity is primarily in agricultural use. There are several airports in the vicinity, but the majority of runways in the region are private airstrips in agricultural fields. Table 3.8-1 lists the airstrips and airports in the vicinity, their distance from the proposed Compressor Station, and their ownership.

Local Setting

Population Density

The proposed Project Area is located in a sparsely populated area. The nearest occupied residences to the proposed Storage Field facilities are located on Road 16, which provides the primary access to the Storage Field Project Area. These homes are located 1 mi north of the proposed central compressor station site. A single occupied residence is located on the south bank of the San Joaquin River, in the southeast corner of the Storage Field, in Fresno County.

Population data for the area along the proposed pipeline alignment was collected from field investigations. Areas along the pipeline route are sparsely populated. There are only a few agricultural buildings along the route. Some commercial and recreation uses are present between pipeline MPs 18 and 19.5.

Hazardous Materials

The California Health and Safety Code defines a hazardous material as “any material that because of its quantity, concentration or physical or chemical characteristics poses a significant present or potential hazard to human health and safety, or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, radioactive materials, and any material which a handler or the administrating agency has a reasonable basis for believing that it

Table 3.8-1: Airports and Airstrips in the Project Area Vicinity

Facility Name	Distance from the proposed Compressor Station	Ownership
Mendota Airport	7.0 mi SW	Public: City of Mendota
Firebaugh Airport	12.6 mi NW	Public: City of Firebaugh
Madera Municipal Airport	15.4 mi NW	Public: City of Madera
El Peco Ranch Airstrip	9.0 mi NE	Private: El Peco, LP
Du Bois Ranch Airstrip	9.0 mi SE	Private: George W. Du Bois
Haws Airstrip	10.2 mi N	Private: Estate of E.B. Haws
Bland Field Airstrip	13.5 mi SE	Private: Russell Bland
San Joaquin Airstrip	14.5 mi S	Private: Grouleff Aviation, Inc.

Notes

N: North S: South
NW: Northwest NE: Northeast
SW: Southwest E: East

SOURCE: Pilotoutlook.com 2008

would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment" (Health and Safety Code § 25501).

Well Sites and Compression Station Site Environmental Data Resources

An Environmental Data Resources (EDR) Area Study was conducted for the Project well sites and compressor site to identify previous contamination in the area that may have resulted from past or present uses of the property. The EDR report identified one site that has previous contamination, at 4142 Road 16 (between Avenue 5 and Avenue 4) approximately 1.5 mi north of the proposed compressor site, outside of the Storage Field. The nature of the site is not known; however, the Spills, Leaks Investigation and Cleanup database indicate that the case is closed (Entrix 2008). There are no recorded sites within the Storage Field boundary.

Gas Pipeline Corridor and Electric Power Line Corridor Environmental Data Resources

Another EDR Area Study was conducted for the gas transmission pipeline corridor (MP 0.0 to 26.7 of the proposed pipeline route only) and the electric power line corridor to identify contamination in the corridors that may have resulted from past or present uses of the property.

The EDR report identified 10 sites. A summary of each of the sites identified in the EDR report is provided in Table 3.8-2.

Natural Gas

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic but is classified as a simple asphyxiant, posing an inhalation hazard. Oxygen deficiency can occur if methane is inhaled in high concentrations, resulting in serious injury or death. Flammable concentrations of methane can explode within an enclosed space in the presence of an ignition source. Methane is buoyant at atmospheric temperatures and disperses rapidly in air; as such, unconfined mixtures of methane in air are flammable but rarely explosive. Methane is also a significant contributor to GHG emissions, which have been linked to global warming.

Table 3.8-2: Summary of Sites Identified in the EDR Report

Site Number	Corridor Location	Site Name and Address	Description
1	Power line – MP 0.0	Madera Power, LLC 11427 Firebaugh Blvd Firebaugh, CA 93622	RCRA-SQG/FINDS – A small quantity hazardous waste generator (tetrachlorethylene). No violations found.
2	Power line – MP 2.0	George Andrew & Son 13845 Avenue 7 Madera, CA 93637	HIST UST – One 4,000-gallon UST used for storing regular fuel was historically present at the site.
3	Pipeline – MP 19.5	Spreckels Sugar Co Mendota Limekiln Fresno (County), CA	MINES – Lime mining site. No other information provided.
3	Pipeline – MP 19.5	Spreckels Sugar Factory #4 29400 Whitesbridge Road Mendota, CA 93640	HIST UST – 6 USTs of varying capacity used for storing fuel and waste oil were historically present at the site.
			Fresno Co. CUPA/TRIS – In 1992 all USTs were removed from the site. The site was listed as a large hazardous material handler, extremely hazardous substance handler, small quantity hazardous waste generator, waste tire generator, and contaminated site. No other details provided.
			SWEEPS UST – 6 USTs of varying capacity used for storing kerosene, fuel, and waste oil are present on the site.
			RCRA-SQG/FINDS/HAZNET – A small quantity hazardous waste generator (asbestos-containing waste, waste oil and mixed oil). No violations found.
			CERCLIS-NFRAP – Release discovered August 1980. Preliminary assessment (priority level – low) conducted 1985. Site classified No Further Remedial Action planned February 1989. No additional details provided.
3	Pipeline – MP 19.5	Western Sun Products 1455 N San Mateo Avenue Mendota, CA 93640	HAZNET – A small quantity hazardous waste generator (oil-containing waste, waste oil, aqueous solution with organic residues)
4	Pipeline – MP 17.5	Nextel Communications 30440 Whitesbridge Road Mendota, CA 93640	Fresno Co. CUPA – Hazardous material disclosure, below reporting quantity.
4	Pipeline – MP 17.5	Spreckels Sugar 29400 Whitesbridge Road Fresno, CA 93640	EMI – reported air emissions to the San Joaquin Valley Air Pollution Control District.
			HAZNET – A small quantity hazardous waste generator (asbestos-containing material)
4	Pipeline – MP 17.5	Mendota Plant 29400 Whitesbridge Road Mendota, CA 93640	WMUDS/SWAT/CA WDS – Facility that treats and/or disposes of liquid wastes for any servicing, producing, manufacturing, or processing operation. Active permit.

Table 3.8-2 *(Continued)*: Summary of Sites Identified in the EDR Report

Site Number	Corridor Location	Site Name and Address	Description
5	Pipeline – MP 16.0	Panoche-Vortac Panoche Road Fresno, CA 93624	HIST UST – 1 550-gallon capacity UST for storing product was historically present at the site.
6	Pipeline – MP 14.5	Franco Garage 915 S Derrick Mendota, CA 93640	FINDS – Site is listed in California used oil recycling system database.
			Fresno Co. CUPA – Site is listed as a conditionally exempt small quantity hazardous waste generator.
6	Pipeline – MP 14.5	Richard E. Guenther 4016 S Derrick Mendota, CA 93640	HIST UST/ SWEEPS UST – 1 1,000-gallon capacity tank used for storing regular leaded fuel was historically present on the site.

Notes:
RCRA-SQG – Resource Conservation and Recovery Act – Small Quantity Generator
FINDS – Facility Index System
HIST UST – Historical Underground Storage Tank Registered Database
Fresno Co. CUPA – Fresno County Certified Unified Program Agency
MINES – Mines Master Index File
TRIS – Toxic Release Inventory System
SWEEPS UST – Statewide Environmental Evaluation and Planning System UST
HAZNET – Hazardous Waste Information System
CERCLIS-NFRAP – Comprehensive Environmental Response, Compensation, and Liability Information System
– No Further Remedial Action Planned
EMI – Emissions Inventory Data (Toxic and Criteria Pollutant)
WMUDS/SWAT – Waste Management Unit Database System/Solid Waste Assessment Test
CA WDS – California Waste Discharge System
UST – Underground Storage Tank

SOURCE: Entrix 2008

Gas Migration

Gas migration is the uncontrolled movement of the natural gas from a contained state in a reservoir, wells, and/or aboveground piping to an uncontained state in the air, geologic formations, or shallow soil. Gas migration is a concern because gas can be highly flammable and explosive, as well as a contributor to global warming.

Gas migration pathways of potential concern are primarily in deep wells if there are cracks, ruptures, or incompletely sealed well casings, and through leaks or ruptures of the surface facilities and gas pipeline. Additional pathways could include faults or utility pipelines. Gas migration through the overlying shale cap rock that serves as a confining layer for the gas reservoir is another potential, but less likely, migration pathway. This pathway for migration is discussed further in Section 3.7: Geology and Soils

Electric and Magnetic Fields

Electric and Magnetic Fields (EMF) are present where electricity flows. These fields are present around any item that transmits or uses electricity, such as utility transmission lines, distribution lines, substations: the building wiring in homes, offices, schools, and in the appliances and machinery used in these locations. The CPUC and the California Department of Health Services have not concluded that exposure to EMF from utility electric facilities is a health hazard. Many reports have concluded that the potential for health effects associated with EMF exposure is too speculative to allow the evaluation of impacts or the definition of mitigation measures. Hundreds of EMF studies have been conducted over the last 20 years in the areas of epidemiology, animal

research, cellular studies, and exposure assessment to evaluate potential impacts of EMF on human health. A number of nationally and internationally recognized multi-discipline panels, including the National Cancer Institute, the World Health Organization, the National Institute of Environmental Health Sciences, and the International Agency for Research on Cancer, have performed comprehensive reviews of the body of scientific knowledge of EMF. None of these groups have concluded that EMF causes adverse health effects (NIEHS 2002). For this reason, EMF is not considered an environmental impact cognizable under the California Environmental Quality Act (CEQA). This discussion of EMF, therefore, is provided solely for public information purposes.

EMF would be present during construction (from the existing power lines and other sources in the area) and operation and maintenance (from the proposed power line). The CPUC, in response to a situation of scientific uncertainty and public concern, specifically requires PG&E to consider "no-cost" measures, where feasible, in order to reduce exposure from new or upgraded utility facilities in accordance with PG&E's EMF Design Guidelines. "No-cost" measures are defined by the CPUC as those steps taken in the design stage, including changes in standard practices that would not increase the project cost but would reduce the EMF strength. The only developed land is a dairy operation on the north side of Avenue 7 ½. There are up to two residential structures at the dairy operation site in the southwesterly portion of the site; however, these structures are set back approximately 250 feet from Avenue 7 ½. The distance between the existing switch proposed to be used for the tie-in and the existing residential structure would be approximately 300 ft, and the proposed electric power line would be farther away from any residences than the existing power line. PG&E identified a no-cost mitigation that would relocate the tap point for the new power line1,100 feet east of its current proposed location (See PG&E's EMF Plan, July 21, 2009). This new tap point (east of pole 14/178) would move the line approximately 1,100 feet (0.2 mile) further east than the originally proposed location, further away from the rural residential land use on the diary property north of Avenue 7½. There are no additional no-cost measures that would reduce EMF levels at the aforementioned residential structures.

3.8.2 REGULATORY SETTING

A summary of the key applicable regulations are provided here. Additional pertinent regulations are identified in the PEA and supplemental submittals.

Federal

U.S. Department of Transportation Regulations

U.S. Department of Transportation (DOT) regulations in 49 Code of Federal Regulations Part 192 define hazard area classifications, based on population density in the vicinity of natural gas pipelines that corresponds to the minimum safety requirements. The class location unit is an area that extends 220 yards (660 ft) on either side of the centerline of any continuous 1-mi length of pipeline. The four area classifications are defined as follows:

- **Class 1:** Location with 10 or fewer buildings per mile intended for human occupancy;
- **Class 2:** Location with more than 10 but fewer than 46 buildings per mile intended for human occupancy;
- **Class 3:** Location with 46 or more buildings per mile intended for human occupation or where the pipeline lies within 100 yards of any building or small well-defined outside area occupied by 20 or more people during normal use; and
- **Class 4:** Location where buildings with four or more stories aboveground are prevalent.

Pipelines constructed on land in Class 1 locations must be installed with a minimum cover depth of 30 inches in normal soil and 18 inches in consolidated rock. All pipelines installed in navigable

rivers, streams, and harbors must have a minimum cover of 48 inches in soil and 24 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock.

Area classifications also specify the maximum distance to a sectionalizing block valve for onshore line segments. Part 192 regulations require at least one sectionalizing block location every 20 miles in Class 1 locations, every 15 miles in Class 2 locations, every 8 miles in Class 3 locations, and every 5 miles in Class 4 locations.

Areas with higher population density require higher safety factors in pipeline design, testing, and operation. Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, Maximum Allowable Operating Pressure (MAOP), inspection and testing of welds, and frequency of pipeline patrols and leak surveys must all conform to higher standards in more populated areas.

The DOT regulates pipeline safety pursuant to US Code Title 49 Chapter 601. The DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. The Office of Pipeline Safety (OPS) administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline.

Office of Pipeline Safety Rules

The DOT PHMSA's OPS has published a series of rules that define high consequence areas (HCAs) where a gas pipeline accident could do considerable harm to people and property, and require an integrity management program to minimize the potential for an accident. The DOT (68 Federal Register 69778, 69 Federal Register 18228, and 69 Federal Register 29903) defines HCAs as they relate to the different hazard classification zones (discussed above), potential impact circles, or areas containing an "identified site" as defined in 49 Code of Federal Regulations Part 192.903 of the DOT regulations.[1]

Federal Pipeline Safety Improvement Act

Congress passed the Pipeline Safety Improvement Act (PSIA) in order to strengthen the nation's pipeline safety laws in 2002 (HR 3609). Under the PSIA, gas transmission operators are required to develop and follow a written integrity management program containing all the elements described in Part 192.911 of the DOT regulations and to address the risks on all transmission pipeline segments which includes an HCA. Specifically, the law establishes an integrity management program that applies to all HCAs.

Clean Water Act

The CWA sets up the framework through which permits to discharge waste to surface waters are authorized. The National Pollutant Discharge Elimination System (NPDES) permit typically has conditions specific to the permitted operation and may set limits on acidity (pH), chemical concentrations, oil and grease, dissolved and suspended solids, and temperature. The CWA also prohibits the discharge of pollutants to storm water.

Superfund Amendment and Reauthorization Act Title III

[1] An "identified site" is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

The Superfund Amendment and Reauthorization Act Title III (SARA) of 1986 is the Emergency Planning and Community Right-to-Know Act. Facilities are required to report on USEPA Form R, the Toxic Chemical Release Inventory Reporting Form, the following items:

- Facility identification
- Off-site locations to which toxic chemicals would be transferred in wastes
- Chemical-specific information
- Supplemental information

Form R also requires facilities to list hazardous substances that are handled onsite, and to account for the total releases of listed toxic chemicals during the year. Releases to the environment include:

- Air emissions
- Discharges to surface water
- On-site releases to land and underground injection wells

The proposed project would be subject to SARA for the use, storage, transport, disposal, or release of toxic chemicals.

State

CPUC General Order 112-E

The CPUC has developed General Order 112-E, which establishes minimum requirements for the design, construction, and quality of materials, locations, testing, operations and maintenance of facilities used in the gathering, transmission and distribution of gas. General Order 112-E provides requirements for reporting, construction and safety standards, liquefied natural gas facilities, gas holders, and petroleum gas vessel stations.

California Division of Oil, Gas, and Geothermal Resources

The California DOGGR regulates production of oil and gas, as well as geothermal resources, within the state of California. DOGGR regulations define well design and construction standards, surface production equipment and pipeline requirements, and well abandonment procedures and guidelines. DOGGR regulations are defined in the California Code of Regulations, Title 14, Chapter 4. The DOGGR regulates well abandonment procedures to ensure they are conducted safely and are effective. These regulations require procedures designed to prevent future migration of oil and gas from a producing zone to shallower zones, and to protect groundwater. DOGGR can also require re-abandonment of existing abandoned wells if it appears they have not been abandoned in a manner that is consistent with current standards, and that they may function as a conduit for gas migration.

Natural gas monitoring can also be required by DOGGR. DOGGR oversees operations. When an operator ceases well operation or production, state law requires the well is abandoned within a reasonable period of time. Regulations require operators to maintain detailed records of abandonment operations and file copies with DOGGR. The DOGGR also regulates environmentally sensitive pipelines within 300 feet of any public recreational area, or a building intended for human occupancy (residences, schools, hospitals, and businesses) that is not necessary to the production operation.

The following regulations have been developed by the DOGGR in relation to abandonment, production, and injection at natural gas fields.

The State Oil and Gas Supervisor may establish Field Rules for any gas pool or zone in a field when adequate geologic and engineering data is available from previous drilling operations (California Code of Regulations Title 14, Division 2, Chapter 4, Section 1722). The Field Rules are meant to supplement broader applicable requirements, and apply to development wells only.

The Gill Ranch Gas Field is subject to Field Rule No. 507-03. There is significant land subsidence caused from water production for agricultural uses; therefore, the well casing is subject to compression and failure from the water producing depth to the surface. Well casing in development wells should be unlanded to relieve the stress every 5 years (No. 507-03).

The following general requirements are from California Code Resources, Public Resources Code 04, California Laws for the Conservation of Petroleum and Gas, Title 14, Division 2, Chapter 4, Subchapter 1, Article 3. Chapter 4 is related to the development, regulation, and conservation of oil and gas resources, and discusses various requirements for well casing, blowout prevention, and plugging and abandonment of wells.

Casing Program

Each well is required to have casing designed to provide anchorage for blowout prevention equipment and to seal off fluids and segregate them for the protection of all oil, gas, and freshwater zones. All casing strings have to be designed for safe operation, and to withstand collapse, burst, and tension forces. Casing setting depths must be based upon geological and engineering factors, such as formation pressures and the degree of formation compaction or consolidation (Section 1722.2).

Blowout Prevention

Blowout prevention and related well control equipment has to be installed, tested, used, and maintained in order to prevent uncontrolled flow of fluid from a well (Section 1722.5).

Plugging and Abandonment

Cement plugs must be placed across specified intervals to:

- Protect oil and gas zones
- Prevent degradation of usable waters
- Protect surface conditions
- Protect public health and safety

Blowout prevention equipment could be required during plugging and abandonment operations. Foreign material and drill cuttings must be recovered from the well, if possible with diligent effort, if the material would prevent proper plugging and abandonment (Section 1723).

Conservation of Petroleum and Gas

The following regulations are from California Code of Regulations, Public Resources Code 01, California Laws for the Conservation of Petroleum and Gas, Division 3, Chapter 1, Articles 4 and 5. Topics discussed include well completion, well abandonment, blowout prevention, orders for repair, abandoned wells, hazardous wells, and unreasonable waste of gas.

Well Completion

A well is properly completed when it has been shown, to the satisfaction of the supervisor, that the manner of producing gas or injecting fluids into the well is satisfactory, and the well has maintained production of oil or gas or injection for a continuous 6-month period (Section 3207).

Abandonment

A well is properly abandoned when it has been shown, to the satisfaction of the supervisor, that all proper steps have been taken to isolate all gas-bearing rock encountered by the well. It must also be shown that steps have been taken to protect underground or surface water that is suitable for irrigation or farm or domestic purposes from the infiltration or addition of any harmful substance, and to prevent later damage to life, health, property, and other resources (Section 3207).

The supervisor or district deputy may order the re-abandonment of any previously abandoned well in order to prevent damage to life, health, and property if there is reason to question the integrity of the existing abandonment (Section 3208.1(a)).

Blowout Prevention

Wells shall be shall equipped with casings of sufficient strength, and with such other safety devices as may be necessary, and shall use every effort and attempt effectually to prevent blowouts, explosions, and fires in any district where the pressure of gas is unknown (Section 3219).

Order for Repair

The supervisor shall order such tests or remedial work as in the supervisor's judgment are necessary to (Section 3224):

- Prevent damage to life, health, property, and natural resources
- Protect oil and gas deposits from damage by underground water
- Prevent the escape of water into underground formations
- Prevent the infiltration of harmful substances into underground or surface water suitable for irrigation or domestic purposes

Abandoned Wells

The supervisor, in cooperation with appropriate state and local agencies, shall conduct a study of abandoned oil and gas wells located in areas of the state with substantial potential for methane and other hazardous gas accumulations in order to determine the location, the extent of methane gas and other hazardous gas accumulations, and potential hazards from abandoned wells (Section 3240).

Hazardous Wells

Hazardous and certain idle-deserted oil and gas wells are public nuisances. It was found by the Legislature that it is essential, in order to protect life, health, and natural resources that such oil and gas wells be abandoned, re-abandoned, produced, or otherwise remedied to mitigate, minimize, or eliminate the danger to life, health, and natural resources (Section 3250).

Article 5: Unreasonable Waste of Gas

No firm or corporation that owns or controls land in which there exists a leaky gas well "shall willfully permit natural gas flowing from the well wastefully or unnecessarily to escape to the atmosphere" (Section 3501).

California Water Code

The California Water Code (CWC) includes provisions of the federal CWA and water quality programs specific to California. The CWC requires reporting, investigation, and cleanup of hazardous material releases that could affect waters of the state (including stormwaters).

California Health and Safety Code Section 25534

Section 25534 of the California Health and Safety Code requires businesses that handle amounts of acutely hazardous materials (AHMs) in excess of certain quantities to develop a risk

management plan (RMP). The RMP encompasses process hazards, potential consequences of releases, and documentation, auditing, and training relating to the AHMs that are above specified threshold quantities at the generating station.

Hazardous Waste Control Act

The Hazardous Waste Control Act describes the requirements for proper management of hazardous wastes, including criteria for:

- Identification and clarification of hazardous wastes;
- Generation and transportation of hazardous wastes;
- Design and permitting of facilities that recycle, treat, store, and dispose of hazardous wastes;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

California Environmental Protection Agency- Department of Toxic Substance Control

The Department of Toxic Substances Control (DTSC) protects California and Californians from exposures to hazardous wastes. The DTSC operates programs to:

- Deal with the aftermath of improper hazardous waste management by overseeing site cleanups
- Prevent releases of hazardous waste by ensuring that those who generate, handle, transport, store and dispose of wastes do so properly
- Take enforcement actions against those who fail to manage hazardous wastes appropriately
- Explore and promote means of preventing pollution, and encourage reuse and recycling
- Evaluate soil, water and air samples taken at sites, and develop new analytical methods
- Practice other environmental sciences, including toxicology, risk assessment, and technology development
- Involve the public in DTSC's decision-making

Storage Tanks

Hazardous materials are typically stored in underground or aboveground storage tanks. Laws and regulations regarding underground storage tanks used to store hazardous materials (including petroleum products) require that owners and operators register, install, monitor, and remove their tanks according to established standards and procedures. Releases are to be reported. The California Aboveground Petroleum Storage Act is implemented by the RWQCBs and regulates the storage of petroleum in aboveground storage tanks (ASTs) and requires construction methods and monitoring to prevent petroleum releases. Owners of above-ground storage tanks containing petroleum products are to prepare and implement spill prevention and response strategies, and to contribute to the Environmental Protection Trust Fund that is used to respond to some spills. Proper drainage, dikes and walls are required to prevent accidental discharge from endangering employees, facilities, or the environment.

California State Lands Commission

The State of California owns all tidelands, submerged lands, and beds of navigable waterways. The California State Lands Commission (SLC) regulates the use of these lands for the benefit of all the people of the state. The SLC requires that detailed engineering plans be prepared and

approved before a lease is granted to a project to cross state lands. The engineering plans must include:

- A boring plan for each crossing, including descriptions of the drilling unit, hole diameter, depth of cover, directional survey and control plan, mud system, additives, and mud pumping pressures
- Information about pipeline construction methods (e.g., pipe diameter, wall thickness, American Petroleum Institute grade, weight per foot, tensile strength, rating yield pressure), detailed information about welding procedures and repair of defective welds, and radiographic inspection plans
- A pipeline hydrostatic testing program that identifies the testing contractor, method of testing, test duration, and temperature measurement plan
- A pipeline installation plan, with pulling tension control plans and drill mud recovery plans
- A bore abandonment contingency plan

Local

Fresno County General Plan

The Safety and Public Facilities Elements of the Fresno County General Plan (Fresno County 2000) includes goals and policies relevant to hazards and hazardous materials. These goals and policies are intended to reduce the risk of loss of life, injury or damage to property and the environment due to fire hazards, and the use, transport, treatment, and disposal of hazardous materials and hazardous wastes (Goals HS-F and S-5).

Madera County General Plan

Section 6, Health and Safety, of the Madera County General Plan (Madera County 1995) includes goals and policies relevant to fire hazards and hazardous materials. These goals are intended to minimize the risk of loss of life, injury, and damage to property and watershed resources resulting from unwanted fires (Goal 6.C) and from the use transport, treatment, and disposal of hazardous materials and hazardous wastes (Goal 6.G).

Madera County Airport Land Use Commission

The purpose of the Airport Land Use Commission is to provide for the orderly development of each public use airport within the County of Madera and the surrounding area so as to promote the overall goals and objectives of the California airport noise standards adopted pursuant to Section 21669 of the Public Utility Code and to prevent the creation of new noise and safety problems. It is the purpose of this article to protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses.

Business Plan (Emergency Planning and Community Right-to-Know Act)

California's version of the Emergency Planning and Community Right-to-Know Act is set forth in Chapter 6.95 of the California Health and Safety Code, Article 1, Hazardous Materials Release Response Plans and Inventory. Article 1 requires emergency response plans for facilities that store hazardous materials in excess of 55 gallons, 500 pounds, or 200 cubic ft. Facilities that handle more than these quantities of hazardous materials must submit a Hazardous Materials Business Plan to the Certified Uniform Program Agency (CUPA). The CUPA for Fresno County is Fresno County Environmental Health Department. The CUPA for Madera County is Madera County Department of Environmental Health.

3.8.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on hazards and hazardous materials if the Project would:

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

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

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

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of an airport or use airport, would the project result in a safety hazard for people residing or working in the project area.

f) Expose people or structures to a significant risk of fire or explosion.

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

Impact Discussion

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

Construction

Hazardous materials transported, used, and disposed of during construction would include oils, lubricants, fuels, paints, etc. Trucks would be required to bring equipment and materials to the Project sites. Workers could be exposed to low levels of these chemicals and hazardous materials. The potential for impacts from exposure to fuels and equipment-related hazardous materials would be very low because of the small volume and low toxicity of the materials. The most likely incidents involving these materials would include potential spills and drips of gasoline, diesel fuel, oil, hydraulic fluid, and lubricants from vehicles or other machinery. There would also be the potential for accidental release of paints, solvents, adhesives, or cleaning chemicals during construction.

Drilling would involve potentially hazardous materials including drilling additives and mud, diesel fuel, lubricants, solvents, oil, equipment/vehicle emissions. Drilling mud and fluid would be directed to the reserve tank. The contents would be tested and removed and disposed of off-site in a facility authorized to receive such wastes. Adverse impacts are not expected. The drill site would be fenced or walled to prevent unauthorized access, which would minimize risks to the general public

The Applicants would be required to implement a Storm Water Pollution Prevention Plan (SWPPP), which would reduce any impacts to less than significant levels. The SWPPP is discussed further in Section 3.8: Hydrology and Water Quality. Implementation of the Mitigation Measures Hazards-1, -2, and -3 would additionally require the creation of specific plans and would reduce impacts related to exposure to hazardous materials to less than significant levels.

Mitigation Measure Hazards-1: The Applicants shall prepare a Hazardous Materials and Waste Management Plan. The plan shall be submitted to the CPUC for CPUC staff review and

approval at least 30 days prior to Project construction. The plan shall include, but not be limited to, the following:

a) No refueling or servicing shall be done within the Project work area without absorbent material or drip pans underneath to contain spilled fuel or lubricants.

b) Any fluids drained from machinery during servicing shall be collected in leak-proof containers and taken to an appropriate disposal or recycling facility. If such activities result in spillage or accumulation of a product on the soil, the contaminated soil shall be assessed and disposed of properly. Under no circumstances shall contaminated soils be added to a construction spoils pile.

c) Mobile refueling trucks shall be independently licensed and regulated to haul and dispense fuels, to ensure that the appropriate spill prevention techniques are implemented.

d) All maintenance materials (i.e., oils, grease, lubricants, antifreeze, and similar materials) shall be stored at designated staging areas. These materials shall be placed in a designated area away from site activities and sensitive resources if they are required during field operations.

e) During construction, all vehicles and equipment required on site shall be parked or stored at least 100 feet from water bodies, wetlands, known archaeological sites, and other sensitive resource areas during construction. These areas shall be identified on the construction drawings, as appropriate. All wash-down activities shall be conducted at least 100 feet from sensitive environmental resources.

f) Fluids drained for maintenance shall be either transferred directly into disposal trucks for immediate transportation or shall be temporarily stored in appropriate tanks on site until regularly scheduled trucks can haul it away.

g) Used fluids removed from site shall be delivered to an appropriate disposal or recycling facility.

h) Storage tanks for both new and used fluids shall be installed with secondary containment, either integral to the tanks or external.

i) Diesel fuel and petroleum-based lubricants shall be stored only at designated staging areas.

Mitigation Measure Hazards-2: A Hazardous Materials Contingency Plan shall be created, and submitted to the CPUC at least 30 days prior to the start of construction for CPUC staff review and approval. The plan shall be implemented if an accidental spill occurs or if any subsurface hazardous materials are encountered during construction. Provisions outlined in this plan shall include phone numbers of county and state agencies and primary, secondary, and final cleanup procedures. The plan shall include but not be limited to the following:

a) All hazardous material spills or threatened releases, including those of petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of the quantity spilled, shall be immediately reported if the spill has entered or threatens to enter a water of the state, or has caused injury to a person or threatens injury to public health.

b) If asbestos containing transite pipe is encountered, the pipe shall be removed by Hazmat trained employees from the path of the trench and stockpiled to the side. Containment and removal may be carried out simultaneously with the continuation of the trenching.

c) If hydrocarbon contaminated soils are encountered, they shall be stockpiled, sampled, labeled, and removed. If groundwater is encountered with identifiable hydrocarbons, samples shall be obtained, and the area of the contamination shall be demarcated, and work may continue outside that zone, until remedial measures make it safe to proceed in that area.

d) If natural gas or volatiles are encountered in the soil or ambient air, then air monitoring shall be conducted. If it is in a trench or excavation, that area shall be considered a permit-required confined space, and no one shall enter, until all permit-required confined space procedures are carried out, or until the atmosphere has been shown to be safe, and the space is reclassified as non-permit (per 8 CCR 5157/ 29 CFR 1910.146).

e) In cases where an unknown material is discovered, the area shall be shut down until fully assessed. Work may continue in areas that are not affected.

Mitigation Measure Hazards-3: Project contractors shall prepare a site-specific Health and Safety Plan (HSP) to ensure that no impacts shall occur if hazardous soils or other materials are encountered during construction or operation of the Project. The HSP shall include elements that establish worker training, engineering controls, and monitoring. The HSP also shall establish emergency response procedures and security measures to prevent unauthorized entry to cleanup sites and to reduce hazards outside the investigation/cleanup area. The plan shall be submitted to the CPUC at least 30 days prior to construction for CPUC staff review and approval.

Operation and Maintenance

Storage Field and Facilities. Operation of the compressor station and wells, and ancillary equipment, such as the fire water pump, would require the use and onsite storage of hazardous materials. The types of materials that would be required for operation of the central compressor station include tri-ethylene glycol, lube oils, transformer oil, diesel fuel, corrosion inhibitor, and methanol. The fire water pump would potentially require the use of a 100-HP diesel engine, which would result in fuel consumption of about 9 gallons per hour when in operation. The pump will be run for up to 2 hours during an emergency situation; however, it is conservatively assumed that the pump would be run up to 4 hours. This operation would require 36 gallons of on-site storage. The diesel fuel would be stored on-site in a single, 150-gallon, double-walled tank stored with the fire pump in the northwest area of the compressor station. The volumes and toxicity of these materials are relatively low, and threats to public safety and environmental damage are relatively low. The Project would be located in a sparsely-populated rural area, which minimizes any potential risks to the public. Facilities that handle hazardous materials must submit a Hazardous Materials Business Plan to the CUPA; a copy of the plan shall be submitted to the CPUC. The CUPA for Fresno County is Fresno County Environmental Health Department.

Maintenance of the Storage Field and its facilities could involve the use, transport and disposal of gasoline, diesel fuels, oils, and lubricants. Workers would be exposed to such chemicals and hazardous materials. Maintenance could also involve spills.

Implementation of Mitigation Measures Hazards-1, -3, -4, and -5 and the required SWPPP and Hazardous Materials Business Plan would reduce impacts to less than significant levels.

Mitigation Measure Hazards-4: Chemicals stored on-site shall be managed by inventory and periodic inspection. Material Safety Data Sheets and a location map of chemicals stored and/or used on-site shall be maintained and kept available on-site.

Mitigation Measure Hazards-5: All personnel working at the facility shall be trained in general and specific hazardous chemical safety issues and response procedures.

Pipeline and Electric Power Line. Operation of these the pipeline and electric power line would not specifically require use of hazardous materials. Maintenance activities could require the use of the hazardous materials or substances described above. Maintenance of these components could involve the use of gasoline, diesel fuel, oil, and lubricants. Workers would be exposed to such chemicals and hazardous materials. Implementation of Mitigation Measures Hazards-1, -3, -4, and -5 would reduce impacts to less than significant levels.

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?

Construction

Gas Storage Field and Facilities. The most likely incidents that could occur involving hazardous materials are associated with minor spills or drips. Excavated soils and/or encountered waters could be contaminated, as described above. Impacts from such incidents would be effectively minimized to less than significant levels with the implementation of Mitigation Measures Hazards-1, -2 and -3.

Specific impacts related to well drilling could occur. Well drilling into the storage field could pose an explosion hazard. Impacts would be significant if gas is allowed to escape from the reservoir through the drilled borehole. The well drilling program would be designed to meet or exceed DOGGR regulations. The surface well casing would be set at a depth to protect all shallow water zones from future drilling and ultimate storage operations. The production casing would be designed to provide the necessary protection at the surface in an unlikely uncontrolled well event. The drilling rig would be equipped with all required safety features including properly-sized blow-out prevention devices, choke manifolds, accumulators, lines, gas detection instrumentation, and vents. The well drilling program would be designed to drill the wells in a manner to ensure that the pressure of the column of fluid in the well would exceed the formation pressure under normal conditions, so as to prevent gas from migrating up the borehole and creating an explosion hazard. Impacts would be less than significant with these design methods and measures.

Gas Pipeline. General impacts from construction of the gas pipeline would be similar to those for the construction of the Storage Field and its associated facilities (e.g., spills, drips, leaks, and the potential to encounter contaminated soils and water). Mitigation Measures Hazards-1, -2 and -3 would be used to reduce these impacts to a less than significant level. Additional impacts specifically related to the pipeline could occur.

Construction crew conducting the pipeline trenching could encounter existing underground utilities and infrastructure. Known pipelines, telephone cables, and other underground structures would be located prior to trenching. All necessary precautions would be taken to protect the structures from damage as a result of the construction work. The implementation of Mitigation Measure Hazards-6, -7, and -8 would reduce impacts to existing underground infrastructure to less than significant levels.

The Applicants would follow the requirements of Senate Bill 1359 (Chapter 651, Statutes of 2006) for high priority subsurface installations[2]. This law provides a process for identifying and delineating high priority subsurface installations, prior to construction activities occurring near these installations.

The EDR report for the gas pipeline corridor and electric power line corridor report indicated that that the Spreckels plant (MP 19.5 of the gas pipeline corridor) may have active USTs; however, the Fresno County CUPA/TRIS reported that all USTs were removed from the site in 1992, and the potential for contaminant migration during construction activities appears to be low. Nonetheless, should one or more of these reported USTs have had a release of contaminants in the past, or be leaking during Project construction, excavation of earth for the installation of the pipeline could

[2] High priority subsurface installations are defined by Government Code Section 4216(d) as high-pressure natural gas pipelines with normal operating pressures greater than 60 psig or greater than 6 inches nominal pipe diameter, petroleum pipelines, pressurized sewage pipelines, high-voltage transmission lines, conductors, or cables equal to or greater than 60kV, or hazardous materials pipelines that are potentially hazardous to workers or the public if damaged.

uncover contaminated soils. Mitigation Measure Hazards-9 would reduce any impacts to less than significant levels.

Impacts from excavation activities during pipeline construction would be considered less than significant with implementation of mitigation.

> **Mitigation Measure Hazards-6:** The Applicant shall use the DigAlert System to identify foreign underground structures prior to pipeline trenching. The owners of all foreign underground structures shall be notified in writing and shall be telephoned prior to excavating near their facilities.
>
> **Mitigation Measure Hazards-7:** Underground structures shall be crossed by boring or ditching under them unless the owner of the structures allows the natural gas pipeline to be installed over them. The trench shall be hand dug in areas in close proximity to existing pipelines and other structures. A minimum clearance of 1 foot shall be maintained, where feasible, between such lines or structures and the line being laid, unless otherwise specified. Special procedures, such as placement of protective materials between the pipeline and existing structure, shall be followed to protect existing structures where this clearance is not feasible.
>
> **Mitigation Measure Hazards-8:** Pipe and/or pipe coating damaged by construction work shall be repaired. Special care shall be taken to protect other pipelines and coatings in the vicinity of the new pipeline construction.
>
> **Mitigation Measure Hazards-9:** In the event that soils suspected of being contaminated, based on evidence from visual, olfactory, or from portable chemical monitoring devices, are removed during excavation activities along the pipeline corridor, the excavated soil shall be tested and, if contaminated above soil action levels, shall be disposed of at a licensed waste facility. Any excavated areas which have an odor due to contaminated soil shall be covered while one or more samples are being tested to determine the level of contamination. The presence of known or suspected contaminated soil or groundwater shall require the supervision of testing and investigation by a licensed professional geologist or engineer, as appropriate to meet state and federal regulations.

Water that is potentially contaminated and is encountered during trench dewatering shall be managed as necessary and appropriate to be protective of human health and the environment. Mitigation Measure Hydrology-1 specifies that the Applicant shall prepare a Construction Groundwater Management Plan that includes a protocol for sampling and analyzing the quality of dewatering effluent during construction for comparison with existing ground water, and that outlines appropriate measures to manage contaminated groundwater.

Electric Power Line. Construction of the proposed electric power line would involve the use of lubricants, oils, paints, etc. Incidents that could occur involve spills, drips, and leaks of these materials into the environment. It is possible that contaminated soils could be encountered during construction, but it is unlikely. Implementation of Mitigation Measures Hazards-1, -2 and -3 would reduce the potential for any impacts associated with the release of hazardous materials to less than significant levels.

Operation and Maintenance

Gas Storage Field and Facilities

Pressure Releases. Accidental release of natural gas from surface facilities could occur as a result of a change in pressure conditions. This could occur from pressure relief device activation or unintended opening of vent valves. Pressure relief devices would activate if system pressures exceed normal operating levels either due to pressure buildups from connected systems or due to inadvertent operation of block valves. The compressor station would be equipped with safety

features to prevent and alert operators to circumstances which may lead to accidental release in order to guard against such occurrences, in compliance with applicable standards and regulations.

Other unscheduled releases could include the venting of pressure safety valves. In all cases the vent locations would be identified during design and specific layout and equipment choices would be made to eliminate any possible ignition source within a defined proximity in accordance with all applicable pipeline safety regulations, including 49 CFR 601 Part 192.911. It is standard design practice to route and direct all vents upward to a safe location because natural gas is less dense than air.

The compressor station control system would monitor all system parameters (pressure, temperature, flow, etc.) and would provide operators with alarms in the form of lights and buzzers in the event that normal conditions are exceeded or when equipment operations do not respond appropriately to operator or automated commands. Implementation of Mitigation Measure Hazards-10 (Emergency Response Plan) would reduce impacts associated with pressure releases to less than significant levels.

Pressure release could also occur at the new IW wells, or the existing abandoned wells that are open to the Starkey Formation reservoir. Each individual IW well would be equipped with an Emergency Shutdown System (the OM wells are for monitoring, and do not operate in any active way; therefore, it is not necessary for OM wells to have a shutdown system). The Emergency Shutdown System would monitor the pressure in the surface piping at key locations at the well site. The wellhead master valve would close in the event there is either an indication of abnormal high or low pressure, thus blocking the flow of gas from the well. Valves could be closed from the compressor station control room if conditions warrant. Impacts would be less than significant with implementation of these design measures and Mitigation Measure Hazards-10.

Mitigation Measure Hazards-10: The Applicants shall prepare an Emergency Response Plan. The plan shall be submitted at least 30 days prior to Project construction to the CPUC for CPUC staff approval, and to other agencies for approval, as appropriate. The plan shall include but not be limited to the following sections:

a) **Initial Response**: This section shall include the procedures for the immediate internal and external notifications of the appropriate facility personnel at Gill Ranch Storage and response organizations including local fire departments in the event of an accident. These notification procedures shall include a description of the information that should be reported and the applicable reporting requirements. This section shall also include notification names and phone numbers (agencies, employees, emergency medical personnel, public, and media). This section shall include the procedures for the establishment of a response management system, a preliminary assessment of the situation, and the response resources and mitigating actions including the implementation of a tactical plan and mobilization of resources. This section shall include response checklists and decision flowcharts and brief descriptions of actions to be taken to control different types of incidents. References to information contained in other sections of the plan shall be included in the checklists. This section shall identify potential hazards and the associated initial response steps for each event.

b) **Sustained Actions**: This section shall address the transition of a response from the initial emergency stage to the sustained action stage where more prolonged mitigation and recovery actions progress under a response management structure, if applicable. In addition, mobilization, evacuation, or shelter-in-place procedures that involve the surrounding community or areas of the facility other than the immediate vicinity of the release shall be addressed in this section.

c) **Termination and Follow-up Procedures**: This section shall include procedures to ensure that the person in charge of mitigating the incident can, in coordination with federal, state, or local emergency responders, terminate the response. Follow-up

actions associated with termination of a response (e.g. accident investigation, response critique, plan review, follow-up reports) shall also be outlined in this section.

Gas Migration

A further safety consideration related to gas storage is the potential for gas to migrate beyond the intended storage reservoir. The reservoir has trapped and contained native natural gas for millions of years and can reasonably be expected to be a competent "container" for the life of the Project. Gas would be injected under pressures up to 40% higher than pre-development pressures in the formation, however, and there is a potential that the increased pressure could induce some leakage of gas, either vertically or horizontally. The proposed IW wells would be drilled to the deepest production zone within the Gas Field. Gas would first migrate to and would likely be captured in the more shallow zones if migration were to occur. Monitoring of pressures within up to seven strategically-positioned groundwater observation wells within the Starkey Formation reservoir below the groundwater-gas interface would alert the operator to pressure changes related to gas migration, and operational changes would be implemented to stop the migration. Continuous monitoring of pressures within the observation wells will be conducted using data loggers and telemetry equipment. Operational measures will include evaluation of the nature, magnitude, and impact of the pressure change effect, and if appropriate, the shutdown of one or more injection wells until the problem is corrected.

Existing Wells. Casing leaks in existing wells could become a path for migration of storage gas. The Applicants have identified 17 wells in the wellfield that have penetrated the Starkey reservoirs to depths above or near the original gas/water contact. Applicants have collected and evaluated available public data for the abandoned wells, dry holes, and existing wells in the proposed storage field area. The data include well logs, well histories, and plugging and abandonment documentation submitted to the DOGGR. A detailed summary report for these 17 wells is provided in Appendix E. This report does not, however, provide detailed analysis of the 26 other wells at the site because they do not penetrate to the depth of the Starkey Formation or they are not within the anticline where the gas storage will occur, so that gas migration to these wells is unlikely The Applicants have also completed a public records search to identify wells that might be of concern regarding gas migration during operation of the proposed Project. Existing wells have been evaluated based on the well records, which include substantial data regarding well construction, integrity and condition. Additional data would be obtained on the wells when they are converted to storage service or plugged during storage development. This would include a further evaluation of construction and condition based on the well data collected during the workover process. There would also be baseline logs run on the wells which are converted to storage service. Well integrity is largely based on casing thickness, depths and condition, coupled with the presence of cement grout sealant at the appropriate depths. The data collected would be used to verify that the reworked or plugged wells have the required integrity to contain gas at the projected storage pressures.

The completion histories of all 17 wells that penetrated the Starkey reservoirs were analyzed to assess the quality of the casing, the casing seal, and the abandonment of the storage zone. Poor cementing and poor or inadequate abandonment practices could provide a path for injected gas to migrate to a shallower permeable zone or to the surface along the well bore. Fourteen of the seventeen wells were found to be properly completed and properly abandoned.

Three wells that penetrated the Starkey sands in the potential storage reservoir were identified to require re-working. If left in their current condition they could possibly provide a conduit for storage gas to migrate from the storage reservoirs. The three wells (Gill No. 61-20, Gill Ranch S.E. No. 21-1, and Gill No. 62-21) would be re-entered, re-worked and completed as observation wells to enhance the monitoring of the First Starkey and Second Starkey. All three of these wells are located in the eastern section of the proposed storage area where both the First Starkey and

Second Starkey are targeted for storage development. Plans and procedures to complete the reworking of these wells are provided in Appendix E. Implementation of Mitigation Measure Hazards-11 (Gas Monitoring Plan), which includes periodic monitoring of the existing wells at the site, would further reduce potential impacts to less than significant levels. Mitigation Measure Hazards-11 (Gas Monitoring Plan), specifies an increased monitoring frequency (quarterly) versus the annual monitoring that the Applicants have proposed, and includes monitoring of soil gas concentrations at the 17 existing wells that penetrate the Starkey Formation above the gas/water interface.

There are four existing active gas wells in the Gill Ranch Gas Field (Appendix E, Table 3.3), none of which are open to the potential storage zones. The Starkey sand in the Gill 91-21 and Gill 38x-17 wells are behind production casing that was cemented in place and never perforated (Appendix E). The Gill Ranch 18x-17 well and the Gill Ranch Deep A-2 were originally completed in one of the potential storage zones in the Starkey sands, but all potential storage zones in both wells were cemented and isolated to prevent the wells from becoming potential conduits to flow. However, these wells are still open in the shallower producing formations that overlie the Starkey Formation. Gas migration from these wells is considered highly unlikely due to the fact that they have been cemented closed in the Starkey sands, and mitigation would not be required.

Proposed Wells. Proposed wells for the Project that do not already exist in the Storage Field would have the potential for gas migration during operation if not properly designed and constructed. The Second Starkey has an original field pressure of approximately 2,665 pounds per square inch absolute (psia), as stated in historical data from the DOGGR (Entrix 2008). The Applicants have indicated that they intend to increase the injection pressures up to 40% higher than the original (natural, pre-development) pressures (Entrix 2008). This is consistent with conditions at the Wild Goose Storage Expansion Project, for which the EIR (2002) states that the injection pressures required would be 35 to 40 % higher than original field pressures. Applying 40 percent to the 2,665 psia original pressure for the Second Starkey West yields 3,731 psia as the approximate required initial injection pressure (Entrix 2008). The Applicants estimate that a 0.6 psia/ft pressure gradient[3] would be required to displace water for the first several years of operation in order to create adequate space for natural gas storage. A 0.6 psia/ft pressure gradient would create a maximum reservoir pressure of 3,750 psia at the average depth of the Second Starkey of 6,240 ft, which would be reasonable compared to that of the Wild Goose facility, an approved California underground gas storage facility.

Gas migration would occur if the cap rock would not be able to sustain a 3,750 psia operating pressure. Mitigation Measure Hazards-12 would require the Applicants to demonstrate that the integrity of the cap rock is more than adequate for this operating pressure, or to adjust the operating pressure downward, accordingly. Mitigation Measure Hazards-11 would require gas monitoring. Mitigation Measure Hazards-13 would require monitoring of temperature anomalies. Mitigation Measure Hazards-16 would require prompt notification of the DOGGR if gas monitoring detected gas leaks; the cause of the leaks would be investigated, and repairs made, as necessary. Implementation of these measures would reduce impacts to less than significant levels.

The Storage Field would be located in an area that has experienced land subsidence as a result of regional groundwater extraction (Entrix 2008). Although the rate of subsidence has declined in recent years, future subsidence could affect the structural integrity of the existing or new wells, and, over time, the shallow portions of the well casings could potentially weaken to a point at which natural gas is released to the surrounding surface area. The DOGGR, as the agency that regulates gas well development, has issued requirements for well development in the proposed Storage

[3] A pressure gradient is the change in pressure divided by the depth over which the change occurs.

Field in order to address potential safety effects of ground surface subsidence on well stability. The DOGGR Field Rule 507-003, dated March 5, 2007, states:

> In the Gill Ranch Gas field there is significant land subsidence caused from water production for agricultural uses. The well casing is subject to compression and failure from the water producing depth to the surface. The well casing should be unlanded to relieve the stress every 5 years (Entrix 2008).

The proposed wells would be constructed and maintained in accordance with DOGGR regulations, including Field Rule 507-003 that specifically applies to the proposed Storage Field. The Applicants would work with the DOGGR to develop a mutually acceptable well design that protects the well structural integrity from future subsidence. The Applicants intend to complete the wells in a manner that satisfies the DOGGR field rules, protects the present and future casing integrity, but removes the requirement to unland the well casing every 5 years. The Applicants have discussed with the DOGGR and agreed in concept that the new wells would be designed to allow for subsidence but not damage the well or require to re-land the casing as required in the field rules, which are developed and enforced by the DOGGR. The production casing cement would be placed so its base is at the top of the production zone and its top is just below the base of surface casing but not inside the surface casing.

A well casing is normally landed in the wellhead using slips at the surface. The slips serve two purposes; they centralize the casing inside the wellhead, and provide support to the casing if the operator chooses to land the casing in the slips after the cement has been placed but prior to the cement curing. The Applicants have proposed using an assembly that centers the casing inside the wellhead but has rollers instead of slips. The rollers would allow free movement for the casing in the wellbore. There would be no need to re-land the casing as it is allowed free movement if subsidence continues because the production casing would not be bonded to the surface casing or fixed and locked inside slips at the surface.

Significant impacts related to gas migration could occur if the DOGGR and the Applicants do not formally agree on the Applicants' intentions to design the casings in an alternative method to that specified in a portion of the DOGGR Field Rule 507-003. Mitigation Measure Hazards-14 would be implemented to reduce potential impacts to less than significant levels.

Other Wells. The Applicants believe that the 11 abandoned wells located off of the Storage Field structure do not pose a concern for gas migration; however, the potential for a gas migration hazards would still exist. Implementation of Mitigation Measure Hazards-15 for leak detection monitoring would reduce any potential impacts to less than significant levels.

> **Mitigation Measure Hazards-11:** The Applicants shall implement a Gas Monitoring Plan (Appendix G) that is summarized briefly here. The Gas Monitoring Plan addresses the type and frequency of gas monitoring locations and well tests, both surface and subsurface; the frequency of well-site inspections by a qualified operator; monitoring requirements for abandoned well-sites; and reporting requirements. The Plan includes appropriate designs for gas monitoring probes that may be permanent or temporary designs, which are constructed to collect representative samples of soil gas from shallow soil depths within approximately 5 feet of the ground surface. Details of the design of the probes are presented in the Gas Monitoring Plan. Permanent or temporary gas monitoring probes shall be constructed in accordance with specifications cited in California's Advisory for Active Soil Gas Investigations (California EPA 2003), Section 2.2. Any proposed revisions to the Gas Monitoring Plan presented in Appendix G shall be submitted to CPUC for CPUC staff approval and to DOGGR for approval at least 45 days prior to operation.

The data gathered from the first phase of the plan shall establish the baseline methane gas levels in the shallow soil at key locations on site, including each IW well and the existing 17 wells that penetrate the Starkey Formation, and document gas composition information. Any residence or other building located within the boundaries of the Gill Ranch Storage Field that is occupied at some point during the period of measurement (quarterly, or as modified) shall also be included as a monitoring point. After completing the first fill cycle, additional gas monitoring data shall be collected at regular (quarterly) intervals for the first year from each IW well, the existing 17 wells, and any other identified monitoring point such as occupied buildings, and shall be compared to the baseline data. Following the first year and annually thereafter, provided there is no or *de minimus* evidence of gas migration to the surface, the Project operator may provide the CPUC Energy Division with information demonstrating the *de minimus* change in concentrations and may request approval from the Energy Division for a change in monitoring frequency. In the event any gas monitoring data exceeds an acceptable quantifiable concentration, the plan outlines the next steps in the response, such as evaluating whether the concentrations constitute a risk to health and safety or the environment, and evaluating the composition of the gas to evaluate whether it is the injected gas or gas from another source.

In addition, leakage surveys shall be conducted along existing County and private farm roads in the Project Area. The leakage surveys will be conducted annually in conjunction with the transmission pipeline leakage surveys.

In the event an anomaly is identified, or elevated gas concentrations above background are detected in the shallow soils during monitoring, the Applicants shall further investigate to determine the cause and source of the anomaly. The Gas Monitoring Plan outlines conditions that require Immediate Action to protect human health and safety and property, and those which require Timed Action (within 6 months or less) to remedy any identified leaks. Documentation of monitoring results shall be sent to DOGGR and the CPUC at quarterly intervals (or as modified) at a minimum.

Mitigation Measure Hazards-12: The Applicants shall drill an early test well in an optimum location to gather geologic data, information and rock and core samples. The location of the early test well shall be approved by the DOGGR prior to drilling. Cores of the cap rock from depths above the First Starkey and Second Starkey and reservoir rock shall be collected and sent to a testing lab for extensive studies of various parameters including threshold pressure. Test data on new core samples shall be sent to the CPUC technical team and the DOGGR for review. The Applicants shall use this information to refine the development plans in coordination with the DOGGR, and define the cap rock threshold pressure and a margin of safety for storage operations. If new data indicates that cap rock strength is different (substantially lower) than indicated by previous tests, operating and injection pressures shall be reduced to maintain an appropriate level of safety consistent with DOGGR safety guidelines.

Mitigation Measure Hazards-13: The Applicants shall conduct annual temperature monitoring inside IW well casings. A temperature tool shall be run into each injection and observation well to measure temperature anomalies. In the event an anomaly is identified, or elevated gas concentrations are detected in the shallow soils during monitoring conducted as part of Mitigation Measure Hazards-11, the Applicants shall further investigate to determine the cause and source of the anomaly. In the event there is a casing integrity issue, practicable steps shall be taken in a concerted effort to minimize the impact of the leak until repairs can be made. Leaks shall be repaired as soon as possible in the case of a leak that is potentially hazardous to human health, as soon as reasonable without causing additional hazards, and no later than

4 months and the documentation shall be sent to DOGGR; a copy shall be submitted to the CPUC.

Mitigation Measure Hazards-14: The Applicants shall come to a written agreement with the DOGGR regarding the alternative methods proposed for well casing construction and the DOGGR Field Rule 507-003 requirement to un-land the well casings every 5 years. The agreement shall be completed prior to construction, or the casing shall be constructed in accordance with DOGGR Field Rule 507-003.

Mitigation Measure Hazards-15: As provided in the Gas Monitoring Plan (Appendix G),the Applicants shall conduct a quarterly leak detection survey on the 11 wells located off of the Storage Field structure for the first year of operation. Once the wells are located, the site coordinates shall be recorded and a leakage survey shall be conducted within a 15-ft radius around the well. The first survey shall be conducted, and results provided to the CPUC, at least 2 weeks prior to initial injection. If after the first year no leaks have been recorded, then the Applicants may petition the DOGGR for the leak detection survey at these locations to be conducted less frequently.

Mitigation Measure Hazards-16: If routine surface or subsurface gas monitoring indicates that a well may be leaking (methane concentrations above background, gas bubbles, distressed vegetation), the Applicants shall report it immediately to the DOGGR and implement the appropriate remedial actions consistent with DOGGR procedures outlined in California Code of Regulations Section 1723 *et. seq.* in consultation with the DOGGR. The Applicants shall submit all well remediation and repair records to the DOGGR. Well repairs shall be made as soon as possible in the case of a leak requires immediate action according to the Gas Monitoring Plan, and as soon as practicable, and no longer than 6 months in the case of a leak that requires timed action according to the Gas Monitoring Plan. The documentation shall be sent to DOGGR and the CPUC.

Gas Pipeline. A gas pipeline rupture could be caused by third party damage, internal or external corrosion, pipeline malfunction, or other causes. A pipeline rupture could result in explosion, and the release of gas and mixing with air could ignite and cause a fire if there is an ignition source; this is considered the worst-case scenario. The consequence of a worst-case rupture of the pipeline and release of natural gas was calculated following the protocol established in 49 Code of Federal Regulations Part 192 – Pipeline Safety: High Consequence Areas for Gas Transmission Pipelines (Entrix 2008). The result of this calculation is the Potential Impact Radius (PIR).[4] The PIR is defined by the DOT as the radius of a circle within which the potential failure of a pipeline could have significant impact on people or property (Entrix 2008).

The analysis considered the complete rupture of a natural gas pipeline. The impact area is based on acute effects to humans (blistering and mortality) and structures (spontaneous and piloted ignition to wooden structures). Property outside the impact area would not be expected to ignite and burn; people who are indoors would be protected indefinitely; and people outdoors would be exposed to a “finite but low chance of fatality.” The analysis indicated that the worst-case impact area would be 779 ft from either side of the pipeline centerline. The normal operating pressure of the natural gas pipeline would be below the MAOP; as such, the actual hazard footprint is expected to be fewer than 779 ft from either side of the pipeline centerline.

[4] PIR is determined by the formula r = 0.69* (square root of ($p*d^2$)), where r is the radius of a circular area in feet surrounding the point of failure, p is the maximum allowable operating pressure (MAOP) in the pipeline segment in pounds per square inch and d is the nominal diameter of the pipeline in inches. Therefore the PIR = 0.69*Square root $(1,250)*(30)^2$) = 732 feet.

The probability of a worst-case release and explosion related to a rupture would be extremely low. A small release from a pinhole leak or other pipeline anomaly has a greater probability of occurring, but would also have a lower probability of igniting since the gas would likely dissipate below the flammable limit into the atmosphere and be detected before reaching an ignition source.

The most common threat to buried pipelines is third party dig-ins that could damage and/or rupture the pipeline. Mitigation Measure Hazards-17 would be implemented to reduce any potential impacts related to third-party dig-ins to less than significant levels.

The proposed pipeline would be designed, constructed, and operated in accordance with the applicable DOT guidelines. Mitigation Measure Hazards-18 requires the applicant to exceed DOT standards for pipeline construction. Implementation of Mitigation Measure Hazards-19 (Pipeline Integrity Management Plan) would further ensure that impacts would be less than significant.

Mitigation Measure Hazards-17: The proposed pipeline shall be designed, constructed, and operated with the specific intent of minimizing the probability of dig-in damage or rupture using the following measures:

a) The proposed pipeline shall be located in a private easement unless environmental issues or conflicts with existing infrastructure necessitate placement within the public right-of-way.

b) The proposed pipeline shall be buried with a minimum depth of cover of 60 inches. National codes generally require a minimum of 36 inches.

c) The proposed pipeline shall have a warning tape placed in the pipeline trench approximately 2 feet above the pipe.

d) The proposed pipeline shall have warning signs and markers as required by applicable codes.

e) The Applicants shall become members of the Underground Service Alert (USA North) Underground Facility Damage Prevention Service that provides facility marking, information, or clearance to dig to excavators and facility owners.

Mitigation Measure Hazards-18: The gas transmission pipeline design shall exceed that required by the US Department of Transportation (DOT) 49 CFR §192 for the Project area. In Class 1 locations, the pipeline shall be designed to meet Class 2 requirements utilizing a minimum design factor of 0.6, and in Class 2 locations, the pipeline shall be designed to meet Class 3 requirements utilizing a minimum design factor of 0.5. Pipeline designations are listed in Table 3.8-3.

Mitigation Measure Hazards-19: The Applicants shall prepare a Pipeline Integrity Management Plan in accordance with DOT regulations. The plan shall be submitted to the CPUC and the DOT for review and approval at least 30 days prior to Project operation. The plan shall include, but not be limited to, the following:

a) Identification of all Covered Segments[5]

b) A baseline assessment plan for Covered Segments

c) Identification of potential threats to Covered Segments

d) A direct assessment plan

e) Provisions for remediating conditions found during an integrity assessment

f) A process for continual evaluation and assessment

g) Preventative and mitigative measures to protect covered segments

[5] Covered Segments are identified by densely populated locations, or areas where a pipeline is located within a specified distance from an “identified site” (e.g., facilities with persons who are mobility-impaired, confined, or hard to evacuate, such as hospitals, churches, schools, or prisons, and places where people gather for recreational purposes). Such distances are based on the pipeline’s diameter and operating pressure.

h) Performance measures to assess whether the integrity management program is effective

i) Record keeping requirements

j) A management of change process

k) A quality assurance process

l) A communication plan

m) A process for ensuring that each integrity assessment is conducted in a manner that minimizes environmental and safety risks

n) A baseline assessment plan which identifies segments to be assessed, methods selected to assess each pipeline segment, the basis for selecting each assessment method, and a priority-based schedule for completing the assessment

Table 3.8-3: Pipeline DOT Hazard Classifications

Project Segment	Milepost	Description of Structures within 220 yards of Pipeline Centerline	DOT Class Location	Classification For Design	Minimum Design Factor
Line 401 tie-in to Highway 33	0.0 – 10.2	Sparsely populated (agricultural buildings; approx 3 residences)	1	2 (Mainline valve at MP 0.0)	0.6
Highway 33 to Slough	10.2 – 18.0	Sparsely populated (agricultural buildings; approx 3 residences)	1	2 (Valve at MP 14.2)	0.6
Slough to San Mateo Avenue	18 – 19.5	Commercial and recreational uses at east bank of Slough several residences and agricultural structures on south side of Hwy 180	2	3	0.5
San Mateo Avenue to Chowchilla Canal and Avenue 3	19.5 – 24.0	Sparsely populated	1	2 (Valve at MP 19.5)	0.6
Avenue 3 segment to Compressor Station	24.0 – 26.7	No structures present	1	2 (Mainline valve at Compressor Station, MP 26.7)	0.6

SOURCE: Entrix 2008

Electric Power Line. Public safety concerns related to power lines include risk of fire and electrocution. Power lines may pose a threat of fire if a conducting object were to come into close proximity to the power line (resulting in a flashover to ground) or electrocution if a person were to come into close proximity to the power line. The proposed power line would be designed in accordance with CPUC General Order-95 guidelines for safe ground clearances established to protect the public from electric shock caused by induced currents, and this would also provide adequate distance from objects below the line, thereby reducing fire risk. Fire risk is discussed further below. With the implementation of design features and construction methods detailed in General Order-95, potential impacts related to the power line would be less than significant.

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

No schools are present within 0.25 mi of any of the proposed project facilities, nor are any proposed in the agricultural Project area. Impacts would not occur.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Exposure of contaminated soil or water could result in a threat to human or ecological receptors. The EDR report for the gas pipeline corridor and electric power line corridor identifies that the Spreckels plant (MP 19.5 of the gas pipeline corridor) may have active USTs; however, the Fresno County CUPA/TRIS reported that all USTs were removed from the site in 1992, and the potential for contaminant migration during construction activities appears to be low. Excavation for the installation of the pipeline could still, however, uncover contaminated soils. Mitigation Measure Hazards-9 above would reduce any impacts to less than significant levels.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

The nearest municipal airport is located in Mendota, approximately 7 mi southwest of the proposed compressor station. The Project would not result in a safety hazard for people residing or working in the project area because the airport is a substantial distance from the project area. Potential impacts to air traffic are discussed in Section 3.16: Transportation and Traffic. Impacts would be less than significant.

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

The closest private airstrip is located along Road 16, approximately 1 mi north of the proposed central compressor site. Neither the compressor site nor other Project features present potential conflicts with this airstrip that would result in a safety hazard for people residing or working in the project area. Impacts would not occur.

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

Construction

The Project would be located in a sparsely populated area, and construction would not impede access to or from the Project Area or interfere with an adopted emergency response plan or emergency evacuation plan. No road closures would be required, and any lane closures would be temporary and limited to short road segments, possibly impeding access to residences. Provisions of the proposed Traffic Control Plan (Mitigation Measure Traffic-1) would be implemented as appropriate to mitigate for this impact. Requirements of the Plan include provisions to notify adjacent property owners and emergency service providers in advance of the construction where access to nearby property would be blocked, and ensuring that access in emergency situations would be available. Impacts would be less than significant with implementation of mitigation.

Operation and Maintenance

Operations would have no impact on emergency response or access. The pipeline would be buried, and most other Project components would be located within Storage Field. The electrical power line would be located in an existing utility corridor and would not affect emergency evacuation. Impacts would not occur.

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?

The wildland fire risk for the Project area is moderate or unrated. The properties surrounding the Project site are generally level, have mostly been cleared of vegetation, and either have been or are currently being used for agricultural purposes. Mitigation Measure Hazards-20 would be implemented to reduce impacts to less than significant levels.

> **Mitigation Measure Hazards-20:** The Applicants shall prepare a Fire Protection Plan. The plan shall be submitted to the CPUC for CPUC staff review and approval and local fire protection authorities for review and approval at least 30 days prior to Project construction. The plan shall include fire protection and prevention methods for all components of the project during construction and operation and maintenance.

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3.9 Hydrology and Water Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☒	☐	☐
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 off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?	☐	☒	☐	☐
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?	☐	☒	☐	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
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?	☐	☐	☐	☒
h) Place structures within a 100-year flood hazard area, which would impede or redirect flood flows?	☐	☐	☒	☐
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?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

3.9.1 ENVIRONMENTAL SETTING

Climate Characteristics

The area of the San Joaquin Valley that encompasses the Project Area is located in the Mediterranean-type climate zone typical of central California. This zone is characterized by cool, wet winters and hot, dry summers, with winds typically blowing from the northwest. The Valley is situated in the rain shadow of the Diablo Range to the west and, at elevations of 130 to 175 ft amsl, lacks the enhancement characteristic of the Sierra Nevada range to the east. This causes the mean annual precipitation to vary from about 6 to 8 inches of rainfall in western Fresno County to about 12 inches in the eastern portion of the Project Area (Fresno County General Plan Background Report 2000 as cited in Entrix 2008), with over 95 percent of all rain falling between the months of October and April. Periods of abundant rainfall and prolonged droughts are both frequent in the historical record. Rainfall was generally above-average during the 1990s, with very wet years in water years 1993, 1995, 1996 and 1998 and 2006[1]. This wet period was followed by below-average rainfall during water years 2007 and 2008, reminiscent of the prolonged, 6-year dry period in the late 1980s and early 1990s.

Surface Water

The Project gas pipeline route would cross four major surface water features from west to east: the California Aqueduct (MP 2.7), Fresno Slough (MP 18.0) San Joaquin River (MP 22.7) and Chowchilla Canal (MP 24.0). The gas pipeline would also cross a number of small water supply and irrigation return water canals. The electric power line would cross the Chowchilla Canal at the same location as the gas pipeline crossing. The locations of the Project components relative to these surface water features are shown on Figure 3.9-1. The Project proposes to use HDD technology to emplace the gas pipeline beneath the California Aqueduct, Fresno Slough, San Joaquin River, and Chowchilla Canal.

California Aqueduct

The western portion of the gas pipeline alignment would cross under the California Aqueduct at approximately MP 2.7. The California Aqueduct conveys water for agricultural, industrial, and municipal supply to users throughout its over 400-mi length, which extends from the Sacramento-San Joaquin Delta through the San Joaquin Valley, over the Tehachapi Mountains, and south to the Los Angeles basin. The man-made concrete-lined canal is trapezoidal in cross-section and the depth and velocity of flow varies depending on location and season.

Chowchilla Canal

The gas pipeline and electric power line would cross the Chowchilla Bypass Canal at Avenue 3 approximately 1.5 mi north of the San Joaquin River. The Chowchilla Canal and associated levees were designed to prove a 50-year level of flood protection by isolating more than 240,000 ac of San Joaquin River floodplain. The Bifurcation Structure diverts up to 5,500 cubic feet per second (cfs) from the San Joaquin River into the Canal, which conveys flows north to the Chowchilla River (San Joaquin River Restoration Study 2002, as cited in Entrix 2008).

Fresno Slough

Near the Storage Field site, the gas pipeline would cross under the Fresno Slough at approximately MP 18.0. Fresno Slough, the North Fork of the Kings River, is an intermittent stream which flows northwestwards through the Project Area, discharging into the Mendota Pool downstream from the Project. The reach of Fresno Slough crossed by the pipeline is typically dry,

[1] Most hydrologic and geomorphic monitoring occurs for a period defined as a water year, which begins on October 1 and ends on September 30 of the named year. For example, water year 2008 (WY2008) began on Oct. 1, 2007 and concluded on September 30, 2008.

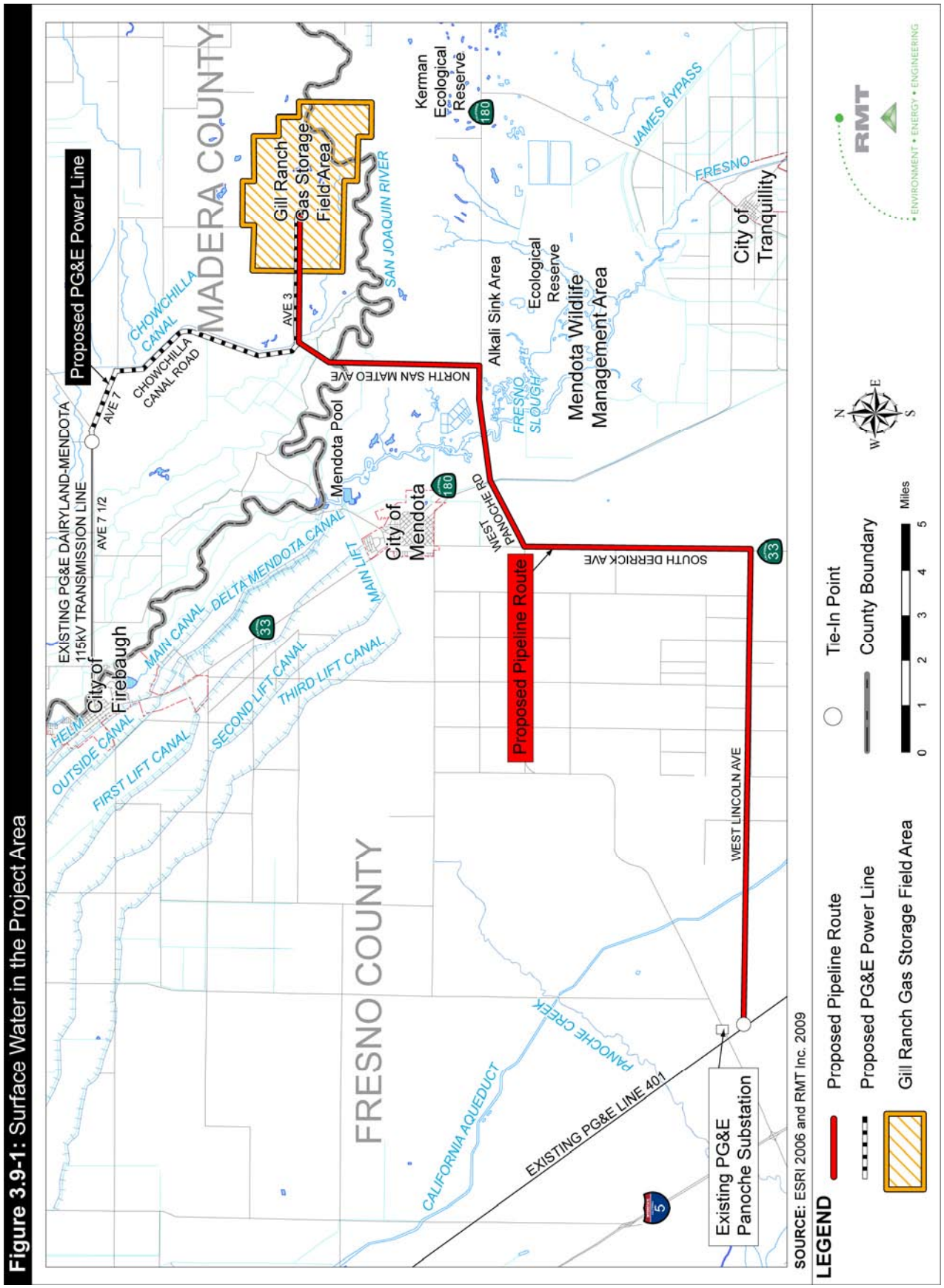


Figure 3.9-1: Surface Water in the Project Area

flowing only during flood periods or when used to convey irrigation water. Flood levels in the Kings River are controlled through operations at Pine Flat Reservoir and smaller upstream hydroelectric facilities owned by PG&E. Flows of up to 4,750 cfs are diverted to Fresno Slough, while higher flows are diverted to the South Fork of the Kings River (Fresno County General Plan 2000 as cited in Entrix 2008).

Four-Mile Slough

Four-Mile Slough, an isolated agricultural canal, is typically dry except when used to convey irrigation water. The pipeline would not cross the Four-Mile Slough.

San Joaquin River

The San Joaquin River, the largest river in the Project Area region, historically flowed generally northwest through the San Joaquin Valley before discharging into the Sacramento-San Joaquin Delta. Flows in the river are currently almost entirely regulated by upstream releases from Friant Dam, which forms Millerton Reservoir, and extensive reaches of the River channel below Friant Dam are dry. Millerton Reservoir stores water for later release to agricultural users downstream, who irrigate approximately 1 million ac of agricultural land in Fresno, Madera, and Tulare Counties (Ferrari and Nuanes 2007 as cited in Entrix 2008). Releases from Millerton Reservoir primarily flow through the Friant-Kern Canal (average annual flow 1.027 million acre-feet [ac-ft]), with smaller amounts diverted to the Friant-Madera Canal (average annual flow 262,800 ac-ft). Average annual flow from the reservoir to the San Joaquin River channel is about 695,500 ac-ft. Releases to the San Joaquin River typically range from 180 to 250 cfs during the May to October irrigation season (San Joaquin River Restoration Study 2002 as cited in Entrix 2008).

Approximately 170,000 ac-ft of the 520,000 ac-ft of storage at Millerton Reservoir are reserved for flood control (Fresno County General Plan 2000 as cited in Entrix 2008). Peak flows are released to the San Joaquin River only when the holding capacity of the Millerton Reservoir is exceeded. Storage behind Friant Dam and at hydroelectric facilities further upstream tends to moderate peak runoff from most storm events. The greatest risk of flooding occurs during warm rain-on-snow events in winter months or at the peak of the spring snowmelt. The reach of the San Joaquin River between Friant Dam and the Project pipeline crossing at milepost 22.7 also receives inflows from two uncontrolled creeks, Cottonwood Creek and Little Dry Creek (San Joaquin River Restoration Study 2002 as cited in Entrix 2008).

Structures used for conveyance or storage that affect the flow regime of the San Joaquin River in the vicinity of the Project include the Friant Dam, Chowchilla Bypass, Mendota Dam, Mendota Pool, Delta-Mendota Canal and various (offstream) gravel pits along the river banks. The San Joaquin River channel from Friant Dam to the Chowchilla Bypass, located approximately 1.5 mi upstream of the proposed gas pipeline crossing, has a capacity above 8,000 cfs. The river channel narrows to a maximum capacity of 8,000 cfs beyond the Chowchilla Bypass, but generally carries fewer than 2,500 cfs (Fresno County General Plan 2000 as cited in Entrix 2008). Flood flows greater than about 2,500 cfs are diverted from the River through the Chowchilla Bypass to the eastside canal, then returned to the River at the Mariposa Bypass structure 30 mi downstream (San Joaquin River Restoration Background Report 2002 as cited in Entrix 2008).

The confluence of the Fresno Slough, Delta-Mendota Canal, Mendota Pool, and Mendota Dam is approximately 4.7 mi west and downstream of the Chowchilla Bypass and approximately 3.2 miles downstream of the proposed Project gas pipeline crossing under the San Joaquin River. Water from the Sacramento-San Joaquin Delta is diverted through the Delta-Mendota Canal, which has a capacity of 4,600 cfs but typically flows at a rate of 2,500 cfs, for storage in the Mendota Pool (capacity: 3,000 ac-ft). A series of diversion canals remove most of this imported water, leaving about 500 cfs to be discharged into the San Joaquin River. As the Mendota Pool is not intended

for flood control, flashboards on the dam are raised during high-flow events to allow flows to pass through.

Open-pit gravel mines along the River banks between Friant Dam and the gas pipeline crossing have altered peak river flows primarily by construction of levees (San Joaquin River Restoration Study 2002 as cited in Entrix 2008). Despite significant depletion of this resource by past mining activities, at least 12 mineral resource sites remain along the stretch of the River between Friant Dam and the Project gas pipeline crossing (Fresno County General Plan 2000 as cited in Entrix 2008). The total surface area of the gravel pits along this stretch of the River that are hydraulically linked to the San Joaquin River is estimated at 1,360 ac.

Flows in the San Joaquin River have been further modified by groundwater withdrawals, which have lowered water levels in local aquifers. The result is that reaches of the River that previously retained water, such as the reach to be crossed by the Project gas pipeline, have become "losing" reaches where the River now recharges ground water where aquifer compaction and subsidence of the ground surface have been avoided (San Joaquin River Restoration Study 2002 as cited in Entrix 2008).

Other Surface Water Features

The proposed Project gas pipeline alignment crosses numerous small man-made water supply and irrigation return water canals. Most of the agricultural ditches, ponds, and canals would be avoided during pipeline construction. The agricultural channels or seasonal surface water features intersected by pipeline construction would be traversed using open trench excavation, with the trenches backfilled with native soils and recompacted to original densities after placement of the proposed gas pipeline.

Hydrogeologic Setting

The regional geologic setting of the Project is described in detail in Section 3.7. A map of the geologic units in the Project Area and the Project Area vicinity is provided in Figure 3.7-1. As it relates to the potential hydrologic and water quality impacts of the Project, the stratigraphy of the Storage Field can be summarized as comprising three zones (Mitten, LeBlanc, and Bertoldi 1970 as cited in Entrix 2008):

- A deep, confined aquifer located below the Corcoran Clay member of the Tulare Formation
- An upper unconfined to semi-confined aquifer above the Corcoran Clay, consisting of alluvial deposits (glacial outwash, coast range alluvium, sands, pumice and ash), separated by clay layers at various depths
- The uppermost, shallow aquifer recharged by local rainfall and agricultural irrigation return flows

Confined Aquifer

The Corcoran Clay member, a thick (20 to 120 ft) Pleistocene lake bed deposit underlying most of the San Joaquin Valley, separates the confined aquifer from the unconfined to semi-confined aquifer above the Corcoran Clay. This aquatard, or confining layer, occurs at a depth of about 80 to 350 ft bgs in the Project Area vicinity. Extensive groundwater pumping from the confined aquifer in the early-mid 20th century caused an estimated 100- to 200-ft decrease in water levels in the aquifer (Belitz and Heimes 1990 as cited in Entrix 2008). The sedimentary layers comprising the aquifer and aquitard underwent compaction as groundwater was withdrawn (Ireland 1986 as cited in Entrix 2008). The land surface subsided as much as 28 ft below pre-pumping elevations in the area of the Project, and the aquifer capacity was permanently reduced.

Unconfined – Semi-Confined Aquifer

The aquifer immediately above the Corcoran Clay consists of unconsolidated to semi-consolidated sediments, Sierran Sands and Coast Range Alluvium. Clay lenses acts as local aquitards within these deposits, partially or completely isolating portions of the aquifer, which is currently the primary source of agricultural water supply in the Project Area (Mitten et al. 1970 as cited in Entrix 2008). Water levels in the unconfined to semi-confined aquifer are falling rapidly (overdraft) as farmers rely more greatly on this source to supplement or replace increasingly-restricted and/or more costly surface water supplies.

Shallow Aquifer

A shallow aquifer has developed above the unconfined to semi-confined aquifer in recent years. This perched groundwater zone is recharged by drainage from agricultural ditches, irrigation water that percolates below the crop root zone, and return flows or "tailwater" discharged from the fields (Mitten, LeBlanc, and Bertoldi 1970 as cited in Entrix 2008). Groundwater is now typically found within about 20 ft of the ground surface in the western portion of the Project Area, and within about 5 to 10 ft of the ground surface in the eastern Project Area nearer the San Joaquin River and the center of the Valley (Westlands Water District 2005 as cited in Entrix 2008). The groundwater table was 100 to 200 feet lower 50 years ago and prior to expansion of irrigation (Belitz and Heimes 1990 as cited in Entrix 2008).

Water Quality

Ground and surface water quality in the Project Area vicinity have been severely affected by agricultural operations, resulting in increased concentrations of salts, pesticides and nitrate-nitrogen (from fertilizers). Percolating rainfall and excess irrigation water leach these constituents downwards from fields into the shallow aquifer, from which they drain laterally into local ditches, streams and rivers. Stormwater runoff and irrigation return flows also mobilize the same set of contaminants from fields into local receiving waters.

Degradation of groundwater quality in the portion of the Valley where the Project is located has primarily been associated with increased levels of nitrate-nitrogen and salts in the shallow aquifer due to agriculture. Groundwater in the shallow aquifer in the Project Area is brackish, with salinities ranging from 4,000 to 10,000 MicroSiemens per centimeter (DWR 2001 as cited in Entrix 2008). The conductivity of seawater is approximately 50,000 MicroSiemens per centimeter (Hem 1985)

Selenium in ground and surface waters is a major concern downstream from the Project Area. Selenium concentrations in west-side soils, naturally-elevated for geologic reasons, are mobilized into groundwater by crop irrigation. Return flows from agricultural ditches and tile drain systems on the west side of the Valley discharge into the 97,000-ac Drainage Project Area (DPA). The DPA is located west of the San Joaquin River, downstream of the Project Area and the Mendota Pool. , The Central Valley RWQCB designated the San Joaquin River from the confluence with Salt Creek to Airport Way Bridge near Vernalis as "impaired" for selenium pursuant to Section 303(d) of the CWA in response to discovery of adverse affects of high selenium concentrations in surface water on wildlife within the Kesterson Wildlife Refuge. The Central Valley RWQCB has established a Total Maximum Daily Load (TMDL) for selenium for the impaired segment of the San Joaquin River.

Increased concentrations of pesticides have primarily been an issue in surface water, rather than groundwater. Sampling conducted from 1992 to 1995 throughout the San Joaquin River basin, as part of the National Water-Quality Assessment Program program, found generally low concentrations of pesticides, but elevated concentrations of nitrate, frequently exceeding the drinking water standard of 10 milligrams per liter of nitrate-nitrogen (Dubrovsky et al. 1995 as cited in Entrix 2008). Numerous different pesticides were detected in the lower San Joaquin River, north

of the Project Area. Concentrations of seven pesticides exceeded criteria for the protection of aquatic life and the concentration of the organophosphate pesticide diazinon attained levels acutely toxic to aquatic life. Later (2001) sampling by the USGS consistently detected 13 pesticides in the San Joaquin River, with diazinon detected in all samples (Orlando and Kuivila 2003 as cited in Entrix 2008).

Flooding

Most of the Project Area lies in Federal Emergency Management Agency (FEMA) flood hazard Zone "X", defined as minimal-risk areas outside the 100-year flood zone where sheet flow flood levels average less than 1 ft deep (Figure 3.9-2). The limited portions of the Project Area that are within Zone "A", defined as high risk with a one percent annual chance of flooding (100-year flood zone), include:

- Small portions of the gas storage field site immediately adjacent to the San Joaquin River
- The area near the pipeline crossing of the San Joaquin River (MP 22.7)
- The electrical power line route between MP 0.0 and 8.3 in the vicinity of the Chowchilla Canal

The flood zone designations at the Storage Field are determined, in part, by the existing levees on both banks of the San Joaquin River. Levees on the north side of the River are unaccredited (uncertified) by the FEMA because the agency lacks information on their integrity. Levees are expected to provide adequate protection to the Project Area, as indicated by the FEMA designations, as they were designed to accommodate regulated flow volumes from upstream releases at Friant Dam. Flood hazards would not change if these levees were overtopped because this condition is incorporated into the FEMA-delineated flood zone.

3.9.2 REGULATORY SETTING

Federal and State Regulations

Federal and state water quality regulations apply to Project that may adversely affect the quality of surface waters or groundwater through the discharge of wastewater and stormwater. Section 303 of the federal CWA and the State's Porter-Cologne Water Quality Control Act establish water quality objectives for all waters in the State. These objectives are implemented locally through Water Quality Control Plans and the National Pollutant Discharge Elimination System (NPDES) permitting program. The CDFG also has regulatory oversight over projects that affect lakes, streambeds and adjacent riparian zones because hydrology is inextricably linked to ecosystem and wildlife health. Section 404 of the CWA additionally gives the USACE authority to regulate discharges of dredged or fill material into Waters of the United States.

Central Valley Region Water Quality Control Plan

The California legislature granted authority to protect and enhance water quality in California to the State Water Resources Control Board (SWRCB) and the nine RWQCBs pursuant to the CWA and the Porter-Cologne Water Quality Control Act. The SWRCB provides oversight and coordination, while the RWQCBs guide and regulate water quality in streams and aquifers through development of Water Quality Control Plans, or Basin Plans. The Project Area drains to waters regulated by the Region 5 (Central Valley) Basin Plan for the Sacramento and San Joaquin River Basins, which was approved in 1995, updated in 1998, and amended in 2007 (RWQCB 1998). The Basin Plan designates beneficial water uses for local aquifers, streams, marshes, and rivers and establishes narrative and numeric water-quality objectives that must be met to protect these uses. The existing beneficial uses designated for the reach of the San Joaquin River between Friant Dam and the Mendota Pool include:

- Municipal and domestic supply

- Agriculture irrigation and stock watering
- Industrial process supply
- Contact and non-contact water recreation
- Warm and cold freshwater habitat
- Migration of aquatic organisms
- Spawning, reproduction, and/or early development
- Wildlife habitat

No beneficial uses have been specifically designated for Fresno Slough or Four-Mile Slough, both of which eventually discharge to the San Joaquin River downstream from the Project at the Mendota Pool. State policy, however, is that the beneficial uses for a specific water body generally apply to its tributaries. Freshwater and wildlife habitat in Fresno Slough and the San Joaquin River are the beneficial uses most sensitive to potential impacts from the Project. Protection of water quality sustaining seasonal wetlands and vernal pools in nearby Valley Sink Scrub communities that provide habitat for state and federally-listed species, including the Fresno kangaroo rat, is also a concern of the RWQCB and the resource agencies even though it is not a designated beneficial use.

Water quality objectives established in the Basin Plan to protect the beneficial uses from the types of potential pollutants that could be generated by the project are included in Table 3.9-1.

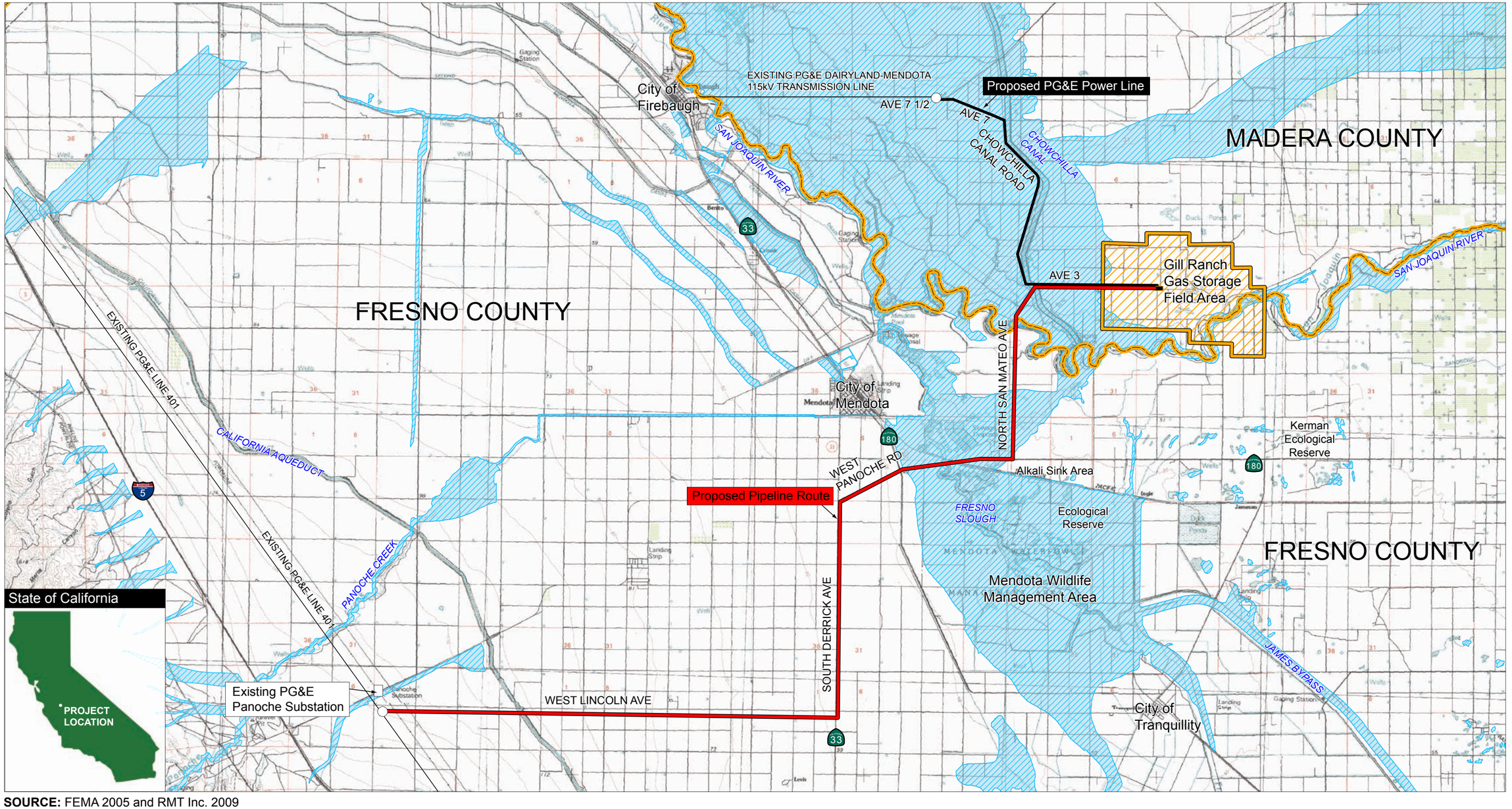
The USEPA published the California Toxics Rule (CTR) in the Federal Register on May 18, 2000, adding Section 131.38 to Title 40 of the Code of Federal Regulations and establishing new water quality objectives for some constituents in the Basin Plans. The Office of Administrative Law approved, with modifications, the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Phase 1 of the Inland Surface Waters Plan and Enclosed Bays and Estuaries Plan) on May 22, 2000. The Policy establishes implementation procedures for three categories of priority pollutant criteria or water quality objectives. These are: (1) criteria promulgated by the USEPA in the National Toxics Rule that apply in California, (2) criteria proposed by the USEPA in the CTR, and (3) water quality objectives contained in RWQCB Basin Plans.

Total Maximum Daily Load – Section 303(d) of the Clean Water Act

The State of California is required by Section 303(d) of the CWA to provide the USEPA with a list of water bodies considered by the State to be impaired (i.e., not meeting water quality standards and not supporting their beneficial uses). The list also identifies the pollutant or stressor causing impairment, and establishes a schedule for developing a control plan to address the impairment, typically a TMDL. The TMDL specifies the amount of the target pollutant that the water body can sustain on a daily or annual basis and allocates loads among the various contributing sources. The TMDLs are prepared by the RWQCBs for incorporation into the Basin Plan. The amended Plan including the TMDL must then be approved by the USEPA. The 303(d) list is used by the USEPA to prepare the biennial federal CWA Section 305(b) Report on Water Quality.

The Mendota Pool is listed as impaired by selenium with agriculture, agricultural return flows, and groundwater withdrawal identified as potential sources, even though waters directly crossed by the proposed pipeline and power line are not included in the 2006 303(d) list. The 67-mi reach of the San Joaquin River immediately downstream of the Project, between the Mendota Pool and Bear Creek, is listed for boron, chlorpyrifos, DDT, diazinon, electrical conductivity, Group A (restricted) pesticides, and unknown toxicity. Agriculture identified as the potential source for all of these pollutants except unknown toxicity, for which the source is unknown. A TMDL for selenium in the

Figure 3.9-2: 100-Year Flood Zones in the Project Area



SOURCE: FEMA 2005 and RMT Inc. 2009

LEGEND

- Proposed Pipeline Route
- Proposed PG&E Power Line
- Tie-In Point
- Gill Ranch Gas Storage Field Area
- 100-Year Flood Zone Area
- County Boundary

0 1 2 3 4 5 10 Miles

N W E S

RMT
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Table 3.9-1: Basin Plan Water Quality Objectives to Protect Beneficial Uses

Parameter	Water Quality Objective
Dissolved Oxygen	5.0 mg/L minimum in waters designated WARM 7.0 mg/L minimum in waters designated COLD 7.0 mg/L minimum in waters designated SPWN The monthly median of the mean daily dissolved oxygen concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent saturation.
Salinity	Electrical conductivity shall not exceed 150 micromhos/cm.
Suspended Material and Settleable Material	Waters shall not contain substances or suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed: 1 NTU where natural turbidity is between 0 and 5 NTUs; 20 percent where natural turbidity is between 5 and 50 NTUs; 10 NTUs where natural turbidity is between 50 and 100 NTUs; or 10 percent where natural turbidity is greater than 100 NTUs.
pH	The pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters designated with COLD or WARM beneficial uses.
Oil and Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in visible film or coating on the surface of the water or on objects in the water, or that otherwise adversely affect beneficial uses.
Floating Material	Waters shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.
Temperature	The natural receiving water temperature intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5ºF (2.8ºC) above natural receiving water temperature.
Toxic Pollutants	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the RWQCB Numeral objectives for arsenic, barium, boron, copper, cyanide, iron, manganese, molybdenum, selenium, silver, and zinc are provided in the Basin Plan.
Pesticides	**No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.**

SOURCE: RWQCB 1998

San Joaquin River was approved by the USEPA in March 2002, and a TMDL for the control of salt and boron discharges into the San Joaquin River upstream of Vernalis is currently under review.

National Pollutant Discharge Elimination System

The USEPA has delegated management of California's NPDES program to the State Board and the nine Regional Board offices. The NPDES program was established in 1972 to regulate the quality of effluent discharged from easily detected point sources of pollution, such as wastewater treatment plants and industrial discharges. The 1987 amendments to the CWA (Section 402[p]) recognized the need to address nonpoint source stormwater runoff pollution and expanded the NPDES program to include operators of municipal separate storm sewer systems (MS4s), construction projects and industrial facilities.

Construction

The State Board administers the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). Projects planning to disturb 0.5 ac or more during construction are required to obtain coverage under the General Construction Permit. A Notice of Intent must be submitted to the State Board prior to beginning construction in order to enroll. The General Construction Permit requires that projects then develop and implement a SWPPP, identifying potential sources of pollution and specifying runoff controls (best management practices [BMPs]) during construction for the purpose of minimizing the discharge of pollutants in stormwater from the construction area. The SWPPP must contain a visual monitoring program as well as a chemical monitoring program for "non-visible" pollutants, to be implemented if there is a failure of BMPs. The SWPPP additionally needs to identify post-construction control measures and include a monitoring plan.

The State Board is in the process of revising the Construction General Permit. The latest draft of the new permit was released in March 2008 and the permit is expected to be reissued and adopted in 2009. The new permit, in its current form, would require the permittee to implement additional minimum BMPs. The draft permit also requires specific analytical procedures to determine whether the BMPs are preventing further impairment due to sediment and preventing non-visible pollutants from violating water quality objectives. The new requirements also include monitoring of the quality of stormwater discharges at most sites. All sites would additionally be required to meet new development and redevelopment performance standards to minimize or mitigate hydrologic impacts.

A rule that exempts construction activities at oil and gas sites from the requirement to obtain an NPDES permit for storm water discharges became effective on June 12, 2006. This exemption includes disturbances to the ground from oil and gas exploration, production, processing, and treatment operations or transmission facilities including gathering lines, flow lines, feeder lines and transmission lines. However, the rule encourages voluntary application of BMPs for related construction activities in order to minimize erosion and control sediment to protect surface water quality. The Project generally meets the provisions for the exemption of oil and gas operations. Exemption from the General Construction Permit will be confirmed by the applicant through discussions with the RWQCB.

Dewatering

RWQCB Order No. R5-2008-0081, the General Order for Dewatering and Other Low Threat Discharges to Surface Waters, is a general permit covering discharges of construction dewatering under the following circumstances: the discharge does "not contain significant quantities of pollutants and they are either (1) 4 months or fewer in duration, or (2) the average dry weather discharge does not exceed 0.25 mgd (million gallons per day)." The General Low Threat Discharge Permit applies to the Project based on the short duration of discharge, and the anticipated low volume discharge of drilling fluids, dewatering and hydrotest water.

Local

Fresno County General Plan

The Fresno County General Plan contains numerous policies that address regional planning for protection and management of ground water and water quality; support for water banking; and use of over-irrigation as a means of ground-water recharge (for example: Policies OS-A.1 through OS-A.16).

Madera County General Plan

The Agricultural and Natural Resources Element of the Madera County General Plan also contains policies related to water resources. These policies address protection of percolation and ground-water recharge; control of sedimentation and excessive grading; avoidance of flood hazards; and use of construction BMPs (reference, for example: Policies 5.C.1 through 5.C.4, 5.C.7; Policies 3.E.1 through 3.E.6; and Policies 6.B.1 through 6.B.6).

Madera County Grading and Erosion Control

The Madera County Code includes a chapter on grading and erosion control that sets forth regulations for control of erosion, sedimentation, and other environmental damage resulting from excavations and related activities.

Fresno County Grading Ordinance

The Fresno County Code includes a grading ordinance that sets forth regulations for control of excavating, grading, earthwork construction, including fills or embankments and related work.

3.9.3 ENVIRONMENTAL IMPACTS

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on hydrology and water quality if the Project would:

a) Violate any water quality standards or waste discharge requirements.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

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 off-site.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site.

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.

f) Otherwise substantially degrade water quality.

g) Place structures within a 100-year flood hazard area, which would impede or redirect flood flows.

h) 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.

i) Be at risk of inundation by seiche, tsunami, or mudflow.

Discussion:

a) Violate any water quality standards or waste discharge requirements?

Construction

Gas Storage Field and Facilities and Gas Pipeline. The proposed Project could potentially impact water quality through discharges of dewatering effluent during pipeline construction. The Construction Groundwater Management Plan, required by Mitigation Measure Hydrology-1, would include a protocol for sampling and analyzing the quality of dewatering effluent during construction for comparison with existing ground water. Discharges must comply with RWQCB Order No. R5-2003-008 (General Low Threat Discharge Permit). Preliminary analysis indicates the feasibility of disposal through surface infiltration and/or evaporation in basins to be constructed near each section of pipeline trench. If effluent quality is questionable, Form 200 (Report of Waste Discharge) would be filed to initiate review by the RWQCB. The RWQCB would then review the list of constituents, their concentrations, proposed treatment processes and disposal methods in conditioning the discharges and approving the Waste Discharge Order permitting effluent disposal. Central Valley RWQCB Order No. R5-2006-0061 (Limits on diazinon and chlorpyrifos) may be applicable depending on the concentrations of organophosphate pesticides in the dewatering effluent, and may require specific types of treatment (e.g., carbon filtration) to be implemented, or off-site disposal. Impacts would be less than significant with implementation of mitigation.

The proposed project could potentially impact water quality through discharges of hydrostatic testing water used to assess the integrity of the pipelines prior to operation. Hydrostatic test water would be supplied by a municipal supplier, the Westlands Water District, or one or more irrigation wells serving local farming operations, depending on the availability and proximity to three sections of the pipeline. Potential concerns related to municipal supply focus on chemicals added to municipal potable water (e.g., chlorine) that could be toxic to aquatic organisms if water leaked from pipelines during testing or during disposal. The Applicants' preliminary Hydrostatic Test Water Management Plan states that only raw (untreated) water would be used for hydrotesting, avoiding potential impacts associated with potable water containing chlorine. Raw surface water from a municipal supplier or from the Westlands Water could be returned to the purveyor after use or infiltrated locally, as water quality from both sources would be expected to meet standards for infiltration after use. Contaminants in local ground water used for hydrotesting could make disposal via infiltration problematic if the contaminants are present at elevated levels. Water drawn from an agricultural irrigation well would be tested for comparison with local ground water, per Mitigation Measure Hydrology-2, and if of lower quality, would be subject to treatment requirements established by RWQCB Order No. R5-2003-008 (General Low Threat Discharge Permit) and Order No. R5-2006-0061 (Limits on diazinon and chlorpyrifos). Impacts would be less than significant with implementation of mitigation.

> **Mitigation Measure Hydrology-1:** The Applicants shall prepare a Construction Groundwater Management Plan that includes a protocol for sampling and analyzing the quality of dewatering effluent during construction for comparison with existing ground water. The Plan shall be submitted to the CPUC for CPUC staff review and approval at least 30 days prior to construction. If effluent quality is questionable (i.e., if the concentration levels of various contaminants are greater than concentrations required by drinking water standards), the Applicant shall comply with applicable RWQCB regulations (e.g., Resolution Nos. R5-2006-0061, R5-2003-0008, and R5-2008-0081, as appropriate), and coordinate with the RWQCB as needed to design and implement approved treatment methods and disposal options.
>
> **Mitigation Measure Hydrology-2:** The Applicants shall prepare a Hydrostatic Test Water Management Plan that specifies the source(s) of raw water to be used for hydrostatic testing, includes a representative chemical analysis of the water quality from each proposed source, and describes how and where the hydrotest water shall be disposed of once testing is completed. The Plan shall be submitted to the CPUC for CPUC staff review and approval at least 30 days prior to any hydrostatic testing.

Electric Power Line. Construction of the new electric power line would involve installation of new wooden poles, as well as two larger steel poles on either side of the Chowchilla Canal. Potential construction-phase impacts associated with building the gas pipeline, such as trench dewatering and hydrostatic test water management, are not applicable to electric power line construction; thus, no impacts on water quality from construction of the electric power line are expected from the construction of the electric power line.

Operations and Maintenance

The proposed project could potentially impact water quality through discharges of storm runoff, addressed in (e) below. Impacts would be less than significant with mitigation listed under (e).

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Construction

The proposed Project could impact local groundwater levels during dewatering of pipeline trenches. Local groundwater depletion from trench dewatering is of most concern for potential impacts on nearby wetlands and riparian corridors strongly or partly dependant on shallow, perched groundwater tables. The pipeline route addresses this issue by bypassing the most sensitive wetland habitat areas, such as the alkali sink and Four-Mile Slough. Potential concerns are greatest in the eastern portion of the Project Area where groundwater levels are highest (5-10 ft bgs). The Construction Groundwater Management Plan, required by Mitigation Measure Hydrology-3, would minimize impacts of trench dewatering on local groundwater by scheduling trench construction during the dry season, to the extent feasible, and by limiting the length of open trench to one mile, or 0.25- to 0.5-mi-mile long in sensitive areas. Dewatering effluent would be infiltrated in areas adjacent to the pipeline trenches, providing for local replacement of most of the water removed, where water quality is suitable. Measures to avoid modifying existing groundwater flow directions, such as backfilling trenches with excavated soils and recompacting them to recreate pre-existing conditions of permeability and conductivity, and installing "trench breakers[2]" where trenches cross wetlands, would also serve to prevent indirect depletion of groundwater supplying these features. Impacts would be less than significant with implementation of mitigation.

> **Mitigation Measure Hydrology-3:** The Applicants shall prepare a Construction Groundwater Management Plan covering the entire length of pipeline that specifies appropriate measures to minimize impacts of trench dewatering on local groundwater and wetland or groundwater-dependent habitats. The Plan shall include both management measures, such as scheduling trench construction during the dry season, as well as construction methods, such as limiting the length of open trench in sensitive areas. The Plan shall be submitted to the CPUC for review and approval.

[2] Are composed of fill or some other material, and used to prevent erosion caused by the unrestricted flow of water along the slope of the open trench excavation.

Operation and Maintenance

The proposed project could impact local ground water levels through reduced rainfall infiltration on the 3 ac of new impermeable surfaces and through direct withdrawal by the new potable supply well.

Total new impervious surface coverage associated with the central compressor site and storage field is estimated at about 3 ac, including buildings, roads, pads and equipment. The concern is that these new impervious surfaces would create additional runoff, thereby reducing the amount of recharge from rainfall which previously infiltrated to the water table. The preliminary Grading and Drainage Plan has not been developed to the point where design and location of specific BMPs is set. The limited extent of new impervious surfaces coupled with the location of the storage field amid flat agricultural lands strongly indicates that all or almost all of this runoff could be captured and recharged locally. The Erosion and Sediment Control Plan (ESCP) (Mitigation Measure Hydrology-4) would include several types of BMPs, such as shallow retention/infiltration basins, bioswales, and infiltration trenches that, if implemented, would help to avoid potential impacts on groundwater levels.

The Applicants have stated that the new potable water well would be constructed on the 10-ac central compressor site or, if this site is found to be infeasible, within the larger, 22-ac Storage Field. If the central compressor station site is found to be an infeasible location for the potable water well and the potable water well is built at another location, then an alternative offsite well location would be identified based on appropriate groundwater data, and the water would be supplied to the compressor station via a small (e.g., 3- to 4-in diameter) potable water pipeline. Any alternative well site would be located so as to avoid the need for additional roads, well pads, or other peripheral infrastructure, to the extent practical. Offsite infrastructure would be limited to the water well itself, associated buried piping, and power supply. Offsite water piping, if required, would follow existing roads and avoid land use disturbances to the extent practical. Existing land uses would be restored in accordance with the Agricultural Impact Mitigation Plan, Erosion and Sediment Control Plan (Mitigation Measure Hydrology-4) and Site Restoration and Revegetation Plan (if applicable), in coordination with the landowners. The maximum estimated distance that an offsite well would need to be located is 1 mile from the compressor station.

While the well would likely draw from the same 200- to 400-ft deep zone as other local agricultural operations, the anticipated pumping rate of about 300 gallons per day is minimal in comparison to these operations and would have a negligible impact on groundwater levels. The well would be permitted and constructed in accordance with applicable requirements of the Madera County Code and the state's California Well Standards. Impacts would be less than significant with implementation of mitigation.

> **Mitigation Measure Hydrology-4:** The Applicant shall prepare an Erosion and Sediment Control Plan describing best management practices (BMPs), such as shallow retention/infiltration basins, bioswales, and infiltration trenches, to be used at the gas storage field site to control and manage erosion and sediment, control and treat runoff, and promote infiltration of runoff from new impervious surfaces. The plan shall also address construction within the pipeline and power line corridors, with particular emphasis on construction in sensitive areas, as described in Mitigation Measure Biology-20. BMPs, where applicable (e.g., for bioswales) shall be designed based on specific criteria from recognized BMP design guidance manuals. The Plan shall also include "housekeeping" measures to prevent rainfall contacting building materials and avoid introducing chemicals into runoff during project construction. Locations and designs of specific BMPs shall be provided in the Grading and Drainage Plan for the Project. The Erosion and Sediment Control Plan shall be submitted to the CPUC, Madera County and Fresno County for review and approval at least 30 days prior to the commencement of construction.

The Erosion and Sediment Control Plan shall be revised and updated as needed, and re-submitted to the CPUC, Madera County, and Fresno County, if the nature of the construction or operation activities evolve and are not adequately addressed by the existing approved Erosion and Sediment Control Plan.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Construction

Gas Storage Field and Facilities, Gas Pipeline, and Electric Power Line. Disturbance during pipeline trenching and construction of facilities at the compressor station and storage field sites could cause erosion, increasing the turbidity of runoff to local streams, water supply channels and wetlands. Potential impacts include channel sedimentation and degraded water quality for habitats and supply uses. The preliminary ESCP (Mitigation Measure Hydrology-4) would describe the regulatory context for management of construction-phase and post-construction impacts. Features of the ESCP would be designed based on specific criteria from recognized BMP design guidance manuals, and would be incorporated into the project SWPPP (Storm Water Pollution Prevention Plan) (or ESCP, if the project is exempted from coverage under the NPDES Construction General Permit). Mitigation Measure Hydrology-4 would reduce this potential impact to below the level of significance.

Gas Pipeline. The proposed project could alter drainage patterns in local streams and channels due to pipeline crossings. The proposed pipeline routes cross numerous agricultural drains, sloughs and channels. The Applicants have has proposed to use conventional HDD and the similar “slick bore” method to advance the borings at a safe distance beneath surface water features at most crossings. These conventional approaches would be sufficient to avoid disruption of flow patterns and resulting impacts to channel beds and/or banks that could result in erosion and sediment transport.

Temporary diversion of surface water may be necessary at locations where the pipeline crosses minor agricultural ditches carrying flows. The Applicants propose to use conventional methods to isolate the excavation work area, then dam, divert and bypass the agricultural water until the section of pipeline crossing is completed and flow can be returned to the ditch. Mitigation Measure Hydrology-5 and Hydrology-6 would also reduce this potential impact to below the level of significance.

Mitigation Measure Hydrology-5: The Applicants shall prepare a Frac-Out Contingency Plan which outlines how boring entry and exit points shall be sited, proposed depths of drilling, how HDD progress will be monitored, and how inadvertent releases of drilling fluids to surface waters will be contained. The Plan shall be submitted to the CPUC for review and approval at least 30 days prior to the commencement of HDD activity.

Mitigation Measure Hydrology-6: The Applicants shall prepare and implement a Grading and Drainage Plan that incorporates detailed engineering plans for grading of the site in order to preserve existing drainage patterns to the extent feasible and direct runoff away from active construction areas. The plan shall be submitted to the CPUC for review and approval at least 30 days prior to the commencement of construction.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?

Construction

The proposed Project could increase the risk of local flooding if excavation and grading during construction significantly altered the surface topography in a manner that increased the amount and velocity of uncontrolled surface runoff. The most important factor limiting potential impacts is that the Project would be constructed on generally flat land.

Gas Storage Field and Facilities. The greatest potential for construction-phase impact on drainage is at the Storage Field and facilities site, where grading and excavation would occur to install pipelines and create pads for the compressor station, other buildings, access roads and berms. The preliminary Grading and Drainage Plan states that grading would largely preserve existing drainage patterns, although the site would be minimally contoured to direct runoff away from active construction areas. The preliminary ESCP describes how the same suite of BMPs used to control drainage from disturbed areas and stockpiles at pipeline construction sites would also be used at the gas Storage Field. Additional details on grading and design and location of specific construction-phase BMPs would be provided in the Grading and Drainage Plan, required by Mitigation Measure Hydrology-6. Detailed engineering plans have been incorporated into the preliminary Grading and Drainage Plan and the preliminary ESCP (see Mitigation Measure Hydrology-4).

Gas Pipeline. Potential impacts of gas pipeline construction on drainage patterns would be minor due to the limited areal extent of disturbance during trenching and pipe placement, and because trench segments would be excavated serially, with only a limited length of trench open at any one time. Control measures (BMPs) such as geotextile mats, erosion control blankets, silt fences, straw bales or fiber rolls would be installed per Mitigation Measure Hydrology-4 to control erosion from graded areas and soil stockpiles if pipeline construction proceeds during the rainy season.

Electric Power Line. Potential impacts of electric power line construction on local drainage patterns would be negligible due to the limited area of disturbance.

Operation and Maintenance

Gas Storage Field and Facilities. The proposed Project could increase the risk of local flooding if construction of new impervious surfaces is not accompanied by controls on the rate and amount of runoff. The Project would be constructed on generally flat land with little or no nearby development. All or almost all of the 3 ac of new impervious surfaces would be created through construction at the compressor station and storage site. Potential post-construction impacts of the pipeline on the rate and volume of surface runoff would be negligible due to the limited width of the disturbed area and because construction would include replacing excavated soils and compacting them to pre-disturbance permeability, after which the trench surface and surrounding areas would be contoured to match prior grades. Additional details on grading and design and location of specific post-construction phase BMPs would be provided when the detailed engineering plans have been incorporated into preliminary Grading and Drainage Plan and the preliminary ESCP (see Mitigation Measure Hydrology-4) has been updated and submitted to the CPUC and County agencies for review.

The preliminary ESCP provides examples of suitable BMPs to control the rate and amount of post-construction runoff at the compressor station and storage field site. These features, which include shallow retention/infiltration basins, bioswales, and/or infiltration trenches, would be designed based on specific criteria from recognized BMP design guidance manuals and incorporated into

the project SWPPP (or ESCP if the project is exempted from coverage under the NPDES Construction General Permit). It appears that runoff from most events can be contained and infiltrated or evaporated adjacent to the compressor station and storage field facilities due to the limited area of disturbance and the hydrologic setting. Mitigation Measure Hydrology-4 would also reduce this potential impact to below the level of significance.

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Construction

The proposed Project could alter local drainage patters due to construction of the gas Storage Field and facilities and to a much lesser extent the pipeline causing adverse impacts on the capacity of downstream facilities. Potential impacts of the pipeline on the rate and volume of surface runoff would be negligible due to the limited area of disturbance during construction and construction methods that would restore pre-disturbance permeabilities and drainage patterns, as described in (d) above. The preliminary ESCP describes how conventional BMPs for controlling the rate and volume of runoff, such as shallow retention/infiltration basins, bioswales, and/or infiltration trenches, designed based on specific criteria from recognized BMP design guidance manuals, would be used to detain, retain and infiltrate and/or evaporate runoff from most rainfall events, preventing impacts to downstream drainage facilities. Mitigation Measure Hydrology-4 would also reduce this potential impact to below the level of significance.

Operations and Maintenance

Gas Storage Field and Facilities. The proposed Project could adversely impact runoff quality through two major pathways: erosion from project lands during or following construction, and release of pollutants from equipment operation and maintenance during or following construction. Mobilization of soil and/or chemical pollutants in runoff during the construction phase could impact downstream water quality and beneficial uses. As described in (c) and (d) above, measures to control erosion and detain/retain runoff are included in the applicant's preliminary ESCP (Mitigation Measure Hydrology-4). The Plan would also include "housekeeping" measures to prevent rainfall contacting building materials and avoid introducing chemicals into runoff during project construction. Mitigation Measure Hydrology-4 would reduce this potential impact to below the level of significance.

The proposed Project could adversely impact runoff quality release of pollutants from equipment operation and maintenance following construction. Mobilization of soil and/or chemical pollutants in runoff during the post-construction phase could impact downstream water quality and beneficial uses. The preliminary Hazardous Materials and Waste Management Plan (Mitigation Measure Hazards-1) would include suitable post-construction measures to prevent stored chemicals from mingling with floodwaters, including: site grading to raise pads above the elevation of surrounding areas; containment walls for single-wall chemical storage tanks; use of double-wall chemical storage tanks; and solid chemical storage in a flood-proofed portion of the generator building. The ESCP required per Mitigation Measure Hydrology-4 would contain design and implementation of BMPs to treat post-construction runoff for sediment and other pollutants prior to discharge, infiltration or evaporation, thereby reducing the potential impact to below the level of significance. These mitigation measures would reduce this potential impact to below the level of significance.

f) Otherwise substantially degrade water quality?

Construction

Gas Pipeline. Hydraulic fracturing during installation of the pipeline beneath surface water features could result in discharge of drilling muds, a non-toxic bentonite clay-based slurry used to

remove soil and rock fragments during drilling, degrading water quality in surface water or groundwater. Site-specific designs for use of HDD (e.g., entry and exit sites, subsurface profiles) would be developed based on geotechnical surveys of local soils conditions at each proposed crossing. The Frac-Out Contingency Plan (Mitigation Measure Hazards-5) would outline how entry and exit points would be sited, depths of drilling, how HDD progress would be continuously monitored by trained personnel and how inadvertent releases of drilling fluids to surface waters would be contained. Impacts would be less than significant with mitigation.

Gas Storage Field and Facilities and Electric Power Line. No other impacts have been identified that would substantially degrade water quality from the construction of the Storage Field facilities and electric power line.

Operation and Maintenance

Flooding of the Project Area and equipment could potentially result in stored chemicals being mobilized into floodwaters. Storage and use of chemicals would be limited to the compressor station and storage field once construction is finished. The Applicants have addressed most potential construction-phase and post-construction phase impacts on water quality from these locations through development of the ESCP (Mitigation Measure Hydrology-4), which would be refined and expanded as project permitting proceeds. No special flood protection design measures are proposed for the compressor station or well pads because they are not located within areas currently mapped as Zone A (100-year flood hazard). Levees on the north side of the San Joaquin River are unaccredited (uncertified) by FEMA because the agency lacks information on their integrity. Flood hazards would not change if these levees were overtopped because this condition is incorporated into the FEMA-delineated flood zone. As described in Section 3.8 Hazardous Materials, the Hazardous Materials and Waste Management Plan for the Project would include suitable measures to prevent stored chemicals from mingling with floodwaters, The Project would be required to prepare a Hazardous Materials and Waste Management Plan and submit it to the CPUC for review and approval per Mitigation Measure Hazards-1. These mitigation measures would reduce potential impacts to below the level of significance.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No housing is proposed as part of this project. There would be no impact.

h) Place structures within a 100-year flood hazard area, which would impede or redirect flood flows?

Gas Storage Field and Facilities. The proposed Project could cause flooding at new locations by impeding or redirecting flood flows. No special flood protection design measures are proposed for the compressor station and well pads because these sites are not located within the area currently mapped as Zone A (100-year flood hazard). The compressor station site is mapped by FEMA as Zone X, areas of moderate or minimal hazard (shallow flooding). Well pads would be constructed at grade and would not significantly obstruct flood flows. Ditches and culverts would be used to direct drainage from adjacent lands around the facility to maintain the natural flow patterns, to the extent necessary.

No special protective measures, such as construction to elevations above existing grade, are required for structures at the compressor station. However, as described in Section 3.8: Hazardous Materials, the preliminary Hazardous Materials and Waste Management Plan (Mitigation Measure Hazards-1) includes measures to protect the contents of chemical and material storage facilities from shallow flooding. The mitigation measures and design measures would reduce this potential impact to below the level of significance.

Gas Pipeline. The gas pipeline would be located underground except for minor surface facilities. These facilities are small and would not redirect surface flows.

Electric Power Line. The wood poles for the electric power line would be placed within the 100-year flood zone; however, these structures would not significantly impede flow or modify flood levels, and no wood poles would be placed in the main channel of the Chowchilla Canal or other locations where they would be exposed to high flows. Impacts would be less than significant.

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?

The Project is sited in an area where flooding, when it occurs, is shallow. The only structures proposed for detention/retention of runoff are relatively shallow basins of limited size to infiltrate and/or evaporate storm runoff from the compressor station and storage facility. There would be no impact.

j) Inundation by seiche, tsunami, or mudflow?

The project site is relatively level, does not involve disturbance of slopes, and includes no large basins or ponds that could be subject to seiche or tsunamis. There would be no impact.

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3.10 Land Use and Planning

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the 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?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☒	☐	☐

3.10.1 ENVIRONMENTAL SETTING

Regional Setting

The Project Area is located in the San Joaquin Valley, which is in the Central Valley of California. The Project would be located in the unincorporated areas of Madera County and Fresno County. The Project Area vicinity is an agricultural area with scattered resident and commercial buildings. The developed communities closest to the Project are the Cities of Mendota and Firebaugh, located in Fresno County. Figure 1.1-1 shows the location of the Project elements in relation to nearby communities.

Fresno County

Fresno County regulates land use through general plan designation, its zoning ordinance and development review process. The zoning ordinance defines permitted, conditional, and prohibited uses for all zoning districts and also provides detailed development standards for each district. The Fresno County General Plan details the current status of agricultural lands and notes that agriculture is the dominant land use in Fresno County. The total value of agricultural production in Fresno County in 2007 was $5,348,087,000, which ranks first in the state (CFBF 2007a). Section 3.3: Agricultural Resources contains further discussion of agricultural resources in Project Area vicinity.

The portion of the Project Area in Fresno County is designated for agricultural land use under zoning referred to as AE. This zoning designation provides for a variety of agricultural activities. Certain nonagricultural activities, such as liquefied petroleum gas distribution and storage, mineral extraction, and oil and gas development, are allowed with a special permit.

Land designation immediately adjacent to the Project Area also includes open space areas. This designation, which is applied to land or water areas that are essentially unimproved and planned to remain open in character, provides for the preservation of natural resources, the managed production of resources, parks and recreation, and the protection of the community from natural and manmade hazards (Fresno County 2000).

The most prominent open space areas are the Mendota Wildlife Management Area and the Alkali Sink Ecological Reserve (see Figure 2.2-1 for location). The Mendota Wildlife Management Area is an 11,802-ac designated open space area, consisting of flatlands and floodplain. Camping is allowed in certain areas during waterfowl season. The area also provides restrooms facilities, fishing, hunting, and wildlife viewing activities (Public Lands Information Center 2008). The Alkali Sink Ecological Reserve is not officially identified in the Fresno County General Plan as an open space area; however, the area is recognized by the CDFG as a reserve. The proposed Project would not be located in the Alkali Sink Ecological Reserve. A portion of the proposed pipeline route would be located just north of the Mendota Wildlife Management Area in the far northwestern portion of the management area (Figure 3.10-1).

The portion of the Project Area within Fresno County is zoned EA. The EA district is intended to be an exclusive district for agriculture and for those uses that are necessary and an integral part of agricultural operations. This district is intended to protect the general welfare of the agricultural community from encroachments of non-related agricultural uses that, by their nature, would be injurious to the physical and economic wellbeing of the agricultural district. Liquefied petroleum gas production, distribution and storage are permitted uses within the EA district, subject to a Conditional Use Permit.

Madera County

Madera County regulates land use through general plan designation, its zoning and the development review process. Agriculture is the dominant and most important land use in the county. The total value of agricultural production in Madera County in 2007 was $1,220,284,000, which ranks 13th out of 58 counties in the State (CFBF 2007b). Section 3.3: Agricultural Resources contains further discussion of agricultural resources in the Project Area vicinity.

The portion of the Project Area within Madera County is designated AE with a parcel size of 36 to 640 ac in the Madera County General Plan (Madera County 1995). The AE designation provides for agricultural uses, limited agricultural support service uses, agriculturally oriented services, timber production, mineral extraction, airstrips, public and commercial refuse disposal sites, recreational uses, public and quasi public uses, and similar and compatible uses. The Project Area within Madera County is zoned as Agriculture Rural Exclusive 40 (ARE 40). Most permitted uses in these zoning districts are associated with agriculture; mining is also an allowable use with a Conditional Use Permit.

Local Setting

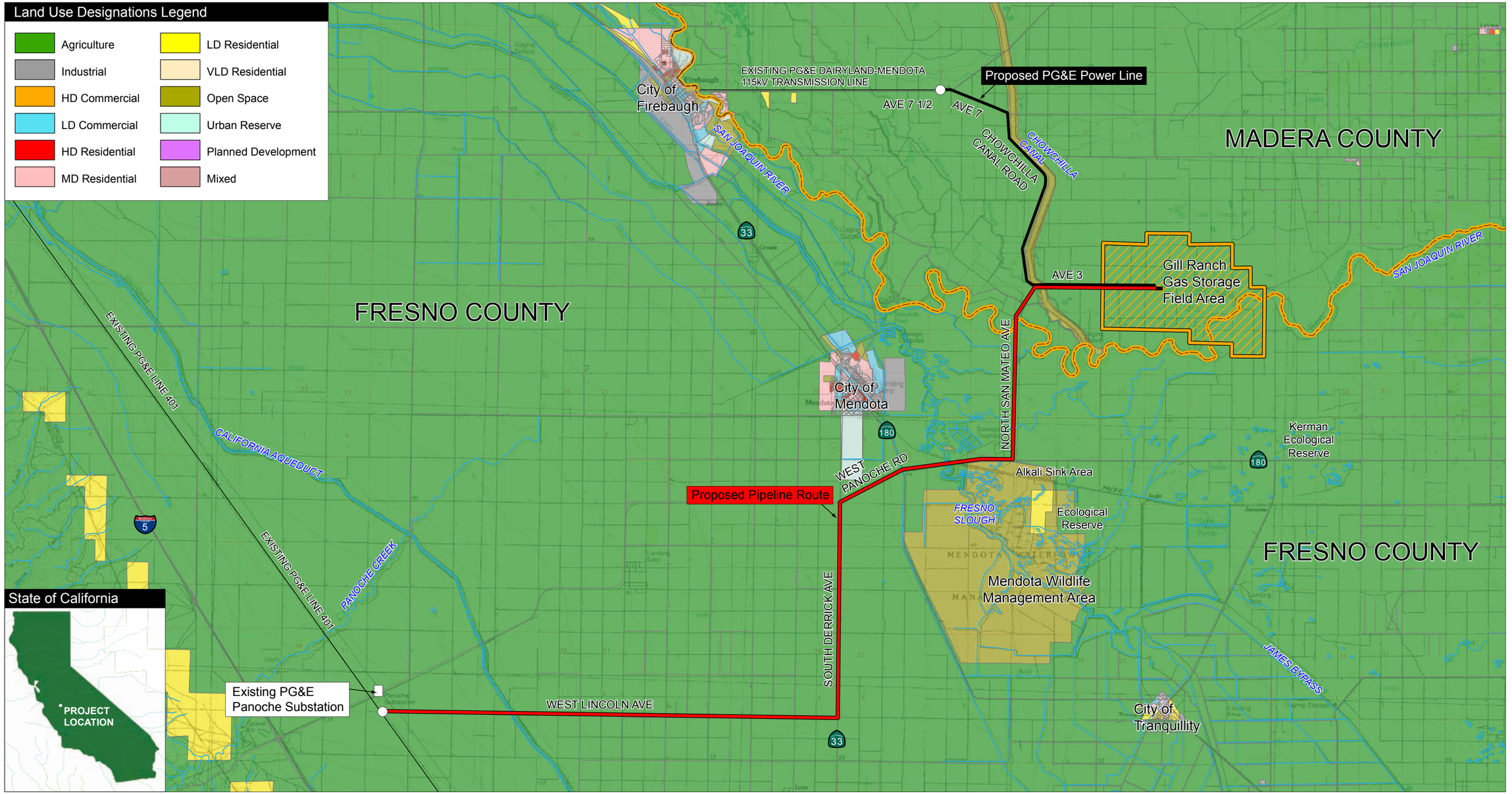
Storage Field and Well Pads

The approximately 5,020-ac Storage Field is within an established gas field. Gas production has occurred throughout the Gas Field since 1942. Limited gas production occurs at the Gas Field today. Existing active and inactive gas production well pads, access roads, and related facilities are interspersed throughout the Storage Field. The Storage Field is also in active agricultural production (row crops, orchards, and vineyards). There is one occupied residence with the Storage

Field located near the south bank of the San Joaquin River (county line), in the southeastern portion of the site.

The location for the compressor station would be reusing a 20-ac graded and level area which was previously used for cotton processing. Table 3.10-1 shows the amount of surface area acreage required for the well pads and compressor station.

Figure 3.10-1: Land Use Designations in the Project Area



SOURCE: California Resources Agency / University of California Davis 2004 and RMT Inc. 2009

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Table 3.10-1: Estimated Surface Area For Storage Field Components

Facility	Individual Acreage	Number of Facilities	Total Approx. Acreage
Compressor Station	10	1	10
IW Well Pads	1.7	4	6.8
OM Well Pads	0.7	8	3.5[1]
	Total	**13**	**20.3**

Note:

1. Assumes two of the eight OM well pads would be co-located with proposed IW well pads and would require no additional surface area; and one of the eight pads would be located on an existing fully developed pad and would require no additional surface area.

The San Joaquin River passes through the southeastern portion of the Storage Field. The proposed 10-ac central compressor station would be centrally located within the Storage Field, along Avenue 3, approximately 0.25 mi east of Road 16. The compressor station site is presently cultivated with irrigated row crops. Buried gas and water gathering lines are proposed to be located within the existing agricultural roads between the well pads and the central compressor station.

A cluster of homes is located on Road 16 near the entrance to the Storage Field. There is one the south bank of the San Joaquin River in the southeastern portion of the Storage Field and is approximately 2 miles from the compressor station site.

Fresno County. The Fresno County portion of the Storage Field is within designated agricultural land use area and zoned as an EA district.

Madera County. The Madera County portion of the Storage Field is located within a designated agricultural exclusive land use area and zoned ARE-40 district.

Gas Pipeline

The approximately 26.7-mi, 30-in diameter gas pipeline would be constructed between PG&E's existing Line 401 near Interstate 5 and the central compressor station site. The initial 23 mi of pipeline would be located in Fresno County, and the remaining approximately 3.75 mi would be located in Madera County. The San Joaquin River forms the Fresno/Madera County boundary in this area. The pipeline would pass approximately 2 mi south of the town of Mendota. Figure 3.10-1 shows the proposed pipeline alignment.

Fresno County. The segment of pipeline that is located in Fresno County is completely within agricultural land use area and is zoned EA. The proposed gas transmission pipeline would near the northern boundary of the Mendota Wildlife Management Area and the Alkali Sink, between pipeline MP 17 and 19.

Residential and commercial uses are very limited along the pipeline alignment. These uses consist of isolated residences near the pipeline route; several homes along the south side of Highway 180; and a restaurant and boat rental business at the Fresno Slough. Agricultural processing facilities include the Spreckels Sugar Plant on the north side of SR 180; cotton gins; and various other active and inactive agriculture-related industrial uses.

Madera County. ***The segment of pipeline that is located in Madera County is completely within designated agricultural exclusive land use area and zoned as an ARE-40 district. Scattered residences along the pipeline are single-family homes associated with farming operations.***

Electric Power Line

An approximately 9.75-mi electric power line would be constructed between PG&E's existing 115-kV electric power line on Avenue 7½ and the central compressor station. The electric power line would be located entirely in Madera County within land zoned ARE-40 (exclusively agriculture). PG&E electric distribution lines are currently located along the proposed electric power line route, except for an approximately 1-mi segment along Avenue 7. Land uses near the approximately 1-mi long portion of new electric power line are agricultural. There are no residences or commercial uses along the electric power line route.

Land Ownership

Appendix H contains a full list of landownership Information for the surface area of the gas Storage Field and along the gas pipeline and electric power line.

3.10.2 REGULATORY SETTING

Federal

There are no federal laws or regulations related to land use and planning that are applicable to the proposed Project.

State

The CPUC General Order No. 131-D contains rules for planning and construction of electric power line facilities and substations located in California. It includes the following rule related to land use (CPUC 1995).

> ***Section XIV B*** *Local jurisdiction action pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the Commission's jurisdiction. However in locating such projects, the public utilities shall consult with local agencies regarding land use matters. In instances where the public utilities shall consult with local agencies are unable to resolve their differences, the Commission shall set a hearing no later than 30 days after the utility or local agency has notified the Commission of the inability to reach agreement on land use matters.*

Local

The goals and policies from the County of Fresno General Plan (2000) pertaining to land use planning and agriculture are relevant to the Project and are shown below.

> **PF-J.2.** The County shall work with local gas and electric utility companies to design and locate appropriate expansion of gas and electric systems, while minimizing impacts to agriculture and minimizing noise, electromagnetic, visual, and other impacts on existing and future residents.
>
> **LU-A.2.** The County shall allow by right in areas designated Agriculture activities related to the production of food and fiber and support uses incidental and secondary to the on-site agricultural operation. Uses listed in Table LU-3 (page 2-13 of the General Plan) illustrate the range of uses allowed in areas designated Agriculture. Table LU-3 lists under Agricultural uses allowed by right, specific oil and gas development and other mineral resource uses allowed by special permit pursuant to the policies in Section OS-C, Mineral Resources of the Open Space and Conservation Element.

LU-A.3. The County may allow by discretionary permit in areas designated Agriculture, special agricultural uses and agriculturally-related activities, including value added processing facilities, and certain non-agricultural uses listed in Table LU-3. Approval of these and similar uses in areas designated Agriculture shall be subject to the following criteria:

a) The use shall provide a needed service to the surrounding agricultural area which cannot be provided more efficiently within urban areas or which requires location in a non-urban area because of unusual site requirements or operational characteristics;

b) The use should not be sited on productive agricultural lands if less productive land is available in the vicinity;

c) The operational or physical characteristics of the use shall not have a detrimental impact on water resources or the use or management of surrounding properties within at least one-quarter (1/4) mile radius; and

d) A probable workforce should be located nearby or be readily available;

LU-A.14. The County shall ensure that the review of discretionary permits includes an assessment of the conversion of productive agricultural land and that mitigation be required where appropriate.

OS-C.10. The County shall not permit land uses that threaten the future availability of mineral resources or preclude future extraction of those resources.

OS-C.14. The County shall permit by right, small-scale oil and gas activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land uses in an established oil and gas field, established oil and gas field in urban areas, or non-urban areas.

OS-C.18. The County shall establish procedures to ensure that exploration and recovery of mineral resources, including oil and natural gas, will occur under appropriate locational and operational standards within areas designated Agriculture and Westside Rangeland.

County of Madera General Plan

The goals and policies from the County of Madera General Plan (1995) pertaining to land use planning that are relevant to the Project are shown below.

5.A.13. The County shall require development within or adjacent to designated agricultural areas to incorporate design, construction, and maintenance techniques that protect agriculture and minimize conflicts with adjacent agricultural uses.

5.A.14. The County shall continue to enforce the provisions of its Right-to-Farm Ordinance and of the existing state nuisance law.

3.10.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on land use and planning if the Project would:

a) Physically divide an established community

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the 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

c) Conflict with any applicable habitat conservation plan or natural community conservation plan

Impact Discussion

a) Physically divide an established community?

Construction

Gas Storage Field and Facilities. The associated facilities include construction of up to twelve surface sites, including up to four IW well pads, with multiple wells per pad; up to seven OM well pads; and one well for the injection of salt water, located at the central compressor site. The 5,020-ac existing gas Storage Field would remain the same size. The site is in active agricultural production today with row crops, orchards and vineyards. The proposed 10-ac compressor station would be centrally located within the Storage Field, along Avenue 3 approximately 0.25 mi east of Road 16. No barriers or other facilities would be created by the facility, its well pads or wells.

Buried gas and water gathering lines are proposed to be located with the existing agricultural roads between the well pads and the central compressor station. No new barriers would be created by these lines as they would be buried and within existing road alignments. No division of an existing farm would be required, and no additional barriers or roadways would be created that would divide farms (additional access roads that may be built to access well pads would not completely transect agricultural parcels, and would not create a barrier between two portions of an agricultural parcel). Construction of the Storage Field and facilities would not create any physical division of any community. There would be no impact.

Gas Pipeline. Construction of the pipeline would extend south and west of the Storage Field, and would not enter the Mendota Wildlife Management Area or any established community. Impacts would be similar to those for the construction of the Storage Field and facilities. No barriers of land splits would be required for the pipeline because construction would occur in existing road ROWs. There would be no division of any established community, and no mitigation would be required.

Electric Power Line. Construction of the electric power line would not enter any established community. The electric power line would follow existing roads. Impacts would be similar to those for the construction of the Storage Field and facilities. There would be no division of any community and no mitigation would be required.

Operation and Maintenance

Gas Storage Field and Facilities. The operation and maintenance of the Storage Field and facilities would not physically divide an established community. Facilities would be relatively small, located in areas presently used for agricultural operations, would not split farms or hinder access to lands under cultivation. No additional land disturbance would be required during operation and maintenance. There would be no impact related to the physical division of an established community.

Gas Pipeline. Operation and maintenance of the gas pipeline would not have divide the surrounding land uses as the pipeline would be located entirely underground and under existing road ROWs. There would be no impact related to physically dividing an established community.

Electric Power Line. Operation of the electric power line would have a no impact related to the physical division of an existing community. The electric power line poles would not divide an established community, and electric power lines are already present along all but approximately 1 mile of the route; this mile is sited along an existing road and there would be no division of farms. The electric power line would be of standard height and would allow farm equipment to pass

underneath the line. There would be no impacts related to physical division of an established community.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the 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?

Storage Field and Facilities

Fresno County. The Storage Field and facilities would be sited in an area designated for agricultural land use and zoned as EA district. The Fresno County General Plan states in policy LU-A.2 that within the agriculture area "Certain oil & gas development activities pursuant to the policies in Section OS-C, Mineral Resources of the Open Space and Conservation Element; uses allowed by special permit include liquefied petroleum gas distribution and storage and mineral extraction and oil and gas development pursuant to the policies in Section OS-C, Mineral Resources of the Open Space and Conservation Element." The proposed Project would be compliant with the applicable policies in Section OS-C, which are listed above. The proposed Project would have no conflict with any applicable land use plan, policy, or regulations. There would be no impact.

Madera County. The Storage Field and Facilities would be sited in an area designated agricultural exclusive land area and zoned ARE 40.The applicable General Plan policies and zoning ordinance do not specifically address gas storage as either a permitted, conditionally permitted, or excluded land use within these designations. The Madera County General Plan allows mineral extraction, including natural gas extraction, in agriculturally designated areas, such as the area where the Storage Field is located. Mineral extraction and mining are similar to gas storage and related gas facility operations because the facilities utilized in this Project are similar to those utilized for extracting and conveying naturally occurring gas. Surface facilities required in connection with underground gas storage projects, like the proposed Project, must be sited above the same naturally occurring geologic formations that produce natural gas, as is the case with mining. Gas storage operations, including the proposed Project can be considered in conformance with the general plans and zoning designations of Madera County. The Storage Field in Fresno County is currently used for similar purposes, as well. The proposed Project would have no conflict with any applicable land use plan, policy, or regulations.

Gas Pipeline and Electric Power Line

Fresno County. The gas pipeline would be sited in an area designated agriculture land use. Buried gas pipelines and associated above-ground pipeline facilities are normally permitted in the Fresno County EA zone district with a special use permit. The proposed Project would have no conflict with any applicable land use plan, policy, or regulations.

The electric power line would be sited in an already existing electric power line corridor, except for a 1-mi segment that would be sited along an existing road. This area is zoned AE. Utility facilities are typically permitted in the AE zone district. There would be no conflict with land use designations or zoning, and no mitigation would be required.

Madera County. The gas pipeline and electric power line would be sited in an area designated agricultural exclusive and zoned ARE-40. The buried pipelines, compressor station, and above-ground power lines are typical utility facilities that are permitted in the AE zoning district. An electric power line would be compatible with the land use designations (Mansfield pers. comm. 2008). The proposed Project would not conflict with any applicable land use plan, policy, or regulations.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

Construction

Gas Storage Field and Facilities and Electric Power Line. The proposed gas Storage Field and facilities, and electric power lines would not conflict with any applicable habitat conservation plan or natural community conservation plan. No plans of this nature apply to these portions of the Project Area and there are no habitat conservation plans in effect along the project ROWs for the gas Storage Field or the electric power line.

Gas Pipeline. The gas pipeline would be aligned to the north of the existing Mendota Wildlife Management Area and has been planned so that it would not intrude into the area. A short segment of the proposed pipeline would traverse an area identified as a candidate area for potential future protection in the *Recovery Plan for the Upland Species of the San Joaquin Valley, California (USFWS 1998),* which includes goals to survey, acquire, and manage natural lands within the historical range of several federally-listed species .The area of the proposed disturbances on these parcels is presently used for grazing and a 30- to 40-ft-wide area within the proposed pipeline alignment (adjacent to the roadway fence line) is maintained clear of vegetation as a part of normal agricultural operations.

There is no conflict with the *Recovery Plan for the Upland Species of the San Joaquin Valley, California* at this time because the subject parcels are privately owned and there is no habitat conservation plan currently in place on these parcels. The pipeline would be constructed using biological monitoring (Mitigation Measure Biology-5), other required Mitigation Measures, and Applicant Proposed Measures; therefore, it would not conflict with the plan, should the plan be implemented in the future. Construction of the gas pipelines would not conflict with any existing habitat conservation plan or natural community conservation plan.

Operation and Maintenance

The Project Area is in the area addressed by the *Pacific Gas and Electric Company San Joaquin Valley Operations and Maintenance Habitat Conservation Plan* (PG&E 2007) This plan covers 23 wildlife species and 42 plant species for 33 routine operation and maintenance activities for PG&E's electric and gas transmission and distribution systems within nine counties in the San Joaquin Valley. Operation and maintenance activities would comply with all aspects of the habitat conservation plan and the project would not conflict with the habitat conservation plan.

The Project would not conflict with the *Recovery Plan for Upland Species of the San Joaquin Valley, California* because the disturbed area would be restored subsequent to construction as required by Mitigation Measure Biology-16. There would be no impact, and no mitigation would be required.

3.11 Mineral Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☒	☐	☐
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?	☐	☐	☒	☐

3.11.1 ENVIRONMENTAL SETTING

Regional Setting

The Central Valley of California (Sacramento and San Joaquin Valleys) is rich in several mineral resources of economic interest. These mineral resources include: petroleum reserves (oil and gas), precious metals (gold, silver, and platinum), construction aggregate (sand and gravel), clay, gypsum, and other deposits (CPUC 2002).

Natural Gas Resources

Hydrocarbons are contained within structural traps where channel sands cross over geologic structure highs (domes and anticlines). Sea levels fluctuated during deposition, creating an alternating sequence of sands and shales forming the reservoirs and cap rock necessary for the accumulation of natural gas.

Fresno County contained eight wells that produced natural gas in 2007. Madera County contained 14 wells that produced natural gas in 2007 (DOGGR 2007). Natural gas fields in the vicinity of the Project Area are shown in Figure 3.11-1. The Project Area is located directly above an existing gas field, as discussed in detail under *Natural Gas* in this section.

Sand and Gravel Resources

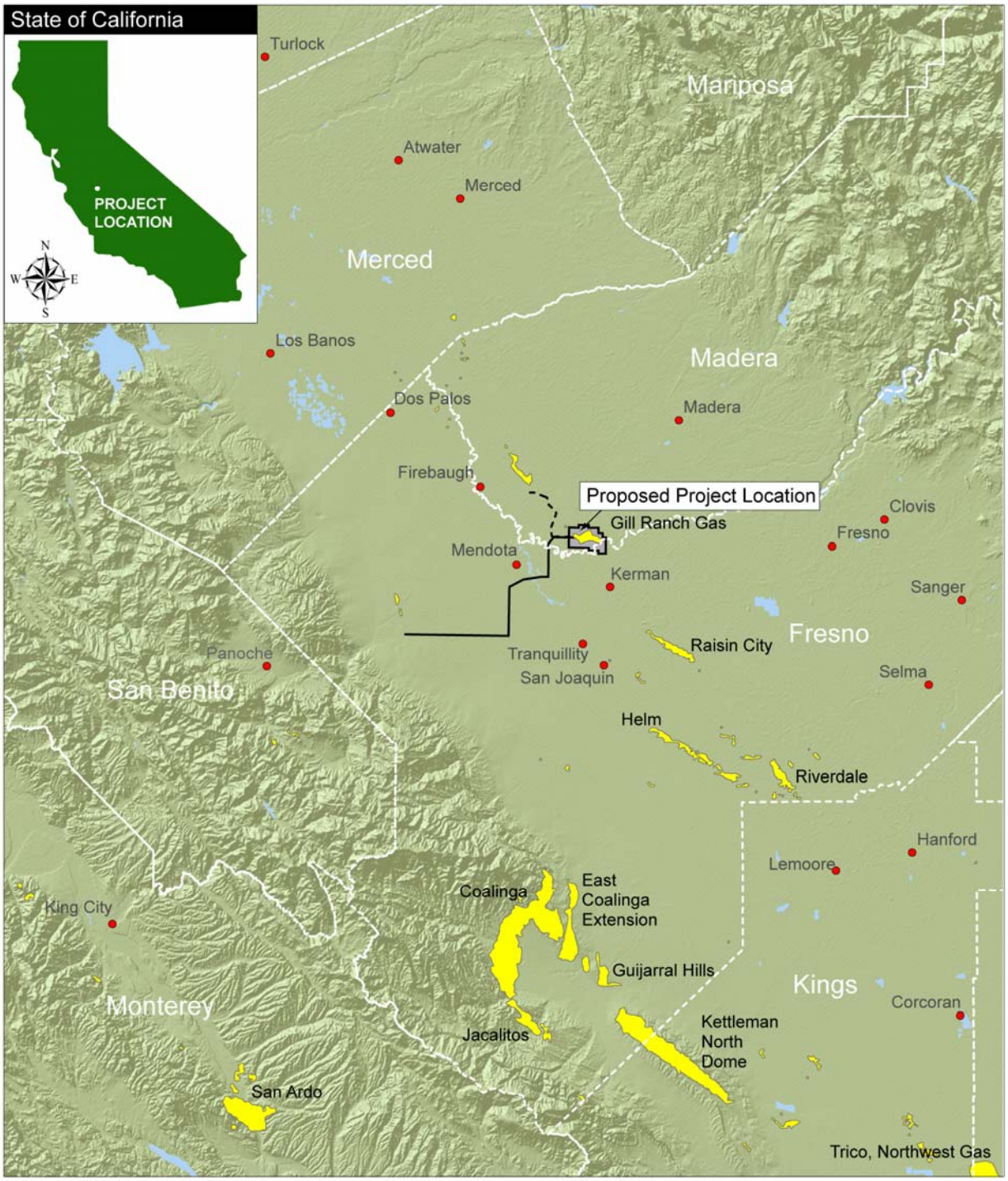
Aggregates are used in the production of building materials, such as concrete, asphalt, and cement. California is the largest producer of sand and gravel in the United States. California produces more sand and gravel than any other industrial mineral. The San Joaquin Valley is the fourth largest producer of aggregates in California (Hill 2006).

Local Setting

The California State Mining and Geology Board uses the Mineral Resource Zone (MRZ) system to classify California's mineral resources. The MRZs are defined as follows:

- **MRZ 1:** Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that there is little likelihood for their presence
- **MRZ 2:** Areas where adequate information indicates significant mineral deposits are present or where it is judged that there is a high likelihood for their presence

Figure 3.11-1: Oil and Natural Gas Field Areas in the Project Region



SOURCE: ESRI 2006, California Division of Oil, Gas and Geothermal Resources 2005, and RMT Inc. 2009

LEGEND

- Proposed Project Gas Storage Field Area
- Oil or Natural Gas Field Area (Areas over 1,000 acres labeled)
- Proposed Pipeline Route
- Proposed PG&E Power Line

0 5 10 20 30 40 Miles

RMT
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- **MRZ 3:** Areas containing mineral deposits, the significance of which cannot be evaluated from available data
- **MRZ 4:** Areas where available information is inadequate for assignment to any other MRZ.

A portion of the Project Area was surveyed for mineral resources by the California Division of Mines and Geology in 1999; however, most of the Project Area has not been surveyed. The designation of the MRZs in the Project Area is based primarily on the presence of significant aggregate deposits. Most of the Storage Field is located in an area designated as MRZ 3. A small portion of the pipeline is in an area mapped as MRZ 2, and the remainder of the areas have been mapped as MRZ 4, areas where there is inadequate information to evaluate the potential for mineral resources (DOC 1999 as cited in Entrix 2008).

Fresno County's General Plan Background Document contains a mineral resource location map that shows the locations of locally important minerals including copper, coal, sand and gravel, gold, limestone, and many others. This map identifies no locally important minerals within the Project Area in Fresno County.

Sand and Gravel

There are three sand and gravel operations near the Project Area. The Maiorino Farms sand and gravel site is 6.5 mi northwest of the closest portion of the Project alignment. The Bass Avenue Material Site is about 3.5 mi west of the closest portion of the Project alignment. The Triple L/Panoche sand and gravel operation is about 3.75 mi west of the closest portion of the Project alignment (Caltrans 2007). Locally produced aggregate is a valuable resource for urban regions because the cost of transporting these materials makes remote production cost-prohibitive.

Natural Gas

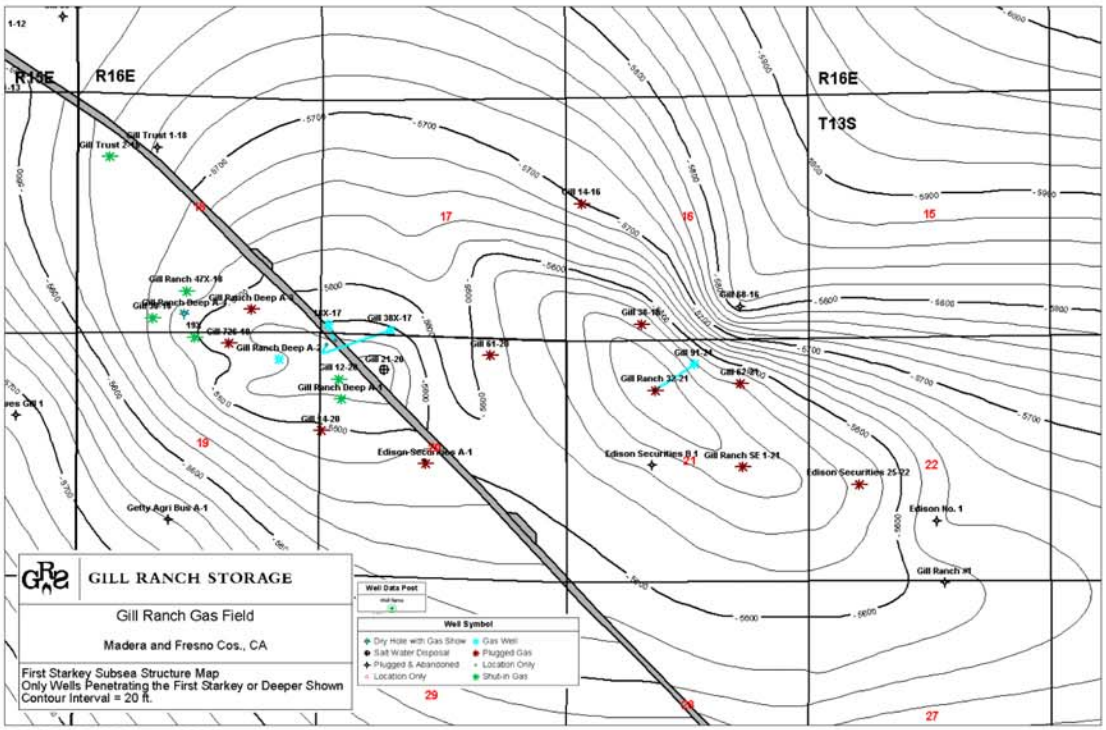
Mineral resources are present at the Storage Field site in the form of natural gas. The geologic stratigraphy of the project site is described in Section 3.6: Geology. The target storage reservoir for the Project, the Starkey Formation, lies at depths of approximately 5,600 to 6,200 feet bgs. Figures 3.11-2, 3.11-3, 3.11-4, and 3.11-5 show the elevation (below sea level) and thickness of the First Starkey and Second Starkey, which are the target zones for gas storage.

The Starkey Formation has produced over 24 billion cubic ft (BCF) of natural gas to date. The Starkey Formation potentially contains several more BCF of natural gas according to confidential data provided by Armstrong Petroleum Corporation (Armstrong), the current mineral rights leaseholder, although the Starkey Formation has not been in production for several years. Overlying formations, including the Kreyenhagen, Domengine, and Moreno Formations, are currently producing, or have recently produced, quantities of natural gas.

Production History. Forty-four wells have been drilled in the Gill Ranch Storage Field area since 1942. Thirty-three of these were productive, and eleven were drilled and abandoned. Twenty-nine of these wells were drilled as deep as the First Starkey or Second Starkey. Eight of these were productive, including one well that produced from both First Starkey and Second Starkey. Six other wells were drilled into the First Starkey or Second Starkey pools post-production and found the reservoirs to be watered up (i.e., where groundwater has replaced the natural gas within the reservoir) at those locations. The Gill Ranch Gas Field natural gas resources are primarily found in Eocene and Cretaceous age sedimentary deposits (DOGGR 2008), and there are currently four active wells producing (Entrix 2008) (see Table 3.11-1).

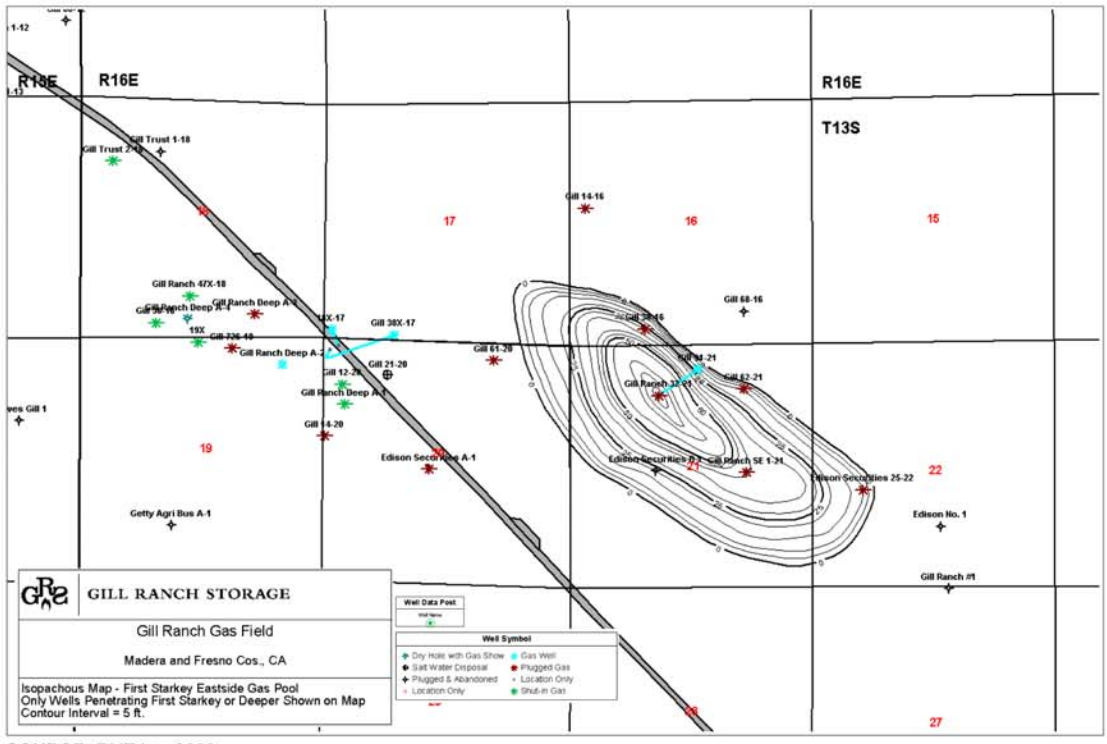
The Gill Ranch Gas Field was discovered in 1942. The well that encountered the Gas Field was drilled to 9,154 ft (basement), and discovered gas in the Kreyenhagen and Domengine Formations (which overlie the Starkey Formation), and in the First Starkey sand of the Starkey Formation.

Figure 3.11-2: First Starkey Subsea Structure Map



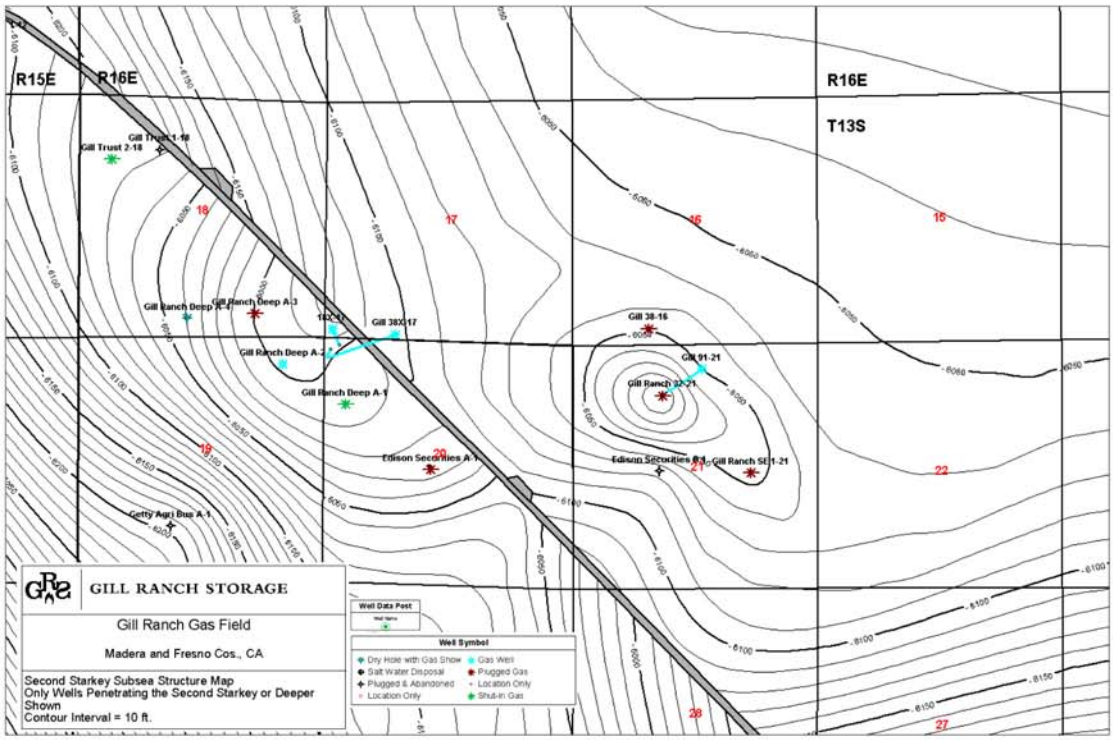
SOURCE: RMT Inc. 2009

Figure 3.11-3: Isopachous Map - First Starkey Eastside Gas Pool



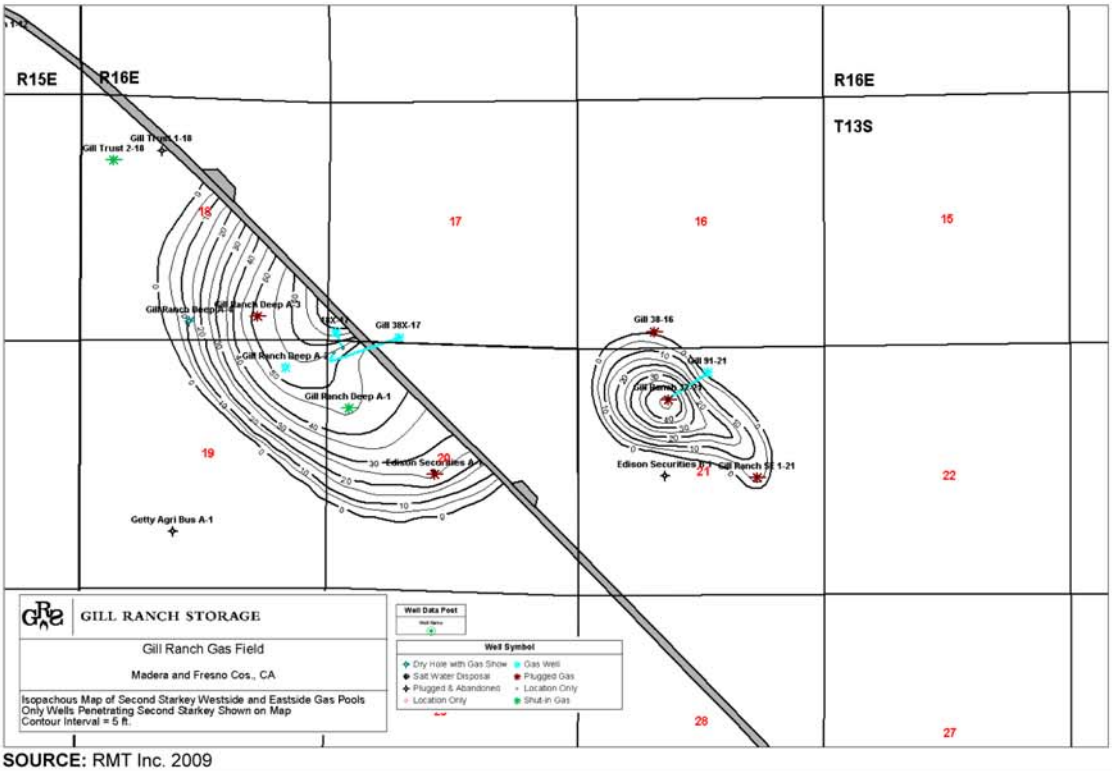
SOURCE: RMT Inc. 2009

Figure 3.11-4: Second Starkey Subsea Structure Map



SOURCE: RMT Inc. 2009

Figure 3.11-5: Isopachous Map - Second Starkey Eastside Gas Pool



SOURCE: RMT Inc. 2009

Table 3.11-1: Gill Ranch Gas Field Production History

Years	Wells Drilled	Results/Notes
1943-1950	10	All produced natural gas
1950-1960	4	All wells were productive New productive zone found in the Kreyenhagen Formation, and several existing wells were re-completed in it Domengine Formation began producing water in several wells, causing abandonment of the water-producing interval in those wells Production from deeper First Starkey sand began in 1957 after shallower Domengine and Kreyenhagen intervals were depleted and abandoned Was the first production from the First Starkey reservoir that would be converted to storage in the east side of the Gas Field
1960-1970	6	New natural gas resource discovered in the Cretaceous Moreno Formation in the west side of the Gas Field in two wells Other wells produced in the Main and Nortonville sands of the Kreyenhagen Formation
1970-1980	2	Both completed in the Nortonville sand
1980-1990	4	Drilled in late 1988 through mid 1989 Production discovered in the Second Starkey sand in the west side of the Gas Field Second Starkey gas pool is the reservoir that would be converted to storage in the west side of the Gas Field
1990-2000	6	Second Starkey pool discovery made during the 1980s was followed with a development well Production from the west side Second Starkey reservoir ceased in 1992, and the reservoir was abandoned Small accumulation of gas in the First Starkey was also discovered on the west side of the Gas Field Well in the First Starkey gas pool in the east side encountered a new gas pool lower in the Second Starkey sand, as well as in the First Starkey; production from this well in the Second Starkey ceased in 1993 and the well was abandoned; Second Starkey gas pool is the reservoir that would be converted to storage in the east side of the Gas Field First Starkey zone was completed shortly after and produced until 1997; has since been abandoned New Moreno gas reservoir was discovered in the northwest corner of the Gas Field above the east side First Starkey reservoir Additional development well was drilled in the First Starkey reservoir and the gas zone was found filled with water
2000-2008	1	Drilled in 2005 into the eastside First and Second Starkey reservoirs; found both Starkey sands filled with water, but established minor production in the Nortonville

SOURCE: Entrix 2008

Current Production. DOGGR online records and information provided by the mineral rights leaseholder (Armstrong) indicate that currently there are four active wells in the Gill Ranch Gas Field. Three are producing relatively minor amounts from the Eocene Nortonville and Main sands, and one is idle in the Cretaceous Moreno sand. Seven wells are listed as idle wells. All are in the west side of the Gas Field awaiting abandonment or a re-completion effort. Three of these produced from the Moreno sand and four from the Main and Nortonville sands. There are no wells that are producing or idle in the First Starkey or Second Starkey reservoirs. All other Gas Field

wells, with the exception of two that have been converted to water injection, have been plugged and abandoned, and the surface has been reclaimed (Entrix 2008).

Armstrong is the current mineral lessee of subsurface rights under a lease with Gill Ranch Trust and the lease operator with respect to the Gill Ranch Gas Field.

3.11.2 REGULATORY SETTING

State

California Division of Oil, Gas, and Geothermal Resources

The DOGGR regulates drilling, production, injection, and gas storage operations in accordance with California Code of Regulations Title 14, Division 2, Chapter 4, Subchapter 1: Onshore Well Requirements, Section, Article 3, s 1724.7: Project Data Requirements. Approval must be obtained from the DOGGR before any subsurface injection or disposal can begin. The operator must provide data that are pertinent and necessary for the proper evaluation of the proposed project. The data required include and are not limited to:

- An engineering study that includes the reservoir characteristics for each injection zone; reservoir fluid data; well casing diagrams; and a well, drilling, plugging, and abandonment plan;
- A geologic study that includes a structural contour map; a map of each injection zone; a geologic cross-section; characteristics of the cap rock; gas reserves of the storage zones before the start of injection; and a representative electric log identifying all geologic units, formations, freshwater aquifers, and oil or gas zones; and
- An injection plan that includes a map of the facilities; maximum surface injection pressure; daily rate of injection per well; monitoring system or method to be used to ensure that no damage is occurring and that injection fluid is confined to the intended zone or zones of injection; method of injection; proposed cathodic protection measures for plant, line, and wells; proposed surface and subsurface safety devices, tests, and precautions taken to ensure safety of the project; treatment of water injected; and source and analysis of injection fluid.

Reservoir characteristics that must be defined include:

- Porosity
- Permeability
- Average thickness
- Areal extent
- Fracture gradient
- Original and present temperature and pressure, and
- Original and residual oil, gas, and water saturations

Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act (SMARA) of 1975 serves to ensure the proper reclamation of surface mining operations and to safeguard access to mineral resources of regional and statewide significance in the face of competing land uses and urban expansion. Under the authority of SMARA, the Department of Conservation is responsible for the classification and conservation of the state's mineral resources.

Local

Madera County General Plan

The Madera County General Plan includes policies related to minerals. These policies include, but are not limited to, the following:

> **5.I.1.** The County shall require new mining operations to be designed to provide a buffer between existing or likely adjacent uses, minimize incompatibility with nearby uses, and adequately mitigate their environmental and aesthetic impacts. The buffer area shall be zoned Agricultural, Rural, Exclusive-20 Acre or -40 Acre.
>
> **5.I.2.** The County shall discourage the development of incompatible land uses in areas that have been identified as having potentially significant mineral resources, except where the California Department of Mines and Geology agrees that economic or environmental considerations make mineral extraction infeasible.
>
> **5.I.3.** The County shall discourage the development of any uses that would be incompatible with adjacent mining operations or would restrict future extraction of significant mineral resources.
>
> **5.I.6.** The County shall require that all mining operations prepare and implement mining plans and reclamation plans that mitigate environmental impacts and incorporate adequate security to guarantee proposed reclamation.

Madera County Code

The Mineral Resource Protection section (19.01.170) of the Madera County Code states that mine development is encouraged in compatible areas before encroachment of conflicting uses. Mineral resource areas that have been classified by the DOGGR or designated by the State Mining and Geology Board, as well as existing surface mining operations that remain in compliance with the provisions of this chapter, are protected from intrusion by incompatible land uses that may impede or preclude mineral extraction or processing, to the extent possible for consistency with Madera County's general plan.

Madera County's general plan and resource maps are updated to reflect mineral information (classification and/or designation reports) within twelve months of receipt from the State Mining and Geology Board of such information, in accordance with Public Resources Code Section 2762. Land use decisions within Madera County are guided by information provided on the location of identified mineral resources of regional significance. Conservation and potential development of identified mineral resource areas will be considered and encouraged. Recordation on property titles of the presence of important mineral resources within the identified mineral resource areas may be encouraged as a condition of approval of any development project in the impacted area. Conditions of approval may be applied to encroaching development projects to minimize potential conflicts prior to approving a use that would otherwise be incompatible with mineral resource protection (Ordinance 614 Section 2, Part 2006).

Fresno County General Plan

The Fresno County General Plan includes policies related to minerals. These policies include, but are not limited to, the following:

> **OS-C.2.** The County shall not permit land uses incompatible with mineral resource recovery within areas designated as MRZ 2.
>
> **OS-C.10.** The County shall not permit land uses that threaten the future availability of mineral resources or preclude future extraction of those resources.

Fresno County Ordinance Code

Mineral Resource Zone 2 (17.08.345). Defines an MRZ 2 as an area where adequate information indicates that significant mineral deposits are now present, or where it is judged that a high likelihood for their presence exists (Ord. 88-007 Section 2).

3.11.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on mineral resources if the Project would:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Impact Discussion

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?

Construction

Gas Storage Field and Facilities. Construction of the Storage Field facilities would occur in an area currently used for agriculture and natural gas extraction. Existing well sites would be used to minimize the amount of ground disturbance associated with construction of Storage Field facilities. Construction of Storage Field facilities would be temporary. The construction of facilities would not result in the loss of known mineral resources; impacts would be less than significant. No mitigation would be required.

Gas Pipeline. Construction of the gas pipeline would occur adjacent to roadways, and in areas not presently used for mining. Construction would be temporary, and would affect only a narrow corridor. Mineral extraction would not be precluded in the surrounding areas by construction activities. Impacts would be less than significant due to the narrow corridor that would not be available for mining if it occurred in the future, and no mitigation would be required.

Electric Power Line. The new electric power line would be constructed within existing PG&E distribution line corridors, with the exception of an approximately 1-mi segment. The existing distribution lines are located in public road ROW where PG&E currently has a franchise authorizing it to operate. PG&E would construct the new 1-mi segment of the electric power line in public road ROW. Construction within these existing corridors would be temporary, and would not result in the loss of availability of a known mineral resource of value to the region or to the residents of the state. Impacts would be less than significant, and no mitigation would be required.

Operation and Maintenance

Gas Storage Field and Facilities.

Natural Gas*.* Operation and maintenance of the proposed Project would not result in the loss of availability of the gas resources that lie beneath the site. Recovery of gas resources that lie above the targeted reservoir are not expected to be impacted by the Project.

It appears, based on available historical exploration efforts, well data, and gas production data from DOGGR, that it is unlikely that formations below the Starkey Formation contain economically recoverable gas. Exploration and production could coincide with the Applicants' future storage

operations if the deeper zones of the gas reservoir show potential for economically recoverable gas. The withdrawal of natural gas would likely be unimpeded if the deeper formations were exploited for gas using proper well sealing techniques. It is technologically feasible to drill through the Starkey Formation in the event that a mineral owner and/or its oil and gas lessee desire to conduct additional tests or extract natural gas from the formations below the Starkey Formation.

Recovery of natural gas that may be remaining within the Starkey Formation would still be possible, although the Project's planned injection and withdrawal of storage gas into the formation could make it difficult to recover only the native natural gas and not the storage gas. This, however, is more of an economic issue rather than an issue of the physical loss of availability of any gas.

The Project would not substantially physically impact the production availability of the native natural gas beneath the site. Losses of natural gas after injection through leaking cap rock or leaking wells has been discussed in detail in the Hazards and Hazardous Materials Section (Section 3.8), and appropriate mitigation measures have been identified. With the implementation of Mitigation Measures Hazards-6 through Hazards-18, impacts associated with the potential for loss of availability of natural gas resources would be less than significant, and no additional mitigation would be required.

Mineral. The proposed central compressor station site and well pads would be located in the Storage Field, which is primarily located in an MRZ 3 area. MRZ 3 areas are areas where the mineral resource significance is undetermined. Mining could be minimally restricted but would not be precluded by the presence of well pads and the compressor station. Use of the surficial soils at the site for aggregate mining would not be precluded if this area were eventually to be used for mining. Deeper mining of bedrock could potentially be precluded if the mining involved removal of a confining geologic layer that would allow the natural gas to migrate upward. This impact is unlikely to occur, however, as there are no known mineral resources in the bedrock beneath the site. Any impacts associated with the potential for loss of a valuable known mineral resource would be less than significant, and no mitigation is required.

Gas Pipeline. A portion of the proposed pipeline would be located in an MRZ 2 area. The pipeline, however, would be located adjacent to roadways, and in areas not presently used for mining. The buried pipeline would not restrict access to mineral resources because it would affect only a narrow corridor, and mineral extraction would not be precluded in the surrounding areas. Impacts would be less than significant, and no mitigation would be required.

Electric Power Line. The new electric power line would be co-located with existing PG&E distribution lines with the exception of an approximately 1-mi segment. The existing distribution lines are located in public road ROW where PG&E currently has a franchise authorizing it to operate. PG&E would construct the new 1-mile segment of the electric power line in public road ROW. The addition of another electric power line to the existing distribution lines would not preclude the recovery of mineral resources. The new 1-mi segment would not preclude the recovery of mineral resources because the corridor would be very narrow, and mineral extraction could still occur in surrounding areas.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No locally important minerals are identified in the Project area in Fresno County's General Plan or Background Document (2000a, 2000b as cited in Entrix 2008) or in the Madera County General Plan (1995 as cited in Entrix 2008). No impact would occur, and no mitigation would be required.

3.12 Noise

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Cause exposure of 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?	☐	☒	☐	☐
b) Cause exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

3.12.1 ENVIRONMENTAL SETTING

Noise Definitions

Noise is defined as unwanted sound. Sound becomes “noise” when it interferes with sleep or conversation and when it causes physical harm. Human perception of noise is subjective and varies considerably. Background noise is the average noise level caused by all noise sources in an area. The background noise level gradually changes in response to the level of activity nearby. Intrusive noise is caused by isolated events that clearly stand out from the background; these events are responsible for much of the annoyance caused by noise.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Decibels and other technical terms are defined in Table 3.12-1.

Most of the sounds that we hear in the environment do not consist of a single frequency, but a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency combine to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a filter that reflects the fact that human hearing is less sensitive at low frequencies and extremely high

Table 3.12-1: Definition of Acoustical Terms Used in this Report

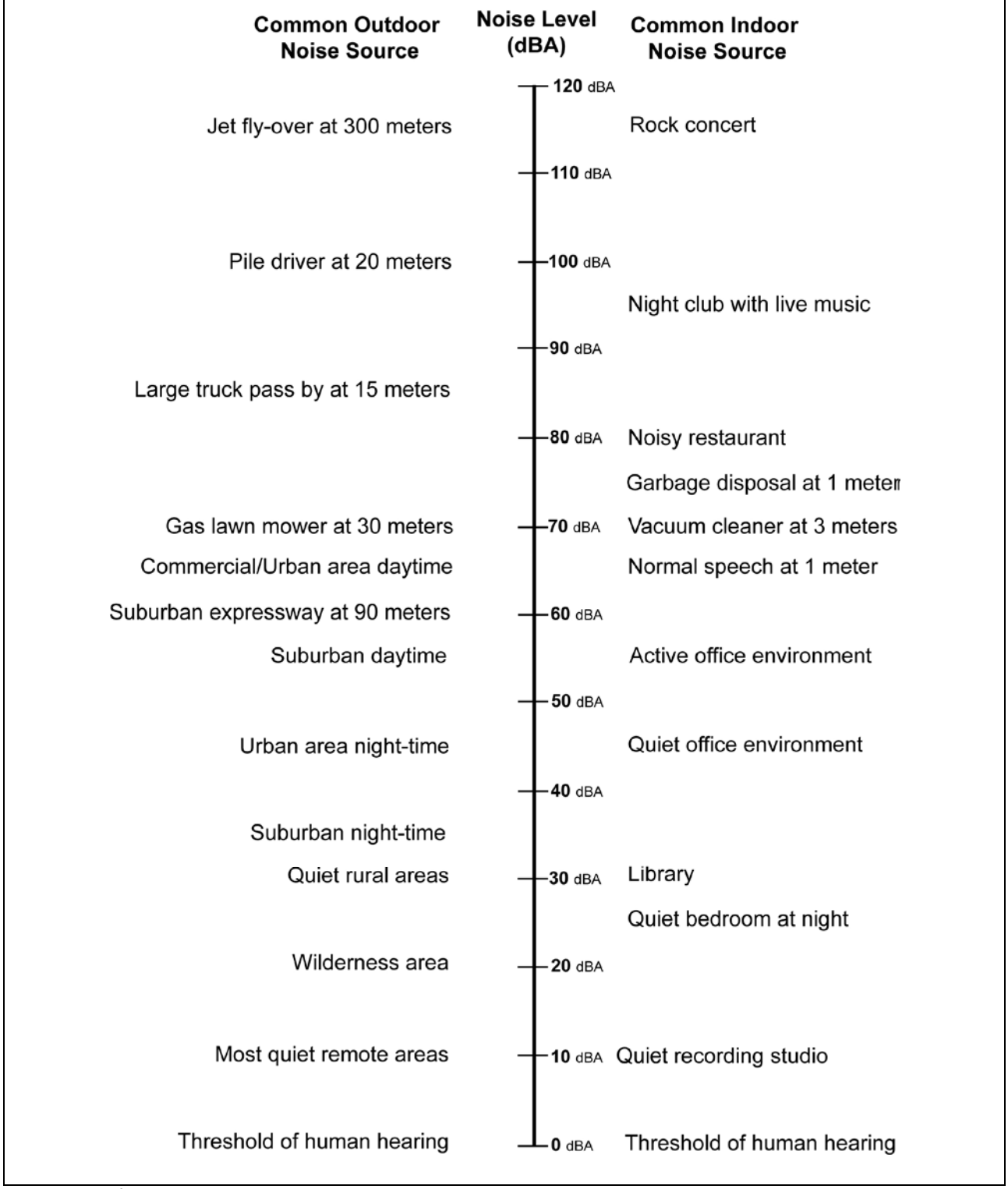
Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA $L_{eq[h]}$.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels in the night between 10:00 pm and 7:00 am.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

SOURCE: Caltrans 1998

frequencies than in mid-range frequencies. This is called "A" weighting; the decibel level measured is called the A-weighted sound level (dBA). The level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Typical A-weighted levels measured in the environment and in industry are shown in Figure 3.12-1 for different types of noise.

Community noise levels vary continuously although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time. Most environmental noise includes a conglomeration of noise from distant sources, which create a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, L_{01}, L_{10}, L_{50}, and L_{90}, are commonly used. They are the A-weighted noise levels equaled or exceeded during 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period. A single number descriptor called the L_{eq} is also widely used. The L_{eq} is the average A-weighted noise level during a stated period of time.

Figure 3.12-1: Typical Noise Levels in the Environment



SOURCE: Caltrans 1998

It is important to account for the difference in response of people to daytime and nighttime noises in determining the daily level of environmental noise. Exterior background noises are generally lower during the nighttime than during the daytime. Most household noise also decreases at night and exterior noise becomes very noticeable despite reduced noise level. Most people sleep at night and are very sensitive to noise intrusion. A descriptor, L_{dn} (day/night average sound level), was developed in order to account for human sensitivity to nighttime noise levels. The L_{dn} divides the 24-hour day into the daytime of 7:00 AM to 10:00 PM and the nighttime of 10:00 PM to 7:00 AM. The nighttime noise level is weighted 10 dB higher than the daytime noise level.

Noise attenuates (diminishes in loudness) as a function of the distance between the source and receptor. For sources of noise emanating from a single location (i.e., point sources), noise attenuates at a rate of approximately 6 dBA for each doubling of distance from the source. Roads typically have an attenuation rate of 4.5 dBA per doubling of distance; however, heavily traveled roads with few gaps in traffic are typically characterized as a line source with an attenuation rate of 3 dBA per doubling of distance. This is the “inverse square law.” This approach tends to underestimate attenuation and, therefore, provides a “worst-case” estimate of noise at the receptor.

Principles of Vibration

Vibrations caused by construction activities are energy transmitted in waves through the soil mass. These energy waves generally dissipate with distance from the vibration source (e.g. pile driving). Since energy is lost during the transfer of energy from one particle to another, vibration that is distant from the source is usually less perceptible than vibration closer to the source. Vibration attenuates as a function of the distance between the source and receptor, as discussed above for noise. For sources of vibration emanating from a single location (i.e., point sources), vibration attenuates at a rate of approximately 50 percent for each doubling of distance from the source. However, actual human and structure response to different vibration levels is influenced by a combination of factors, including soil type, distance between the source and receptor, duration, and the number of perceived events.

The energy transmitted through the ground as vibration can result in structural damage if great enough. The vibratory ground motion in the vicinity of the affected structure is measured in terms of peak particle velocity (PPV) in the vertical and horizontal directions (vector sum), typically in units of inches per second (in/sec) to assess the potential for structural damage associated with vibration. A freight train passing at 100 ft can cause vibrations of 0.1 in/sec PPV, while a strong earthquake can produce vibration in the range of 10 in/sec PPV.

Existing Noise Sources in Project Region

The Project is located in a sparsely inhabited agricultural area. The primary sources of noise are distant and local traffic, the Union Pacific Railroad (UPRR), and agricultural activities. Vehicular traffic on heavy traffic roads, such as SR 180, is a relatively constant source, while noise from trains using the UPRR corridors occurs only during pass-bys, at which time they generate approximately 70 dBA at 100 ft from the railway centerline (Fresno County 2000), and when trains are required to sound their whistles when crossing roadways at-grade.

Ambient noise levels were characterized by measurements made at four locations within and adjacent to the areas where Project components would be located. Measurements were taken at 15-minute increments at four locations, and for a continuous 24-hour period at one location (the cluster of residences on Road 16) in February 2008. Measurements were taken during calm wind conditions, with temperatures ranging from 60 to 75 °F. The meter was calibrated on February 8, 2008 (Entrix 2008). Table 3.12-2 shows the results of that study, and Figure 3.12-2 shows the monitoring locations.

Table 3.12-2: Existing Noise Levels at Key Locations

Location	Date and Time of Noise Measurement	L_{eq}	L_{max}	L_{min}	L_{dn}	CNEL
Proposed Compressor Station Site	February 12, 2008 7:48 a.m. to 8:05 a.m.	41.65	51.7	37.8	n/a	n/a
Residences on Road 16, 1 mile North of Proposed Compressor Station Site	February 13, 2008 12:33 p.m. to February 14, 2008 12:40 p.m.	53.22	80.4	23.4	57.46	57.89
SR 180, East of the Mendota Wildlife Management Area	February 12, 2008 9:11 a.m. to 9:30 a.m.	72.99	87.8	39.2	n/a	n/a
Residence located within southeast portion of Storage Field (south of San Joaquin River, in Fresno County) 2.25 miles east of compressor site, and 0.6 miles north-northeast of observation well site OM-14	February 12, 2008 4:14 p.m. to 4:30 p.m.	36.2	37.5	34.7	n/a	n/a

Notes:
L_{max} – maximum noise level
L_{min} – minimum noise level

SOURCE: Entrix 2008

Gas Storage Field and Facilties

The proposed central compressor station and candidate IW wells would be located in agricultural fields in western Madera County. Up to three OM wells would be located in the southeastern portion of the Storage Field south of the San Joaquin River, in Fresno County. The primary sources of ambient noise at these locations are farm equipment, vehicles, and natural sources, such as wind. Traffic noise from Avenue 7 and SR 180 is not discernable from within the boundary of the Storage Field. Noise measurements taken at the proposed compressor site showed hourly average ambient noise levels of 42 dBA L_{eq} (Entrix 2008). The continuous 24-hour noise measurement made adjacent to a residence on Road 16 (1 mi north of the compressor station site) showed ambient noise levels ranging from about 23 to 80 dBA, and an average of about 57 dBA L_{dn}. Traffic on Road 16 is the primary source of noise at this location.

Pipeline

The proposed pipeline route follows rural roadways through agricultural development in unincorporated Fresno and Madera counties. Existing noise primarily comes from traffic on SR 180 and SR 33, although some noise along the corridor comes from traffic on local roads and farm equipment. Trains are a source of noise in the vicinity of Fresno Slough, where the UPRR tracks cross SR 180. Noise measurements taken at SR 180 approximately 0.75 mi east of the Fresno Slough recorded average ambient noise levels of 73 dBA L_{eq}.

Sensitive Receptors

Some land uses are generally regarded as being more sensitive to noise than others due to the types of population groups or activities involved. Section 8.40.040 of the Noise Control Chapter of the Fresno County Ordinance Code (2007) considers single- or multiple-family residences, schools, hospitals, churches, and public libraries to be noise-sensitive receptors. Sections 9.58.010 and 9.58.020 of the Madera County Code (2007) consider residences, schools, courts, churches, hospitals, or public libraries to be noise-sensitive receptors.

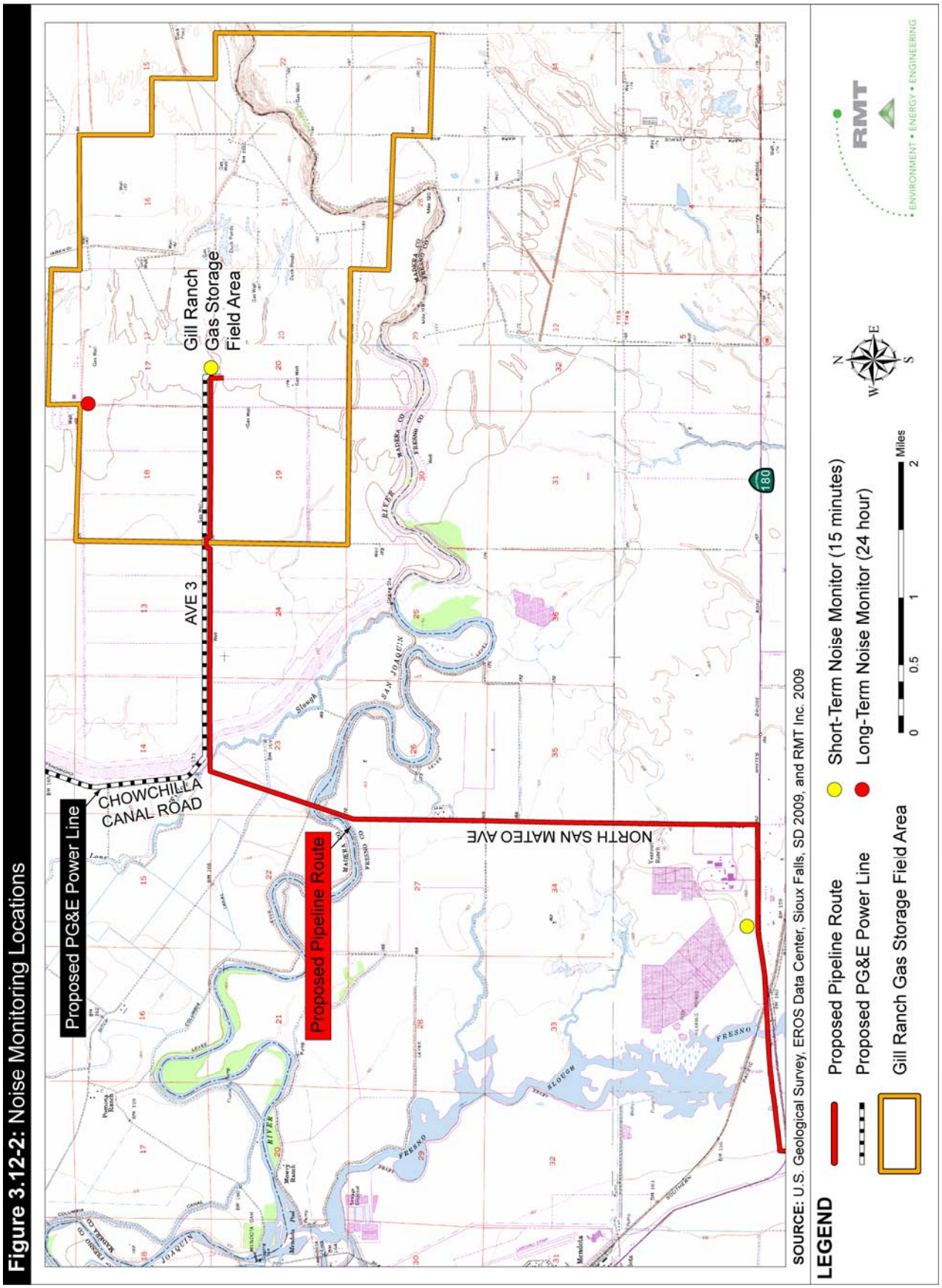


Figure 3.12-2: Noise Monitoring Locations

The identified sensitive receptors include residential sites within 1,000 ft of the proposed gas pipeline alignment, and the residences on Road 16 located approximately 1 mi from the proposed central compressor station site. The single occupied residence within the Storage Field Boundary is over 2 mi east of the compressor station. The greatest concentration of residences is located along SR 180 between Fresno Slough and San Mateo Avenue. This segment of the pipeline alignment is an area that already experiences high noise levels from vehicular traffic and occasional train traffic. Other isolated residences along the pipeline alignment are also located along existing roadways that experience regular traffic.

Pipeline construction would occur in the vicinity of the Mendota Wildlife Management Area and the Alkali Sink Ecological Reserve, both located in Fresno County. Based on Fresno County ordinances, these areas are not considered noise-sensitive receptors. The northern parts of the Wildlife Management Area and Ecological Reserve that are close to the proposed pipeline alignment currently experience significant noise from the adjacent highway. Therefore, these areas are not considered particularly noise-sensitive.

3.12.2 REGULATORY SETTING

Federal

There are no federal noise regulations that are relevant to the proposed Project.

State

The State does not issue statewide standards for environmental noise, but requires each local jurisdiction to include a noise element in its general plan (California Government Code § 65302(f)).

The State of California Department of Health Services Office of Noise Control has studied the correlation between noise levels and their effects on various land uses, and has established four categories for judging the severity of noise intrusion on specified land uses. Noise in the "normally acceptable" category generally requires no mitigation. Noise in the "conditionally acceptable" category may require some mitigation. The "normally unacceptable" category would require substantial mitigation, while the "clearly unacceptable" category can probably not be mitigated to acceptable noise levels.

Local

Fresno County General Plan

The Fresno County General Plan (2000) Noise Element contains Policy HS-G.7, which outlines what change in noise level would be considered significant. A 5-dB L_{dn} increase in noise levels will be considered significant where existing noise levels are fewer than 60 dB L_{dn} at outdoor activity areas of noise sensitive uses. A 3-dB L_{dn} increase in noise levels will be considered significant where existing noise levels are between 60 and 65 dB L_{dn} at outdoor activity areas of noise-sensitive uses. A 1.5-dB increase in nose levels is considered significant where existing noise levels are greater than 65 dB L_{dn} at outdoor activity areas of noise-sensitive uses.

Fresno County Ordinance Code

Section 8.40.040 of the Noise Control Chapter of the Fresno County Ordinance Code (2007) establishes noise level standards that are not to be exceeded at an affected single- or multiple-family residence, school, hospital, church, or public library, as shown in Table 3.12-3.

Section 8.40.060 exempts construction from these provisions provided such activities do not occur before 6:00 a.m. or after 9:00 p.m., Monday through Friday, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday.

Table 3.12-3: Fresno County Exterior Residential Noise Thresholds

Category	Cumulative Number of Minutes in Any One-Hour Time Period	Noise Level Standard, dBA Daytime 7 a.m. to 10 p.m.	Noise Level Standard, dBA Nighttime 10 p.m. to 7 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

SOURCE: Fresno County 2007

Madera County General Plan

The Madera County General Plan (1995) Noise Element includes Policy 7-A.2, which requires that noise created by new transportation noise sources be mitigated so as not to exceed 60 dB L_{dn} within the outdoor activity areas of existing or planned noise-sensitive land uses and 45 dB L_{dn} in interior spaces of existing or planned noise-sensitive land uses.

Policy 7-A.5 requires that noise created by new non-transportation noise sources be mitigated so as not to exceed the noise level standards set forth in Table 3.12-4 on lands designated for noise-sensitive uses.

Table 3.12-4: Madera County Maximum Allowable Noise Exposure for Non-Transportation

Period	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq} (dB)	50	45
Maximum Level (dB)	70	65

SOURCE: Madera County 1995

Madera County Code

Sections 9.58.010 and 9.58.020 of the Madera County Code (2007) state that an intent of Madera County is to protect persons from excessive levels of noise within or near a residence, school, courts, church, hospital, or public library through the following regulations:

- It is unlawful for any person to make, continue, or cause to be made or continued, any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in the area.
- It is unlawful for any person to cause, permit or allow any disturbing or raucous noises caused off streets or highways by accelerating the engine of any motor vehicle while moving or not moving, willful backfiring of any engine, or screeching of tires.
- The characteristics and conditions which should be considered in determining whether a violation of these provisions exists, include, but are not limited to, the following:
  - The level of noise
  - Whether the nature of the noise is usual or unusual
  - Whether the origin of the noise is natural or unnatural
  - The level of the background noise
  - The proximity of the noise to sleeping facilities
  - The nature and zoning of the area within which the noise emanates

  - The density of the inhabitation of the area within which the noise emanates
  - The time of the day or night the noise occurs
  - The duration of the noise
  - Whether the noise is recurrent, intermittent, or constant
  - Whether the noise is produced by agricultural, commercial or noncommercial activity.
- The use of horns, signaling devices, and like equipment associated with the use or operation of automobiles, motorcycles, or any other vehicle in such a manner as to disturb the peace, quiet and comfort of persons of normal sensitivity are declared to be disturbing, excessive, and offensive noises in violation of Section 9.58.020.

Vibration Standards

No single regulatory standard exists for evaluating the potential for structural or cosmetic damage or human disturbance and annoyance from vibration-generating activities. Most local agencies have not established specific criteria for evaluating vibration impacts. Cosmetic or threshold damage to residential buildings generally can occur at peak particle velocities over 0.5 in/sec. Continuous vibration caused by vibratory pile drivers, impact pile drivers, and large vibratory rollers/compactors can cause annoyance but do not cause structural damage if the continuous vibration is less than 0.2 in/sec PPV. Vibratory mechanical equipment may be operated over many minutes several times per day, and the associated response of structures can build up over several seconds due to resonance of the structure, especially during startup and shutdown of vibratory compactors.

3.12.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact from noise if the Project would:

a) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies

b) Expose persons to or generate excessive ground borne vibration or ground borne noise levels

c) Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

d) Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport expose people residing or working in the project area to excessive noise levels

f) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels

Impact Discussion

a) Expose of 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?

Construction

Gas Storage Field and Facilities - Staging Areas. The proposed staging areas near the Spreckels Sugar Plant would be located on the north side of SR 180, and adjacent to an industrial facility. The proposed staging area along Road 16 could be as close as 200 ft from the low-density cluster of residences, depending on the portion of the property that is used for staging. Construction related noise from these staging areas would occur during daytime hours with the exception at certain times for HDD operations as well as during well drilling, which would last 24 hours per day. Noise impacts from staging activities at these locations would be less than significant based on the distance from existing residences, the existing land uses and noise levels, the intervening roadway that serves as a partial barrier, and implementation of Mitigation Measure Noise-1.

Rail loading and staging activities could also occur at an existing railyard facility in Mendota. Potential noise impacts from this activity are considered less than significant because Project activities would be consistent with current and ongoing activities at this facility.

Mitigation Measure Noise-1: The contractor shall prepare and implement a Noise Control Plan during construction to avoid or reduce noise impacts on nearby residents. The plan shall be submitted to the CPUC for CPUC staff review and approval at least 45 days prior to construction. The following specific measures shall be incorporated into the construction contract specifications to reduce and control noise generated from construction-related activities; however, the Noise Control Plan is not limited to these measures:

a) Stationary construction equipment shall be located as far from sensitive receptors as feasible.

b) Equipment shall be turned off when not in use and not allowed to idle.

c) Temporary equipment enclosures or noise barriers shall be used where required to avoid exceeding local standards.

d) Haul truck trips shall occur primarily during daytime hours, however after daytime trips shall be permitted for those trips used in support of 24 hour operations (e.g., well drilling, HDD construction, etc.). Other noise-generating activities associated with construction (e.g., equipment movement for maintenance purposes, or to relocate equipment from one area of the project to another) shall be limited to the hours of 6 am to 9 pm during weekdays, and between the hours of 7am to 5 pm on weekends, with special allowance for safety considerations.

e) Best available noise control techniques (including mufflers, intake silencers, ducts, engine closures, and acoustically attenuating shields or shrouds) shall be required for all construction equipment and trucks. The construction contractor(s) shall retain an acoustical engineer to design sound abatement measures that will meet the local noise standards if needed.

f) If impact equipment (e.g., jack hammers and pavement breakers) is used during construction, hydraulically or electric-powered equipment shall be used wherever practical to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 decibels [dB]). External jackets on the tools themselves shall be used, where feasible, which can achieve a reduction of 5 dB.

Quieter procedures, such as drilling rather than impact equipment, shall be used whenever construction comes within 900 ft of sensitive receptors.

g) Stationary noise sources (e.g., pumps, generators, and compressors) shall be located as far from sensitive receptors as possible. If such equipment must be located within 900 ft of receptors, adequate muffling, enclosures and/or barriers shall be used as needed to ensure that local noise standards are met. Enclosure openings or venting shall face away from sensitive receptors. Enclosures shall be designed by a registered engineer regularly involved in noise control analysis and design. Operation of any stationary equipment beyond the time limits specified shall meet applicable noise ordinance noise limits.

h) Material stockpiles and maintenance/equipment staging shall be located as far as possible from residences within the designated staging areas.

i) Construction notification shall be sent to all residences within 900 ft of the construction location at least 7-days prior to the beginning of construction.

j) An operator contact person shall be designated for responding to construction-related issues, including noise. The name and phone number of the liaison shall be clearly posted at construction areas and on all advance notifications. This person shall take steps to resolve complaints, including periodic noise monitoring, if necessary.

k) An acoustical engineer shall measure actual sound levels at the short-term and long-term monitoring stations as shown in Figure 3.12-2 within 2 weeks of construction. Necessary sound abatement features shall be designed, if necessary, to ensure that long-term operations meet or exceed the local ordinance limits. Additional design features may include use of quieter equipment or further insulation of noise-generating equipment.

Well Drilling. Table 3.12-5 presents noise levels associated with typical construction equipment (with and without noise controls) that may be used for Project construction. The drill rig used for HDD would generate noise levels of about 47 dBA at 100 ft from the source; drilling would occur 24 hours per day during the active drilling phase (Entrix 2008). Drilling the OM and IW wells would generate noise levels between approximately 72 and 77 dBA L_{eq} at 100 ft from the source (Entrix 2008). The USEPA has estimated that noise levels from the construction of public works types of projects with all equipment present generate between 78 and 89 dBA depending on the construction phase (Entrix 2008).

Well pads OM-1 and OM-2 would be at least 2,000 ft from the nearest residences on Road 16. Noise would be reduced to about 45 dBA at this location, even during the noisiest construction activities, because of attenuation. This noise level does not exceed the Madera County nighttime noise standard of 45 dBA (hourly L_{eq}) or the maximum level of 65 dBA. The nearest IW wells (IW-1 and IW-2) would be located more than 1 mile from the nearest residence, and noise from drilling of these wells would be even further reduced by attenuation due to distance. Impacts would be less than significant

Up to three of the OM wells could be located in Fresno County. These well sites would be located over 2.75 mi from the nearest occupied residences, and the drilling noise would not be perceptible at this location. Impacts would not occur.

Compressor Station Site. Construction at the compressor station site in Madera County would use conventional construction equipment. Noise levels from this construction effort are conservatively anticipated to be comparable to the estimates noted above and listed in Table 3.12-5 (i.e., between 78 and 89 dBA depending on the construction phase).

Construction activities at the compressor site would be located over 1 mi from the nearest residences, which are located along Road 16. Construction noise would be reduced by approximately 45 dBA at this distance from the noise source, resulting in a maximum average

Table 3.12-5: Noise Levels and Abatement Potential of Construction Equipment at 25, 50, and 100 feet

Equipment	Noise Level at 25 Feet (dBA)		Noise Level at 50 Feet (dBA)		Noise Level at 100 Feet (dBA)	
	Without Controls	With Controls	Without Controls	With Controls	Without Controls	With Controls
Earthmoving						
Front Loaders	85	81	79	75	73	69
Backhoes	86	81	80	75	74	69
Dozers	86	81	80	75	74	69
Tractors	86	81	80	75	74	69
Graders	91	81	85	75	79	69
Trucks	97	81	91	75	85	69
Materials Handling						
Concrete Mixers	91	81	85	75	79	69
Concrete Pumps	88	81	82	75	76	69
Cranes	89	81	83	75	77	69
Derricks	94	81	88	75	82	69
Stationary						
Pumps	82	81	76	75	70	69
Generators	84	81	78	75	72	69
Compressors	87	81	81	75	75	69
Impact						
Jack Hammers	94	81	88	75	82	69
Pneumatic Tools	92	86	86	80	80	74
Other						
Saws	84	81	78	75	72	69
Vibrators	82	81	76	75	70	69

Notes: Estimated levels can be obtained by selecting quieter procedures or machines and implementing noise control features that do not require major redesign or high cost (e.g., improved mufflers, equipment redesign, or use of silencers, shields, shrouds, ducts, and engine enclosures).

SOURCE: Entrix 2008

noise level of about 44 dBA, which would be less than the existing average ambient noise level at this location. This noise level would not exceed the standards listed in Table 3.12-4. Any noise impacts from construction at the compressor station site would be less than significant, and no mitigation is required.

Gas Pipeline

Most of the pipeline would be located in Fresno County. Section 8.40.060 of the County Code exempts construction from noise thresholds shown in Table 3.11-5, provided such activities do not occur before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday. The pipeline would be constructed within these hours, other than the exceptions described below.

At some locations within Fresno County, including the California Aqueduct, Fresno Slough, and San Joaquin River, HDD may take place for 24 hours per day. No noise sensitive receptors are present at the California Aqueduct or San Joaquin River HDD locations, and thus no impacts would occur at these sites. Residences are located across Highway 180, approximately 100 ft from a proposed HDD exit point; however, most noise-generating equipment, including mud cleaning equipment, would be located at the entry point, which is about 1,300 ft away Equipment operating on the exit side would be used only after the pilot hole is drilled. Noise would be reduced by about 30 dBA at a distance of 1,300 ft from the source, considering the intervening structures and topography. The drill itself would generate noise levels of only about 47 dBA at 100 ft, and other equipment is anticipated to generate no more than 78 dBA because equipment such as jack hammers and pile drivers would not be required (Entrix 2008).

Construction noise would be somewhat attenuated by the land contours between the construction site and the residences (i.e., the raised elevation of the roadway that forms a barrier between the two locations). Nighttime construction at the HDD exit point would not generate noise in excess of the Fresno County exterior nighttime noise threshold of 50 dBA with the implementation of the measures included in the Noise Control Plan, required by Mitigation Measure Noise-1. Equipment would be appropriately muffled and enclosures or barriers would be utilized as needed. Impacts would be less than significant with implementation of mitigation.

The 2-mi pipeline segment within Madera County would be located even farther from the residences on Road 16 than the compressor station. Construction of this segment of the pipeline would not exceed the standards specified in Table 3.12-4. Any noise impacts from pipeline construction in Madera County would be less than significant, and no mitigation is required.

Electric Power Line

The power line interconnect to the Dairyland Mendota 115-kV power line would be approximately 300 feet away from the nearest occupied residences at the dairy farm near the interconnect. The next closest residence is over 2.5 miles away from the electric power line route. Mitigation Measure Noise-1 would require use of noise abatement equipment, and noise would be less than significant at this distance. Noise from construction activities would not be perceptible to the residences 2.5 miles away. No impacts related to exceedence of noise standards would occur to people at those residences.

Operation and Maintenance

Gas Storage Field and Facilities. Noise would be generated during operation of the IW wells. Predicted noise levels would be less than 35 dBA Leq at 620 ft from the source (Entrix 2008). Operation of the wells within the Madera County and Fresno County limits would not generate noise in excess of Madera County standards. No impacts would occur.

Noise from operations would be generated primarily at the central compressor station; the compressors would be the largest noise source. The equipment would run continuously for

variable periods of time. Equipment could operate about 10 days per month during some times of the year; at other times; equipment could operate for two or more months at a time.

Some of the equipment at the central compressor station but not listed in Table 3.12-6 would be enclosed with individual weather enclosures, reducing noise from each by about 10 dBA. A conservative estimate of maximum composite noise levels within the compressor station fenceline is 95 dBA at 15 ft from the compressors, based on the estimated noise levels for the individual equipment components, and the enclosure of certain components. Other noise sources within the central compressor station include truck loading and unloading operations, which could generate about 97 dBA at 25 ft, as indicated in Table 3.12-5.

Table 3.12-6 summarizes the noise generated by equipment located at the central compressor station.

Table 3.12-6: Cumulative Noise Levels from Selected Equipment at Central Compressor Station

Equipment	Noise Level	Distance from Source	Adjusted Noise Level
1 compressor	Up to 110 dBA	15 ft	N/A
5 compressors	Up to 117 dBA	15 ft	95 dBA[1]
Air coolers	Up to 90 dBA	3 ft	N/A
Pipeline valve	Up to 97 dBA	3 ft	N/A
Maximum Composite Noise Level within fenceline		**15 ft**	**95 dBA**

Notes:
[1] Enclosed in a single metal building with minimal noise insulation

SOURCE: Entrix 2008

The nearest sensitive receptor to the compressor station is a cluster of residences located on Road 16 over 1 mi north of the proposed facility location. Ambient noise at this residential location was measured at approximately 57 dBA L_{dn}. Compressor station noise levels would attenuate to approximately 44 to 45 dBA at this residential site. These noise levels are less than the average ambient level. Noise levels are not expected to exceed the Madera County daytime noise thresholds specified in Table 3.12-4; the impacts would be less than significant.

Mitigation Measure Noise-1 requires that an acoustical engineer measure actual sound levels at receptor sites and design sound abatement features, if necessary, to ensure that long-term operations meet or exceed the local ordinance limits. Additional design features could include use of quieter equipment or further insulation of noise-generating equipment. Operational noise impacts from the central compressor station would be less than significant with implementation of mitigation.

Gas Pipeline

Maintenance activities along the pipeline would cause only periodic and incidental noise, primarily from vehicle trips. Noise impacts from pipeline maintenance would be less than significant because of the remote location of the pipeline and the typically short duration of maintenance activities. No mitigation is required.

Electric Power Line

The proposed electric power line is over 2.5 mi from the nearest residence, and any noise associated with operation of the power line, such as corona noise, would not be perceptible at this distance. No impacts would occur.

b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

Construction

Gas Storage Field and Facilities and Electric Power Line. Construction activities that generate considerable vibration, such as pile driving and blasting, would not be required given the nature of the construction and soil types that are present. Project construction would cause some ground-borne vibration, primarily during landform modification activities. Trucks and other types of construction equipment would also generate some ground-borne vibration. Ground-borne vibration attenuates rapidly (approximately 50 percent for each doubling of distance from the source), and impacts would be less than significant.

Gas Pipeline. Most gas pipeline construction would occur in areas that are well removed from sensitive receptors and have the same impacts as discussed above for the Storage Field and facilities and the electric power line. Some residences and other structures are located near the pipeline corridor on SR 180, but the amount of vibration generated by construction equipment would be negligible. Project-related truck traffic would use designated truck routes, and the addition of a maximum of about 22 truck trips per day for a 2-month period would not generate excessive groundborne vibration. Any vibration impacts as a result of construction would be less than significant.

Operation and Maintenance

Operation and maintenance of the various facilities would cause low levels of ground-borne noise and vibration; however, these impacts would be minimal and would likely be imperceptible. Vibration would dissipate within 50 ft of the source. Maintenance of facilities would require a few periodic truck trips; however, this is already a chief source of vibration in the area. Vibration would be minimal. Impacts from operation and maintenance would be less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction

Construction would be temporary and permanent increases in ambient noise levels in the project vicinity would not occur because of project construction activities.

Operation and Maintenance

Storage Field and Facilities. Permanent noise increases would result from compressor station operations, periodic heavy truck trips to and from the compressor station and well pads, and periodic maintenance activities.

Designated truck routes would be used, and the periodic use of these roads would not affect ambient noise levels. Noise measurements taken along SR 180 showed the existing noise level to be approximately 73 dBA during morning hours. In moderately noisy environments such as occurs along the area's truck routes, it would take a doubling of traffic to increase average noise levels by 3 dBA in moderately noise environments such as that along area truck routes (L_{eq} averaging 70 dBA), and only a negligible increase would occur as a result of the Project, as discussed in Section 3.15: Transportation and Traffic. No perceptible changes in noise would result from periodic truck trips during operations.

Operational noise levels of the compressor station would be controlled through measures set forth in the Noise Control Plan (Mitigation Measure Noise-1) so that they are reduced to less than significant levels.

Electric Power Line. The proposed electric power line is over 2.5 mi from the nearest residence, and any noise associated with operation of the power line, such as corona noise, would not be perceptible at this distance. No impacts would occur.

Gas Pipeline. Maintenance activities along the pipeline would cause only periodic and incidental noise, primarily from vehicle trips. Noise impacts from pipeline maintenance would be less than significant because of the remote location of the pipeline and the typically short duration of maintenance activities. No mitigation is required.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction

Gas Storage Field and Facilities. There would be temporary and periodic increases in ambient noise levels in the project vicinity as a result of construction at the Storage Field; however, noise would attenuate to safe levels and/or levels below the existing ambient noise levels at the nearest sensitive receptors with implementation of the Noise Control Plan (Mitigation Measure Noise-1). No further mitigation would be required.

Gas Pipeline. Most of the pipeline would not be constructed in proximity to residences. Several residences are located on the south side of SR 180 in the area between Fresno Slough and San Mateo Avenue; and six other residences are located close to the pipeline alignment, generally near SR 33. All pipeline construction would occur during the daytime, except for occasional nighttime construction during HDD, and construction would occur along a linear corridor so that construction would not be located in one place for an extended period of time. Pipeline construction noise would be temporary in any one location.

The Noise Control Plan (Mitigation Measure Noise-1) would contain measures that would ensure that construction complies with all applicable standards. The ambient noise levels along SR 180 are already high (approximately 73 dBA). Any potential noise impacts from the construction of the pipeline would be less than significant with implementation of mitigation, and considering the relatively high ambient noise levels along existing roadways.

Electric Power Line. Increases in ambient noise level from construction would be temporary, but would not be considered substantial because it would be located more than 2.5 mi from the nearest residence. Impacts would be further reduced and would be less than significant with the implementation of Mitigation Measure Noise-1.

Operation and Maintenance

Temporary and periodic noise generated during operation of Project would only occur from maintenance, primarily from vehicle trips, and would not cause substantial periodic increases in noise levels. Impacts would be less than significant.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The proposed central compressor station would be located within 7.5 mi of the Mendota Airport, a general aviation airport on the eastern side of Mendota. The proposed gas pipeline would be located within 1.7 mi of this airport. No other Project components would be located within 2 mi of the Mendota Airport. People potentially exposed to noise from the airport would be construction workers in the temporary construction area. Noise from periodic aircraft operations would be largely masked by the noise of construction equipment. No impacts would occur.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Several private agricultural airstrips are located in the general vicinity of the Project, including 1 located along Road 16, approximately 1 mi north of the proposed central compressor station site. This airstrip is infrequently used and would not expose construction workers or employees to excessive noise levels. No impacts would occur.

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3.13 Population and Housing

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
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)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.13.1 ENVIRONMENTAL SETTING

Regional Setting

The following sections describe salient characteristics of the local counties' population, labor force, and housing stock.

Population

Fresno County had a population of approximately 897,835 in 2006 (DOF 2008a). The county is projected to grow by over 25 percent between 2006 and 2020 (DOF 2008b). Madera County had a population of approximately 144,257 in 2006 (U.S. Census Bureau 2006a) and is projected to grow by nearly 33 percent between 2006 and 2020 (DOF 2008b). Table 3.13-1 shows growth trends and projections for Fresno and Madera Counties.

Work Force

Fresno County's total work force is approximately 373,500 (Council of Fresno County Governments, undated). There were approximately 23,000 construction jobs in the county as of 2006 (EDD 2007a). Fresno County's unemployment rate (8.0 percent in 2006) has been consistently higher than the rate for California (4.9 percent in 2006), but has dropped steadily from 11.7 percent in 2003 (EDD 2007a).

Table 3.13-1: Population Growth Trends in Fresno and Madera Counites

	Fresno County			Madera County		
	2000	**2006**	**2020**	**2000**	**2006**	**2020**
Total Population	799,407	897,835	1,201,792	123,109	144,257	212,874
Change from 2000 Population	-	+98,428	+402,385	-	+21,148	+89,765
Percent Change from 2000	-	12.3%	50%	-	17%	73%

SOURCE: DOF 2008A; DOF 2008B

Madera County's total work force is approximately 45,400 (EDD 2007b). There were approximately 2,900 jobs in the category "natural resources, mining, and construction" as of 2006 (EDD 2007b). Madera County's unemployment rate of 7.0 percent in 2006 has been consistently higher than the rate for California (4.9 percent in 2006), but has dropped steadily from 10.6 percent in 2002 (EDD 2007b).

Housing

The total number of housing units in Fresno County was 299,578 in 2006. About 55 percent of the occupied housing units in the County are owner-occupied while 45 percent of the occupied units are renter-occupied. The total vacancy rate for all Fresno County housing units was 7.5 percent in 2006 (USCB 2006b).

The total number of housing units in Madera County was 47,671 in 2006. About 61 percent of the occupied housing units in the County are owner-occupied while 39 percent of the occupied units are renter-occupied. The total vacancy rate for all Madera County housing units was 11.6 percent in 2006 (USCB 2006a).

Local Setting

Nearby cities include the City of Kerman, the City of Firebaugh, and the City of Mendota. These cities have a total population of 29,709 and total housing stock of 7,772 units. Between 40 percent and 55 percent of residents of these three cities are renters. Approximately 11,400 people are employed who reside in these cities. These communities provide housing opportunities in the Project Area, and they are located in close proximity to roadways that provide direct access to the Project work sites.

Population

The City of Kerman had an estimated population of 13,591 in 2007, which represents a growth of approximately 59 percent since 2000 (City of Kerman 2008; LAFCO 2007 as cited in Entrix 2008). The city's population is expected to exceed 14,000 in January 2009 (City of Kerman 2008 as cited in Entrix 2008). The City of Kerman is expected to grow another 142 percent by 2030 to a population of 32,900, assuming the city maintains the same percentage of annual average population growth as experienced between 1997 and 2007 (LAFCO 2007 as cited in Entrix 2008).

The City of Firebaugh had an estimated population of 6,692 in 2007, which represents a growth of approximately 17 percent since 2000 (City of Firebaugh 2008; LAFCO 2007 as cited in Entrix 2008). The City of Firebaugh is expected to grow by 52 percent by 2030 to a population of 10,161, assuming the city maintains the same percentage of annual average population growth as experienced between 1997 and 2007 (LAFCO 2007 as cited in Entrix 2008).

The City of Mendota had an estimated population of 9,426 in 2007, which represents a growth of approximately 19 percent growth since 2000 (City of Mendota 2008; LAFCO 2007 as cited in Entrix 2008). The City of Mendota is expected to grow by 68 percent to 15,850 by 2030, assuming the city maintains the same annual average growth rate as experienced between 1997 and 2007 (LAFCO 2007 as cited in Entrix 2008).

Work Force

The City of Kerman's total work force was approximately 4,300 in 2007. The City's unemployment rate in 2007 was 12.3 percent, which is lower than the 15.05 percent unemployment rate reported at the time of the 2000 Census (State of California 2008).

The City of Firebaugh's total work force was approximately 2,900 in 2007. The City's unemployment rate in 2007 was 17.3 percent, which is lower than the 20.63 percent unemployment rate reported at the time of the 2000 Census (State of California 2008).

The City of Mendota's total work force was approximately 4,200 in 2007. The City's unemployment rate in 2007 was 27.2 percent, which is lower than the 31.8 percent unemployment rate reported at the time of the 2000 Census (State of California 2008).

Housing

The total number of housing units in the City of Kerman was 3,830 in 2007, Approximately 58 percent of the occupied housing units in the city are owner-occupied while 42 percent are renter-occupied. The total vacancy rate for Kerman housing units was 2.95 percent in 2007, indicating that approximately 110 housing units were available in 2007 (Fresno COG 2007; City of Kerman 2008 as cited in Entrix 2008). The 80-unit Pebble Brooke apartment complex has opened since this date.

The total number of housing units in the City of Firebaugh was 1,803 in 2007. Approximately 60 percent of the occupied housing units in the city are owner-occupied while 40 percent are renter-occupied. The total vacancy rate for Firebaugh housing units was 10.32 percent in 2007, indicating that approximately 185 housing units were available in 2007 (Fresno COG 2007 as cited in Entrix 2008). There are also designated mobile home areas in the City where temporary workers could locate mobile housing during construction (City of Firebaugh 2008 as cited in Entrix 2008).

The total number of housing units in the City of Mendota was 2,139 in 2007. Approximately 45 percent of the occupied housing units in the city are owner-occupied and 55 percent are renter-occupied. The total vacancy rate for Mendota housing units was 2.74 percent in 2007, indicating that approximately 58 housing units were available in 2007 (Fresno COG 2007 as cited in Entrix 2008). There are also designated mobile home areas in the City where temporary workers could locate mobile housing during construction (City of Mendota 2008 as cited in Entrix 2008).

3.13.2 REGULATORY SETTING

Federal

There are no federal laws or regulations related to population, employment, and housing that are applicable to the Project.

State

There are no state laws or regulations related to population, employment, and housing that are applicable to the Project.

Local

Madera County General Plan

The Madera County General Plan Housing Element contains the following policies related to housing that pertain to the project.

- **Policy 6.0:** The County shall endeavor to protect residential areas and neighborhoods from noise, incompatible land uses, traffic congestion, hazards, and objectionable elements.
- **Policy 6.8:** The County shall reject public or private projects that displace residents or eliminate neighborhoods unless they would contribute to the public's health, safety, and welfare.

Fresno County General Plan

The following policy from the Economic Development Element of the Fresno County General Plan (2000) pertaining to population and housing is applicable to the Project:

- **Policy ED-A.8:** The County shall encourage the location of new industry within cities, and unincorporated communities. The County, in cooperation with the cities will identify circumstances for locating industrial uses in other unincorporated areas consistent with the cities' economic development strategies and taking into account opportunities offered by variations in local environmental conditions.

3.13.3 ENVIRONMENTAL IMPACTS

It is assumed that potential impacts to population and housing would be similar across project components (Storage Field, and facilities, gas pipeline, etc.) due to the rural environment and sparse population of the project area. The following discussion describes potential impacts by phase and in general terms for the entire Project Area.

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)?

Construction

The Project would create temporary construction-related jobs over an approximately 12-month period. The workforce would vary from month to month, and the work would take place in different locations (e.g., a segment of the workforce would be located in the central compressor station area, and other work areas would be located along various segments of the pipeline and electric power line). The average daily workforce would peak at approximately 125 workers during the first 7 months. The average daily workforce would peak at approximately 350 workers during months 8 through 10. The workforce is expected to decline to fewer than 100 workers during months 11 through 12. These workforce estimates are summarized in Table 3.13-2.

It is anticipated that approximately 40 percent of the construction labor force would be drawn from the surrounding communities in both Madera and Fresno counties. The remainder would be comprised of workers with relevant technical expertise from outside the Project Area vicinity (e.g., from the Bakersfield/Kern County area or the Bay Area). It is anticipated that these workers would reside in the vicinity of the Project Area only temporarily during the 12-month construction period because the construction industry differs from most other industry sectors in several ways, such as the following:

- Construction employment has no regular place of business. Rather, construction workers commute to job sites that may change several times a year.
- Many construction workers are highly specialized (e.g., crane operators, steel workers, welders) and move from job site to job site, dictated by the demand for their skills.
- The work requirements of most construction projects are also highly specialized, and as a result, workers are employed on a job site only as long as their skills are needed to complete a particular phase of the construction process.

Table 3.13-2: Estimate of Temporary Workers

Months Present During Construction	Total Number of Workers	Non-local Workers	Local Workers
Months 1-7	125	75	50
Months 8-10	350	210	140
Months 11-12	<100	60	40

It is unlikely that a significant number of construction workers would permanently relocate their place of residence as a consequence of working on the Project. In other similar projects, many workers temporarily relocate to the local project area and reside either in hotels or in their own portable trailer homes (where designated trailer space is available), and then leave the area when the project is completed. Numerous hotels, trailer parks, and recreational vehicle parks with sufficient capacity are present in both Madera and Fresno Counties. The City Managers of the City of Kerman, Firebaugh, and Mendota have all confirmed their cities would be able to accommodate a portion of the temporary project construction workers, during periods of peak construction as well as non-peak construction (see Appendix A). The Project would not induce substantial population growth in Madera and/or Fresno Counties. Any impacts on population and housing associated with construction workers would be less than significant, and no mitigation would be required.

Operation and Maintenance

The operation and maintenance phase of the Project would create a total of approximately 10 permanent and part-time employment positions. Operations and maintenance personnel would be present at the Project during normal daytime workday hours. Typical staffing levels during normal operations are expected to be two or three operators, one mechanic, and one or two instrumentation/electrical personnel. These personnel would work on shifts, and would be supervised by an on-site Operations Manager. Part-time clerical, purchasing, and other administrative support also would be onsite during normal business hours. Infrequent, non-routine activities would require additional contractor personnel onsite for 2 to 4 weeks at a time.

It is likely that most of these new employees would be drawn from the surrounding communities. The addition of up to 10 workers and their families will not constitute a substantial increase in population growth. Any slight increase in the local workforce resulting from the Project would result in limited local economic benefits and help reduce local unemployment and vacancy rates, but these benefits would not be sufficient to trigger additional population growth. No new or expanded services or infrastructure would be necessary to accommodate the permanent positions required by the Project. Accordingly, Project-related permanent positions would not induce substantial population growth in Madera and/or Fresno Counties. Any impacts on population and housing associated with permanent workers would be less than significant, and no mitigation would be required.

The Project would contribute flexibility and operating efficiency to the natural gas supply system by storing gas for use during high demand periods. It would not provide new gas supplies, nor is it an infrastructure project that would provide natural gas to an area that was previously unable to receive natural gas, thereby allowing for more construction in the vicinity of the Project Area. It is possible that none or very few of the customers that would utilize gas stored in the Storage Field would be located in the vicinity of the Project Area. By contrast, as noted in the CEQA Guidelines, a major expansion of a wastewater treatment plant might allow for more construction in the plant's service areas. The Project would not have an indirect growth-inducing effect because it would not remove an obstacle to growth. Impacts would be less than significant and no mitigation would be required.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

Construction

The Project would be located in a rural area, and no existing housing would be displaced or substantially affected by construction of the proposed Project components. There would be no impact and no mitigation would be required.

Operation and Maintenance

Operation and maintenance of the proposed Project would not involve additional construction or ground-disturbing activity. There would be no impacts that would result in the displacement of residents of existing housing, and no mitigation would be required.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Construction

The Project would be located in a rural area, and no people would be displaced or substantially affected by construction of the proposed Project components. There would be no impact and no mitigation would be required.

Operation and Maintenance

Operation and maintenance of the proposed Project would not involve additional construction or ground-disturbing activity. There would be no impacts that would result in the displacement of people, and no mitigation would be required.

3.14 Public Services

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
a) Fire protection?	☐	☐	☒	☐
b) Police protection?	☐	☐	☒	☐
c) Schools, parks or other public facilities?	☐	☐	☒	☐

3.14.1 ENVIRONMENTAL SETTING

Regional Setting

Fire Protection

The proposed Project is located in both Madera and Fresno Counties. Fire protection services to the Project Area and vicinity are provided by both the Madera County Fire Department (MCFD) and Fresno County Fire Protection District (FCFPD).

The MCFD provides fire protection services and emergency medical aid to all unincorporated areas of Madera County. Madera County's General Plan policies encourage local fire protection agencies to maintain the following minimum standards for average first-alarm response times: 10 minutes in urban areas; 15 minutes in suburban areas; and 20 minutes in rural areas (Madera County 1995). The MCFD maintains 15 stations throughout the county and has 19 career fire suppression personnel, 185 paid call firefighters and 11 support personnel (Entrix 2008).

The FCFPD provides fire protection, rescue services and emergency medical aid to all unincorporated regions of Fresno County and several incorporated communities. Fresno County's General Plan policies encourage local fire protection agencies to maintain the following minimum standards for average first-alarm response times: 5 minutes in urban areas; 15 minutes in suburban areas; and 20 minutes in rural areas (Fresno County 2000). The FCFPD maintains 15 staffed stations and four volunteer stations throughout the county and has 89 career fire suppression and 250 volunteer personnel (Entrix 2008).

Police Protection

Police protection services would be provided to Project Area by the Madera County Sheriff's Department (MCSD) and the Fresno County Sheriff's Department (FCSD). The MCSD has a staff of 82 sworn personnel and 34 general employees (MCSD 2007 as cited in Entrix 2008). The MCSD responded to 36,000 calls for service and had an average response time for emergency calls of 4 minutes in 2006 (Ruppel pers. comm. 2007 as cited in Entrix 2008; M. Banuelos pers. comm. 2007 as cited in Entrix 2008).

The FCSD has a staff total of 1,205 personnel divided into four geographic areas. The FCSD supports several specialty team, such as air support, boating enforcement, forensic services, K-9, off-road safety team, search and rescue, and Special Weapons and Tactics. The proposed Project is located in Area 1 of the FCPD geographic regions, which comprises over 2,400 square mi of western Fresno County (FCSD 2008).

Schools

The vicinity of the Project Area is served by five school districts: Firebaugh Las Deltas Unified School District (USD), Kerman USD, Golden Plains USD, Mendota USD, and Madera USD.

The Firebaugh Las Deltas USD includes two elementary schools, one middle school, one high school, and two alternative or continuing education schools. The District enrolled 981 elementary, 493 middle school, 756 high school, and 19 alternative or continuation students in 2006 (Firebaugh Las Deltas USD 2007 as cited in Entrix 2008; DOE 2007 as cited in Entrix 2008).

The Kerman USD includes three elementary schools, one middle school, one high school, and three alternative education schools. The District enrolled 2,268 elementary, 673 middle school, 1,113 high school, and 15 alternative or continuation school students in 2006 (Kerman USD 2007 as cited in Entrix 2008; DOE 2007 as cited in Entrix 2008).

The Golden Plains USD includes four elementary schools, one high school, and one continuing education school. The District enrolled 1,371 elementary, 458 high school, and 32 alternative or continuation school students in 2006 (Golden Plains USD 2007 as cited in Entrix 2008; DOE 2007 as cited in Entrix 2008).

The Mendota USD includes two elementary schools, one middle school, two high schools, and one alternative education school. The District enrolled 1,431 elementary, 396 middle school, 1,506 high school, and 18 alternative or continuation school students in 2006 (Mendota USD 2007 as cited in Entrix 2008; DOE 2007 as cited in Entrix 2008).

The Madera USD includes 12 kindergarten through 6th grade elementary schools, 4 kindergarten through 8th grade country schools, 3 middle schools, 2 high schools, 3 alternative education centers, and 1 charter school. The District enrolled 9,259 kindergarten through 6th grade elementary, 1,694 kindergarten through 8th grade, 2,441 middle school, 4,463 high school, 573 alternative education, and 213 charter school students in 2006 (DOE 2007 as cited in Entrix 2008).

Parks and other Recreational Facilities

The Mendota Wildlife Management Area is located just south of the pipeline alignment, across Highway 180, between pipeline Mileposts 17.5 and 18.3 of the proposed pipeline alignment. Recreational activities at the 11,825-ac site include fishing, hunting, camping, boating, and wildlife viewing. The nearby Alkali Sink Ecological Reserve is used for wildlife viewing and scientific education and research. Construction would not occur in these two areas. Additional discussion of recreational facilities in the area is provided in Section 3.15: Recreation.

Other Public Facilities

The Madera County Library system maintains five libraries (Madera County Library 2008). The Fresno County Public library system, which is part of the San Joaquin Valley Library System, maintains 35 libraries and a community bookmobile (Fresno County Public Library 2008).

Madera County is the home to eight hospitals. Twenty–two hospitals are located in Fresno County.

Local Setting

Fire Protection

The nearest fire station in Madera County to the Project Area is Station 1, located at 14225 Road 28 in the City of Madera; however, estimated travel time from Station 1 to the Project Area is approximately 50 minutes (MCFD 2007 as cited in Entrix 2008). The closest fire station in Madera County is Station 1, located at 14225 Road 28 in Madera, approximately 16 mi from the central compressor station (MCFD 2007 as cited in Entrix 2008; Cline pers. comm. 2007 as cited in Entrix 2008).

The two closest stations in Fresno County are Station 95, located at 25101 W. Morton Road in the town of Tranquility, and Station 96, located at 101 McCabe Avenue in the City of Mendota. These stations are located within 7 mi of the proposed gas pipeline and central compressor station, respectively (FCFPD 2007 as cited in Entrix 2008; pers. comm., M. Bowman 2007 as cited in Entrix 2008). Predicted response time to the Project Area from either fire station is 8 to 12 minutes (FCFPD 2007 as cited in Entrix 2008).

Police Protection

The Area 1 station is located in the City of San Joaquin, approximately 13 mi south of the central compressor station. The Area 1 personnel compliment consists of 1 lieutenant, 8 sergeants, 1 office assistant, 4 community service officers, and 34 deputy sheriffs. Services provided by the Area 1 station include 24-hour patrol, detective services, and crime prevention. The Fresno County Sheriff is also the contract law enforcement for the City of Mendota. Its response time goal is to provide service for life-threatening or critical incidents within 3 minutes of notification (FCSD 2008).

The Madera County Sheriff stationed in the City of Madera would be the closest police protection to respond to any emergency at the storage site. MCSD Headquarters and closest station in to the Project Area is located at 14143 Road 28 in Madera, approximately 16 mi from the central compressor station (MCSD 2007; Ruppel pers. comm. 2007 as cited in Entrix 2008; Banuelos pers. comm. 2007 as cited in Entrix 2008).

Schools

The closest school district to the Project Area is Mendota USD. The closest grade schools which would serve children from Kindergarten to 8th grade is Washington Elementary School and McCabe Elementary School and McCabe Junior High School. These three schools are closely located in the heart of the City of Mendota and are located approximately 3 mi north of the pipeline route. Washington Elementary School serves approximately 702 students; McCabe Elementary School serves approximately 807 students; and, McCabe Junior High School serves approximately 420 students. The closest high school to the project area is Mendota High School, which is also located approximately 3 mi north of pipeline route. Mendota High School currently serves approximately 622 students (Mendota USD 2007 as cited in Entrix 2008).

The population of Mendota Unified School District exceeded its capacity in the 2004-2005 school year by 300 students. Enrollment during the 2004-2005 school year was 2,383 and the available capacity was 2,071 during this period. The District is considering either expanding the existing junior high school or constructing a new one in order to accommodate the additional students (Mendota Unified School District 2007).

Parks and other Recreational Facilities

The proposed Project is located in a remote agricultural area that does not contain developed parks. The city and county parks closest to the Project Area are the City of Mendota's Rojas Pierce Park and Fresno County's Mendota Pool Park; both located more than 6 mi from the compressor

station site. The Mendota Wildlife Management Area, managed by the CDFG, is located just south of the pipeline alignment.

Other Public Facilities

The closest libraries in Madera and Fresno Counties to the Project Area are the Madera Branch Library located at 121 North G Street in the City of Madera, and the Mendota Branch Library located at 1246 Belmont Avenue in the City of Mendota.

The closest hospitals in Madera and Fresno Counties to the Project Study Area are Madera Community Hospital (MCH) and Community Regional Medical Center. The MCH is located at 1270 E Almond Avenue in the City of Madera about 12 mi from the storage facility. MCH is a 106-bed accredited acute care institution offering a wide range of services. The MCH opened on October 1, 1971 and provides quality healthcare services to Madera and the surrounding communities. The MCH medical staff consists of 62 active staff, 5 provisional, 2 honorary (retired), 6 consulting and 15 courtesy staff. The hospital employs over 900 people in over 40 different departments (Madera Community Hospital 2008).

The Community Regional Medical Center located at 2823 Fresno Street in the City of Fresno provides public healthcare services. This facility operates the only combined burn and Level 1 trauma center between Sacramento and Los Angeles and the state's largest emergency department. The hospital has 511 licensed beds and serves an average of 332 inpatients a day (Community Regional Medical Center 2008).

3.14.2 REGULATORY SETTING

Federal

There are no federal laws or regulations related to public services that are applicable to the proposed Project.

State

There are no state laws or regulations related to public services that are applicable to the proposed Project.

Local

Fresno County

Policy PF-A.1 The County shall ensure through the development review process that public facilities and services will be developed, operational, and available to serve new development. The County shall not approve new development where existing facilities are inadequate unless the applicant can demonstrate that all necessary public facilities will be installed or adequately financed and maintained (through fees or other means).

Policy PF-G.2 The County shall strive to maintain a staffing ratio of two sworn officers serving unincorporated residents per 1,000 residents served. (This count of officers includes all ranks of deputy sheriff personnel and excludes all support positions and all sworn officers serving county wide population interests such as bailiffs, and sworn officers serving contract cities and grant specific populations).

Policy PF-H.2 Prior to the approval of development projects, the County shall determine the need for fire protection services. New development in unincorporated areas of the County shall not be approved unless adequate fire protection facilities are provided.

Policy PF-H.8 The County shall encourage local fire protection agencies in the county to maintain the following as minimum standards for average first alarm response times to emergency calls:

a) 5 minutes in urban areas;
b) 15 minutes in suburban areas; and
c) 20 minutes in rural areas.

Madera County

Policy 3.A.1 The County shall ensure through the development review process that adequate public facilities and services are available to serve new development. The County shall not approve new development where existing facilities will be installed or adequately financed and maintained (through fees or other means).

Policy 3.H.2 The County shall encourage local fire protection agencies in the county to maintain the following as minimum standards (expressed as average first alarm response times to emergency calls):

a) 10 minutes in urban areas;
b) 15 minutes in suburban areas; and
c) 20 minutes in rural areas.

Policy 3.H.4 The County shall require new development to development to develop or fund fire protection facilities that, at a minimum, maintain the above service level standards.

Policy 3.H.5 The County shall ensure that all proposed developments are reviewed for compliance with fire safety standards by responsible local fire agencies per the Uniform Fire Code and other state and local ordinances.

3.14.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G states that a development project could have a significant impact on public services if the Project would 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:

a) Fire protection
b) Police protection
c) Schools, parks, and other public facilities

Impact Discussion

The following impact discussion is organized by the type of public service potentially affected, rather than by the project component where impacts could potentially occur. It is assumed that potential impact to public services in the Project Area would be similar across project components; therefore, impacts are discussed in general terms for the entire project area.

a) Fire protection?

Construction

Construction activities would have little, if any, effect on the need for fire protection services. A total of 345 specialized workers would be hired during the 12-month construction period (a maximum of 210 non-local construction workers would be present at a time, for no more than three months). Most workers would not become permanent residents because most of the non-local workers would be in the area only for the duration of the construction. The temporary influx of the small number of non-local workers into the area is not expected to significantly affect emergency service response times or service ratios in the area because the need for fire protection services is not expected to increase significantly.

Demand for fire emergency response would be temporarily increased in the event of an emergency (see Section 3.8: Hazards and Hazardous Materials for discussion of fire risks). It is expected that few instances requiring assistance from emergency service provides would occur during the proposed construction, and any marginal impact would be within the capabilities of the local and regional emergency response providers. No new governmental facilities would be required to support the proposed development. Impacts would be less than significant and no mitigation would be required.

Operation and Maintenance

It is expected that existing fire and emergency responders would be adequate to respond to a small fire, explosion, or release of hazardous substances. Large or catastrophic events would require a concerted effort by multiple emergency response providers in the area. The low probability of such a catastrophic event, as discussed in Section 3.8: Hazards and Hazardous Materials, makes the potential impact less than significant and no mitigation would be required.

Up to 10 new permanent employees would be required during project operations. The addition of up to 10 workers and their families would not cause a significant additional demand for fire protection services, to the extent that all of these employees would have relocated from other locations. The Applicants would be required to pay development fees to Fresno and Madera Counties that would be used, in part, to support public services, such as fire protection and to offset any increased demands from that development. Any impacts associated with the need for new or physically altered governmental facilities would be less than significant, and no mitigation would be required.

b) Police protection?

Construction

Construction activities would have little, if any, effect on the need for police services. In the event of a criminal offense, demand for emergency response would be temporarily increased. Any marginal impact would be within the capabilities of the local and regional emergency response providers, and no new governmental facilities would be required to support the proposed development. Impacts would be less than significant and no mitigation would be required.

Operation

It is expected that existing police protection capacities would be adequate to respond to emergency calls needing police response. Larger situations may require a concerted effort by multiple emergency response providers in the area. The low probability of such an event makes the potential impact less than significant.

Up to 10 new permanent employees would be required during project operations. The addition of up to 10 workers and their families would not cause a significant additional demand for police protection services, to the extent that all of these employees would have relocated from other

locations. The applicant would be required to pay development fees to Fresno and Madera Counties that would be used, in part, to support public services, such as police protection and offset any increased demands from that development. Any impacts associated with the need for new or physically altered governmental facilities would be less than significant, and no mitigation would be required.

c) Schools, parks, other public facilities?

Construction

An estimated 345 specialized workers would be hired during the 12-month construction period. It is expected that most non-local workers would not become permanent residents after the construction phase is completed. It is expected that non-local laborers would not be likely to bring school age children with them because workers would be at a work site for a significant amount of time. Temporary workers may cause minor short-term increases in the use of local parks, libraries, or other public facilities; however, the number of non local workers for this project and its duration would not warrant the construction of new facilities. Non-emergency injured or ill workers may visit local health care facilities and clinics, but would not cause capacity impacts that would require new or physically altered health care facilities. Impacts to schools, parks, and other public facilities during construction would be less than significant. No mitigation would be required.

Operation and Maintenance

The Project would create up to 10 permanent and part-time employment positions. It is likely that most of these new employees will be drawn from the surrounding communities. The addition of up to ten workers and their families will not constitute a substantial impact to school capacity, to the extent that all of these employees would have relocated from other locations. The potential impact on schools in the project area is considered to be less than significant because of the small number of permanent employees who could potentially have children attending schools in this area. The potential of a small increased use to libraries, parks, and local health care facilities and clinics would not require construction of additional facilities. Impacts to schools, parks, and other public facilities would be less than significant, and no mitigation would be required.

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3.15 Recreation

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would/Does the 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?	☐	☐	☒	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒
c) Result in permanent and/or temporary impacts, such as possible disruption of recreational activities, affecting the recreational value of existing facilities?	☐	☒	☐	☐

3.15.1 ENVIRONMENTAL SETTING

Regional Setting

Fresno County

Fresno County offers numerous recreation activities and facilities, such as backpacking and hiking, bike trails, bird watching, horseback riding, mountain and rock climbing, off-highway vehicle (OHV) routes, and golf courses. Numerous campgrounds and RV parks are located throughout Fresno County, as well as lakes and rivers for fishing, and hunting areas. Fresno County also provides winter recreation activities including skiing, snowboarding, ice skating, cross-country skiing, snowshoeing, snowmobiling, sledding, dog sledding, snow camping, and snow play areas. Fresno County has event venues, such as fairgrounds, an indoor event center, an arena, livestock center, and a convention center. Organizations within the county host numerous regular events, such as parades, street fairs, rodeos, car shows, and seasonal food, wine, music festivals. The Fresno Zoo, located in Roeding Park, draws a regional crowd from the county. Fresno County also has several wilderness and ecological reserves, which provide habitat and refuge for many types of species. Kings Canyon National Park is located in the southeastern portion of Fresno County. The John Muir Wilderness is located in the northeastern portion of Fresno County (Fresno County 2008).

Madera County

Madera County provides numerous recreation activities and facilities including golf courses, rodeo grounds, and an auto race track. Madera County contains several lakes and parks for fishing, hiking, camping, backpacking and bird watching. These areas include Bass Lake, Mammoth Pool, Millerton Lake, Eastman Lake, Hensley Lake, Berenda Reservoir, and several smaller lakes. The mountain areas contain numerous public and private camping facilities; Jackass Rock Camp offers permanent facilities for large groups. Devil's Postpile National Monument, Sierra National Forest, Minarets Wild Area, John Muir Wilderness, and Nelder Grove of Giant Redwoods are also located in Madera County. Yosemite National Park is partially located in Madera County, and draws national and international visitors (Hall pers. comm. 2008).

Local Setting

The Project Area is located in a rural agricultural area that does not contain developed parks, centers, or recreation facilities. No current regularly scheduled events or recreation activities occur in the Project Area. The city and county recreation facilities closest to the Project area are the City of Mendota's Rojas Pierce Park and Fresno County's Mendota Pool Park; both located more than 6 mi from the central compressor station site.

The Mendota Wildlife Management Area is located just south of the pipeline alignment, across Highway 180, between pipeline MP 17.5 and 18.3 (Figure 3.5-1). The Mendota Wildlife Management Area is managed by the CDFG. This 11,802-ac managed area provides wildlife viewing opportunities and hunting as a part of its primary function of waterfowl and habitat management. Hunting opportunities include waterfowl, duck, and pheasant hunting. The waterfowl hunting season begins in mid October and extends until the end of January. Duck and pheasant hunting season begins in mid November and ends in mid December. The Mendota Wildlife Area has a capacity of 600 hunters per day; however, capacity is generally only reached during the opening weekend of waterfowl hunting season. The typical use ranges between 150 and 400 hunters per day (Smith pers. comm. 2008). Recreational activities in the wildlife area also include fishing, camping, swimming, and boating (Huddleston 2001). Fishing is allowed year-round (Smith pers. comm. 2008).

The nearby Alkali Sink Ecological Reserve is used for wildlife viewing and scientific education and research. The Alkali Sink Ecological Reserve is located to the southeast of the pipeline alignment, across Highway 180, at pipeline MP 19.6. Construction would not occur in the Alkali Sink Ecological Reserve.

3.15.2 REGULATORY SETTING

Federal

There are no federal laws or regulations related to recreation that are applicable to the Project.

State

There are no state laws or regulations related to recreation that are applicable to the Project.

Local

Madera County

The Madera County General Plan includes policies related to recreation. These policies include, but are not limited to, the following:

> **4.A.7.** The County shall encourage federal, state and local agencies currently providing recreation facilities to maintain, at minimum, and improve, if possible, their current levels of service.

Fresno County

The Public Facilities (PF) and Open Space (OS) Elements of the Fresno County General Plan identify recreational areas and establish policies for outdoor recreation. Policies include, but are not limited to, the following:

> **PF-E.15.** The County should require that retention-recharge basins be suitably landscaped to complement adjacent areas and should, wherever possible, be made available to the community to augment open space and recreation needs.

OD-D.7. The County shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, nutrient storage, and wildlife habitats.

OS-H.5. The County shall encourage federal, state and local agencies currently providing recreation facilities to maintain, at a minimum, and improve, if possible, their current levels of service.

3.15.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on recreation if the Project would:

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.

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

c) Result in permanent and/or temporary impacts, such as possible disruption of recreational activities, affecting the recreational value of existing facilities

Impact Discussion

a) Potential for the project to 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

Construction

Minor, temporary increases in the use of local recreational facilities could occur during construction. Construction of the proposed Project would create temporary construction-related jobs over an estimated 12-month period. The workforce would vary from month to month. The average daily workforce would peak at approximately 125 workers during the first 7 months of construction. The average daily workforce would peak at approximately 350 workers during month 8 through month 10. The workforce is expected to decline to fewer than 100 workers during months 11 and 12.

It is anticipated that a total of approximately 40 percent of the temporary construction labor force would be drawn from surrounding communities in both Madera and Fresno counties. The remainder of the workforce would be comprised of workers from outside the Project Area vicinity (e.g., from the Bakersfield/Kern County area or the San Francisco Bay Area). It is anticipated that these workers would reside in the Project Area region only during the 12-month construction period (refer to Section 3.13: Population and Housing for additional details). It is estimated that a maximum of 210 construction workers from outside of the local area would be needed for 3 months or fewer. The short-term increase in construction workers would not increase the use of parks or other recreational facilities to the point where deterioration would occur due to the relatively low numbers involved, the brief duration of their stay, and the fact that worker residences would likely be distributed among multiple communities. Impacts would be less than significant, and no mitigation would be required.

Operation and Maintenance

The operation and maintenance of the proposed Project would not cause a significant, permanent increase in the use of parks or other recreational facilities that would result in substantial or

accelerated deterioration because the Project would require at most 10 new employees. The operation of the Project would not result in a long-term increase in population growth (refer to Section 3.13: Population and Housing for further discussion). Impacts associated with the use of recreational facilities during operation and maintenance of the proposed Project would be less than significant, and no mitigation would be required.

b) Potential for the project to include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

The proposed Project would not include recreational facilities or require the construction or expansion of recreational facilities. The proposed Project would not warrant the expansion of existing facilities or the construction of new facilities because the project would add only 10 permanent employees. Employees used during construction of the proposed Project are not expected to remain in the area once construction has completed. There would be no impact related to construction or expansion of new or existing recreational facilities.

c) Potential for the project to result in permanent and/or temporary impacts, such as possible disruption of recreational activities, affecting the recreational value of existing facilities?

Construction

Gas Storage Field and Facilities and Electric Power Line. The proposed Storage Field, related facilities, and electric power line would not be located in an area used for recreation. There would be no permanent or temporary impacts to recreational activities due to construction of the gas Storage Field and facilities.

Gas Pipeline. A portion of the proposed gas pipeline (MP 17.5 through 18.3) would be constructed just north of the northwestern corner of the Mendota Wildlife Management Area. Construction would take place as close as 100 ft from the 11,802-ac reserve. Noise produced during construction would potentially affect recreational activities occurring at the Mendota Wildlife Management Area, such as camping and hunting (during hunting season, October through January). Effects would also include visual impacts from the presence of construction equipment. Mitigation Measure Noise-1, Aesthetics-4, and Aesthetics-5 would reduce this potential impact to less than significant.

Operation and Maintenance

Gas Storage Field Facilities and Electric Power Line. The proposed gas Storage Field and facilities and electric power line would not be located in an area used for recreation. There would be no permanent or temporary impacts to recreational activities due to operation and maintenance of the gas Storage Field and facilities.

Gas Pipeline. A portion of the proposed gas pipeline would be located just north of the northwestern portion of the Mendota Wildlife Management Area. This portion of the pipeline would be completely underground. There is the potential for temporary impacts due to maintenance on this portion of the pipeline; however, maintenance would be infrequent, and would be short-term in nature. Impacts on recreational activities due to operation and maintenance of the propose gas pipeline would be less than significant, and no mitigation would be required.

3.16 Transportation and Traffic

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☒	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
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?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Result in inadequate parking capacity?	☐	☐	☐	☒
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

3.16.1 ENVIRONMENTAL SETTING

Introduction

This section addresses transportation and traffic issues related to the Project and consistency with transportation policies and regulations. The study area includes roadways along the proposed gas pipeline alignment, power line alignment and construction corridor, including access to the meter and tap facility and the central compressor station site. The likely haul routes that would be used to transport equipment during Project construction, and worker commuting routes, are also included in the study area. Local jurisdictions in the Project vicinity include the cities of Kerman, Mendota and Firebaugh, and the Counties of Fresno and Madera. Roadway and intersections are rated at varying levels of service (LOS). LOS is a measure of roadway operating conditions, ranging from LOS A, which represents the best range of operating conditions, to LOS F, which represents the worst. Basic definitions are presented in Table 3.16-1. LOS can be estimated based on volume-to-capacity (V/C) ratio or the intersection capacity utilization (ICU) (the ratio of the number of vehicles actually traveling on a roadway to the number of vehicles it was designed to convey), or based on the average delay experienced by vehicles on the roadway.

Table 3.16-1: Level of Service Definitions

LOS	Description	V/C or ICU
LOS A	LOS "A" conditions are characterized by free flow operations. Vehicles are unimpeded in their ability to maneuver within the traffic stream, and stopped delay at intersections is minimal.	0-0.6
LOS B	LOS "B" conditions are characterized by travel speeds which are within 70% of free flow operational speeds. Vehicles are slightly restricted in their ability to maneuver within the traffic stream, and stopped delay at intersections is not bothersome to most drivers.	0.61-.7
LOS C	LOS "C" conditions are characterized as stable operations. The ability to maneuver and change lanes is somewhat restricted, and travel speeds may drop to 50% of free flow speeds. Some queuing typically occurs at signalized intersections, however all vehicles clear the intersection on all or nearly all cycles.	0.71-0.8
LOS D	LOS "D" conditions are characterized by high density traffic flows. Travel speeds may range as low as 40% of free flow operational speeds. Vehicles are restricted in their ability to maneuver within the traffic stream, and one or more vehicles may not clear the intersection within a single signal cycle on a regular basis.	0.81-0.9
LOS E	LOS "E" conditions are characterized as operations at or near capacity. There is little or no freedom to maneuver within traffic stream. Comfort and convenience levels are low, and driver frustration is generally high. Operations at this level are generally unstable, with even minor disturbances or disruptions resulting in the breakdown of operations and substantially increased delays. The failure of vehicles to clear an intersection in a single cycle is a regular occurrence.	0.91-1.00
LOS F	LOS "F" conditions represent forced breakdown flow. The traffic volume approaching location exceeds the capacity of the system at that location. Intersections often become the focal point for roadway system failure. Operations are characterized by extensive queues and long delays. Some or all vehicles fail to clear the intersection during every signal cycle.	>1.00

SOURCE: Highway Research Board 1965

Roadway Network

The proposed Project would be located in a rural area, surrounded primarily by agricultural development with some associated residential use and limited commercial and industrial use. Two state highways (SR 33 and SR 180), County Roads, and local farm roads would provide access to the gas pipeline alignment, electric power line alignment, tap and meter facilities, well pad sites and compressor station site. SR 99 (commonly referred to as Highway 99) to the east and I-5 several miles to the west also provide access to the Project Area from surrounding communities and larger cities. SR 145 (Madera Avenue) traverses north-south between the cities of Madera and Kerman, and connects SR 180 and Avenue 7, east of the proposed Storage Field.

West Panoche Road provides access to the western portion of the proposed gas pipeline alignment with direct connections to I-5 approximately 2 mi west of the alignment's western terminus at PG&E's Line 401. The proposed pipeline alignment would continue on the local, unpaved West Lincoln Avenue for over 7 mi until it reaches Derrick Avenue (SR 33). The proposed pipeline alignment would then continue north for 6 mi until it changes direction to the northeast along West Panoche Road. Panoche Road connects to the local circulation network of the adjoining cities of Mendota and Firebaugh to the north, Kerman to the east, and Fresno further east at this junction. Panoche Road transitions eastbound on West Whitesbridge Avenue (SR 180) towards SR 99 in Fresno.

The pipeline alignment continues north on San Mateo Avenue approximately 2.5 mi after West Panoche Road transitions into SR 180. The pipeline alignment turns left onto Avenue 3 and continues to the proposed compressor station after just over 3.5 miles. Avenue 3 is an unpaved

farm road in the central area of the Storage Field. IW wells and OM well sites would be interspersed among similar farm roads east and west of Road 16.

The proposed electric power line corridor would begin at a point on Avenue 7½ located approximately 5 mi east of the town of Firebaugh; follow Avenue 7½ to Avenue 7; turn south along the Chowchilla Canal Road; and then span the canal and continue east along Avenue 3 between the canal and the central compressor site.

Primary Access Roads

Primary access roads to the Project area include West Panoche Road, SR 33, SR 180, Avenue 7, I-5, and SR 99 (See Figure 3.16-1). Below is a description of each of these primary access roads, including average traffic volumes (Entrix 2008):

- **West Panoche Road** in Fresno County is a two-lane road between the Mendota Wildlife Area in the east and I-5 in the west. This road connects the local farm road and commuter traffic with the cities of Mendota and Firebaugh to the northeast, Kerman and Fresno to the east, and other communities to the south via SR 33. In the Project vicinity, average traffic volumes on West Panoche Road range from 23 to 440 vehicles per day.
- **SR 33** in Fresno County (South Derrick Boulevard and Dos Palos Road) is a two-lane route that starts at SR 152 to the north and ends at I-5 to the south. In the Project vicinity, average traffic volumes on SR 33 range from 100 to 4,856 vehicles per day.
- **SR 180** in Fresno County (West Whitesbridge Avenue) is a two-lane route that starts in the city of Mendota and continues east to the city of Fresno. In the Project vicinity, average traffic volumes on SR 180 range from 2,449 to 4,381 vehicles per day.
- **Avenue 7** in Madera County is a two-lane route that starts as Avenue 7 ½ in the City of Firebaugh in the west and continues as Avenue 7 to SR 99 in the east. In the Project vicinity, average traffic volumes on Avenue 7 range from 1,405 to 1,928 vehicles per day.
- **I-5** is a four-lane highway that carries inter-regional traffic through western Fresno County. In the Project vicinity, average traffic volumes on I-5 range from 33,000 to 36,500 vehicles per day.
- **SR 99** is a four-lane primary inter-regional commute corridor in and through Madera and Fresno counties and has major regional significance in the area. Within the Project Area, average traffic volumes on SR 99 range from 40,000 to 130,000 vehicles per day.

Existing traffic count information for the key roadways in the vicinity of the Project Area is summarized in Table 3.16-2.

Air Transportation Network

The closest airport to the Project Area is Mendota Airport, approximately 1.5 mi north of the intersection of SR 180 and SR 33. Mendota Airport is open to the public and began operating in the fall of 1957. The airport has two runways, and each are 3,499 ft long by 50 ft wide. The Mendota Airport is publicly-owned by the City of Mendota and averages 36 aircraft operations per day. Transient general aviation accounts for 60 percent of air traffic at this airport. The other 40 percent of air traffic consists of local aviation (AirNav.com 2008).

Airstrips, used primarily by private ranches and general aviation, are located further from the proposed Project as follows:

- **Du Bois Ranch:** Located 10 mi southeast of the SR 180/SR 33 intersection
- **San Joaquin Airport:** Located 13 mi southeast of the SR 180/SR 33 intersection
- **Firebaugh Airport:** Located 10 mi northeast of the SR 190/SR 33 intersection

Rail Transportation Network

The UPRR track runs between the cities of Firebaugh, Mendota, San Joaquin, Kerman, and Fresno. The portion of track near the Project Area is a section of the "I-5 Corridor". The I-5 Corridor offers north-south transportation service in Washington, Oregon, and California. Union Pacific trains transport various goods, including chemicals, fuel, manufactured goods, containerized freight, fruits, vegetables, and canned goods. A freight rail yard is located in Mendota near the San Joaquin River and the proposed Project Area (Union Pacific 2008).

Public Transportation

Bus lines within the Project Area vicinity include Amtrak, Westside Transit, and San Joaquin Transit. Amtrak and Westside Transit have routes on SR 180 between the cities of Fresno and Firebaugh. San Joaquin Transit has a network of routes that connect nearby cities, including Kerman, Mendota, San Joaquin and Tranquility, using SR 180, SR 33, SR 145 and local roads. Generally, these transit services generally serve the larger cities in the area, such as Fresno, and do not provide service to rural areas such as the proposed Project Area. There are no bus routes, bus stops or stations within the proposed Project Area (Entrix 2008).

Bicycle and Pedestrian Network

There are existing or planned bikeways in Fresno County along SR 180 and SR 33. There are recreation trails planned along the California Aqueduct and SR 33 between Firebaugh and Mendota (Entrix 2008). Avenue 7 is designated as a Class III bike route (signed route; with no lane markings) in Madera County (Entrix 2008).

3.16.2 REGULATORY SETTING

Federal

There are no federal laws or regulations that address potential transportation impacts that are relevant to the Project.

State

California Department of Transportation

The California Department of Transportation (Caltrans) has authority over the state highway system, including mainline facilities, interchanges, and arterial state routes. Caltrans approves the planning and design of improvements for all state-controlled facilities. Both Caltrans and local jurisdictions generally assess the impact of long-term, not short-term, traffic conditions. Plans and policies related to transportation seek to plan for and accommodate future growth and the vehicular, transit, pedestrian, and bicycle demand associated with that growth.

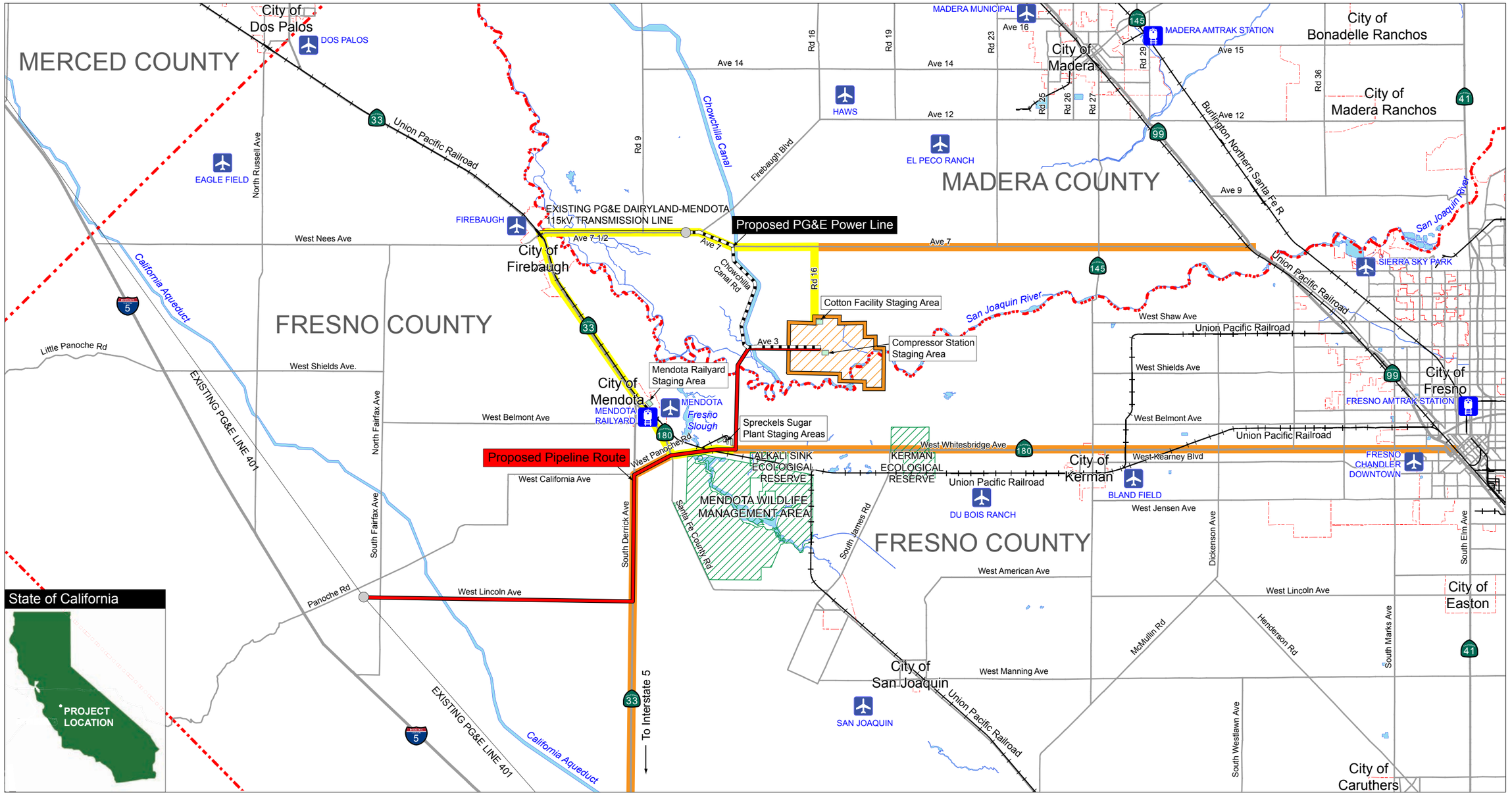
Local

Fresno County General Plan

The Fresno County General Plan (2000) Transportation and Circulation Element includes the following applicable policy related to the Project:

- **Policy TR-A.2:** The County shall plan and design its roadway system in a manner that strives to meet a minimum LOS D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the county.

Figure 3.16-1: Primary Access Roads to the Project Area



SOURCE: ESRI 2006 and RMT Inc. 2009

LEGEND

- Proposed Pipeline Route
- Proposed PG&E Power Line
- Gill Ranch Gas Storage Field Area
- Tie-In Point
- Heavy Haul Route From Mendota Railyard
- Other Heavy Haul Routes
- Interstate Highway
- State Route
- County Boundary
- Airport / Airstrip
- Train Station
- Water Body

0 1 2 3 4 5 10 Miles

N W E S

RMT ENVIRONMENT • ENERGY • ENGINEERING

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Table 3.16-2: Traffic Counts for Key Roadways in the Vicinity of the Project

Roadway	Location	Peak Hour Traffic (vehicles)	Average Daily Traffic (vehicles)
I-5	SR 33 North	5,200	33,000
SR 33	West California Avenue	250	2,400
SR 33	Firebaugh, 12th Street / Ness Avenue	1,400	13,400
SR 33	SR 180 East	620	6,000
SR 180	SR 33 North	700	8,400
SR 180	Belmont Avenue	570	6,500
SR 180	West Panoche Road	590	7,500
SR 180	James Avenue	590	6,300
SR 99	SR 180 South	6,600	55,000
SR 99	Shaw Avenue	5,700	63,000
SR 99	Avenue 7	5,900	65,000
Avenue 7 ½	Road 9	600	6,000
Avenue 7	Firebaugh Boulevard	300	3,000
Avenue 7	SR 99	380	3,800

Notes:
Peak Hour Traffic – the volume in both directions during the hour of the day with the highest volume
Average Daily Traffic - the total volume for the year divided by 365 days
Actual counts for Avenue 7 ½ and Avenue 7 not available; peak hour estimated at 10% of Average Daily Traffic (ADT) based on other locations in Project area.

SOURCE: Entrix 2008

Madera County General Plan

The Madera County General Plan (1995) Transportation and Circulation Element includes the following applicable policy related to the Project:

- **Policy 2.A.8**: The County shall develop and manage its roadway system to maintain a minimum Level of Service of D on all state and county roadways. For planning applications, Level of Service shall be measured for roadway segments and shall be based on the capacities shown in Table 3.16-3. The County may also require analysis of specific intersections when intersections are deemed critical for specific projects or locations.
- **Policy 2.A.9:** To identify the potential impacts of new development on traffic service levels, the County shall require the preparation of traffic impact analyses for developments determined to be large enough to have potentially significant traffic impacts.
- **Policy 2.A.13**: Through-traffic shall be accommodated in a manner that discourages the use of neighborhood roadways, particularly local streets. This through-traffic, including through truck traffic, shall be directed to appropriate routes in order to maintain public safety and local quality of life.

Table 3.16-3: Capacities (number of trips) per Hour per Lane for Various Roadway Facilities

LOS	Freeways	Two-Lane Rural Highways	Multi-Lane Rural Highways	Expressways	Arterials	Collectors
A	700	120	470	720	450	300
B	1,100	240	945	840	525	350
C	1,550	395	1,285	960	600	400
D	1,850	675	1,585	1,080	675	450
E	2,000	1,145	1,800	1,200	750	500

SOURCE: Madera County 1995

3.16.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on traffic and transportation if the Project would:

a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways

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

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)

e) Result in inadequate emergency access

f) Result in inadequate parking

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)

Impact Discussion

a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

Construction

Project construction would be scheduled to last 12 months. Construction activity during the peak months of construction (months eight and nine) would occur on most or all of the Project facilities, including the compressor station, gathering lines, well pads, meter site, pipeline, and electric power line. Construction-related traffic would consist of commuting construction workers and transfer and staging of equipment, piping and other construction materials as well as the movement of construction crews. Equipment staging and delivery trips would be spread over the course of the work day, and would be staged from designated staging areas as described in Section 2.3.7: Construction Staging. Workforce commuter trips would occur at the start and end of

construction each day and would arrive and depart from the staging areas. Construction crews would be bused in 10-passenger vans to their worksites.

Construction staging areas have been identified and these sites would be used for worker parking as well as staging of equipment. Figure 2.3-4 shows the location of these proposed equipment and material staging areas, and the traffic haul routes to and from these areas. The greatest concentration of construction traffic would be to and from these staging areas. Construction workers would park their personal vehicles at the designated staging areas and be bused to and from their designated work site each day, except in cases where a worker's vehicle is needed on the work site.

The number of construction workers and associated worker vehicle trips would vary over the 12-month construction period, and workers would access different areas of the work site at different periods of the work sequence, and at different times of day depending on the construction in progress at any given time. The worst-case number of daily worker vehicles was estimated based on a review of the preliminary Project construction work sequence and schedule, and the estimated number of workers during each month of construction. The worst-case scenario for Project commuter traffic during construction would be each worker driving a car to the construction staging area (e.g., all 360 workers during Month 9 each driving one car for a total of 360 cars, or 720 total worker trips to and from the staging areas per day).

The distribution and timing of these trips over Project area roadways is difficult to predict because workers would travel from different trip origins and use different roads to access the staging areas and would access these areas at different times. Some road segments would experience more traffic than others. It is anticipated that more workers would commute from the east, southeast, and northeast, as compared to worker trips originating in the west, southwest, and northwest due to the relatively higher population centers that are located to the east, such as in the City of Fresno. Conservative assumptions were used in order to estimate the Project's potential contribution to peak hour traffic conditions on Project Area vicinity roadways.

Workers accessing the Spreckels staging site or other pipeline work sites in Fresno County from the west, northwest or southwest would likely use a combination of SR 33, West Panoche Road, and SR 180 to San Mateo Avenue. Workers approaching Spreckels from the east, northeast, or southeast would likely use a different combination of roads including SR 99, SR 145, and SR 180 to San Mateo Avenue.

The daily construction worker trips would likely be distributed over a number of road segments and intersections during the peak months of construction, as shown in Table 3.16-4. Additional trips would be generated by shuttle vans and trucks and small vehicles during routine construction activities throughout the day.

The following assumptions were used in order to very conservatively estimate the Project's potential contribution to peak hour traffic conditions on roadways in the vicinity of the Project Area roadways:

- The peak month estimate of 360 workers would travel to the work locations, and all workers would drive their own vehicle to the staging area.
- Half of all workers would commute during peak hours (180 peak trips).
- Based on the general location of population centers, worker trips would be distributed such that up to 50 percent of commuter vehicles would travel over road segments that approach the work sites from the southwest, west, and northwest (i.e., 90 trips on each of these road segments); and up to 75 percent of commuter vehicles would travel over road segments that approach the work sites from the east, northeast and southeast (i.e.,

135 trips on each of these road segments). Some trips have been double-counted, making the analysis more conservative.

These assumptions are conservative because:

- Workers would normally arrive and depart before or after AM and PM peak hours, which is customary for construction projects of this nature
- Distribution of trips is double-counted on half of the trips coming from the eastern, more heavily populated areas
- It is assumed that all workers are driving alone whereas, most likely many would carpool, particularly those that commute from distant communities

It is reasonable to assume that most of the Project Area road segments would experience less than the estimated peak hour trips on any given day. The peak construction period is anticipated to last 2 to 3 months.

The construction traffic volumes would not result in a substantial increase in traffic in relation to the current traffic load and capacity of the street system. Traffic volumes would continue to be well under the roadway capacity with the addition of peak month construction traffic at intersections where the existing traffic volumes are low (e.g., SR 33 at W. California Avenue). The Project's traffic contribution could result in a short-term (2 to 3 month) increase in traffic volumes at intersections where traffic volumes are already high (e.g., SR 33 at Firebaugh, 12th Street/Ness Avenue). Traffic impacts by component are discussed below and are aggregated at the end of this section.

Storage Field and Facilities. Shuttle trips within the Storage Field to and from well sites, the central compressor station, and the pipeline corridor east of the Chowchilla Canal would be on agricultural roads and these trips would not impact arterial streets, or traffic patterns.

Compressor station construction and construction of the pipeline located in the Storage Field would be staged at the staging areas near the compressor station site, north of the San Joaquin River in Madera County. Access to these staging areas from the east is via the SR 99 / Avenue 7 interchange in Madera County, and Road 16. Access to this area from the east is via SR 33 in Fresno County to Avenue 7 ½ at Firebaugh, to Avenue 7, and then to Road 16.

Construction vehicle trips outside of the Storage Field, including shuttle vans or buses, would occur outside of peak morning and afternoon traffic hours and all construction-related traffic would follow measures outlined in the Traffic Control Plan, required by Mitigation Measure Traffic-1. Impacts would be less than significant with implementation of mitigation.

Mitigation Measure Traffic-1: A Traffic Control Plan shall be developed prior to Project construction. The plan shall be submitted to the CPUC for CPUC staff review and approval at least 30 days prior to construction. The Traffic Control Plan shall conform to the state's *Manual of Temporary Traffic Controls for Construction and Maintenance Work Areas*. Elements of the Traffic Control Plan shall include, but not necessarily be limited to, the following:

a) Circulation and detour plans shall be developed to minimize impacts on street circulation. Flaggers and/or signage shall be used to guide vehicles through or around the construction zone.

b) Sufficient staging areas for trucks accessing construction zones shall be provided to minimize disruption of access to adjacent land uses, particularly at entries to on-site pipeline construction near residences.

c) All access restrictions expected to occur during construction shall be identified. A plan for notifying the affected businesses, homes, emergency services, and other facilities and for ensuring adequate access at all times shall be developed and implemented.

d) Construction vehicle movements shall be controlled and monitored through the enforcement of standard construction specifications by on-site inspectors .

e) Along roads with volume/capacity (V/C) ratios corresponding with level of service (LOS) D or a poorer rating during peak traffic hours, worker vehicles and truck trips shall be scheduled outside the peak morning and evening commute hours to the extent feasible.

f) Lane closures during peak hours shall be avoided to the extent feasible. Outside of allowed working hours or when work is not in progress, roads shall be restored to normal operations, and any open trenches on roadways or access ways shall be plated.

g) Where possible, pipeline construction work in roadways shall be limited to a width that, at a minimum, maintains alternating one-way traffic flow past the construction zone. If the work zone width will not allow a 10-ft-wide paved travel lane, then the road shall be closed to through-traffic (except emergency vehicles), and detour signing on alternative access roads shall be used.

h) All equipment and materials shall be stored in designated contractor staging areas on or adjacent to the worksite in a manner that minimizes traffic obstructions and maximizes sign visibility.

i) Parking areas for construction workers shall be identified, either within the construction staging area and construction zone or, if necessary, at a nearby location, with mass transportation provided between the parking area and the worksite.

j) Roadside safety protocols shall be implemented pursuant to the Manual of Uniform Traffic Control Devices and in consultation with Fresno County and Madera County Public Works Departments. Advance “Road Work Ahead” warning signs and speed control (including signs informing drivers of state-legislated doubled fines for speed infractions in a construction zone) shall be provided to achieve required speed reductions for safe traffic flow through the work zone.

k) Roadway rights-of-way shall be repaired and restored to their original conditions or better upon completion of construction.

l) Project-related information signs at each construction spread shall contain a contact number for the public to call to report traffic problems at construction sites to applicable local jurisdictions and to a Project phone number that is staffed 24 hours per day, 7 days per week.

m) The first 100 ft of all gravel/dirt access ways created at the project site shall be stabilized so as to reduce wear on existing paved surfaces (e.g., with use of track-out devices). Track-out devices or other stabilizing surface materials shall be removed following construction completion, subject to landowner agreement.

Gas Pipeline. Pipeline construction in Fresno County would be staged at one of the two potential sites that have been identified at the Spreckels Sugar Plant property, located on San Mateo Avenue near SR 180. The first site is located at the corner of SR 180 and San Mateo Avenue. The second site is located behind the Spreckels facility, and adjacent to a rail spur. Access to both sites is via the existing main plant access road on San Mateo Avenue.

Approximately 75 percent of the workforce (270 workers) would commute in their own vehicles to the Spreckels staging area during the peak period. From there, shuttle vans would be used and each van would be able to carry approximately 10 workers from the staging area to the construction site. A maximum of 27 round-trip shuttle trips would occur per peak period on roadways between the Spreckels staging site and the pipeline work area during both the morning and evening hours, for a total of 54 daily shuttle trips per day during the peak months. Peak months of construction would be during Months 8 and 9 of the 12-month construction period. The number of trips would be less than this estimate during the remainder of the construction period (before and after these peak months). The addition of an estimated 54 shuttle trips during a 2-month period (and reduced number of shuttle trips during the remainder of construction) would not result in a substantial increase in traffic load and capacity on the street system.

The pipeline work location would change over time as the pipeline construction progresses. Shuttle trips between the Spreckels staging areas and the pipeline corridor work areas would primarily use rural roads. These are rural agricultural County roads that experience very low traffic volumes. The addition of 54 shuttle trips on a daily basis or even during the peak hour would not be substantial when compared to available capacity or existing traffic.

Pipe needed for pipeline construction would arrive by rail to one of two locations: the Mendota Railyard in Mendota, or the Spreckels Sugar Plant staging area via a rail spur adjacent to the plant. Pipe would be shipped in approximately 40-ft sections. An estimated 141,504 lengths of pipe would be needed for pipeline construction, assuming 26.8 miles of pipeline. A single truck can carry four (4) 40-ft pipe sections; therefore an estimated 884 truck trips would be needed to transport pipe from the rail off-loading point to the staging areas. Haul routes between the Mendota Railyard and the staging areas (both north and south of the San Joaquin River) are shown in Figure 3.16-1. The haul route between Mendota Railyard and the Storage Field staging areas would follow a designated truck route in Mendota north to SR 33, to Avenue 7½ at Firebaugh, east to Avenue 7, and then south on Road 16. The haul route between Mendota Railyard and the Spreckels staging areas would follow a designated truck route in Mendota south to SR 33, then continue east on SR 180 to San Mateo Avenue. Other haul routes are also shown on Figure 3.16-1. These include the same roadways noted above, but from origins other than the Mendota Railyard. It is important to note that the 884 truck trips would not occur simultaneously. Pipe deliveries would occur over several days and thus the traffic effects would be spread over the course of several days in order to efficiently utilize trucks and contain construction costs. Truck trips to and from the staging area to the pipeline locations would not be substantial compared to available capacity or existing traffic levels.

The pipes would again be transported to the various pipeline alignment locations as construction progresses after the pipeline is staged. The pipe segments would likely be transported from the staging areas to the alignment during an initial 40-day period of pipeline construction. An estimated 22 truck trips per day would be needed to transport the pipe segments to various locations along the pipeline alignment during this period. These truck trips are anticipated to occur in Months 9 and 10, and trucks would use the haul routes shown on Figure 3.16-1 (SR 180, SR 33, Avenue 7½-7, and Road 16). The 22 trips per day for transporting pipe segments would not be substantial compared to available capacity or existing traffic levels.

Electric Power Line. Up to three shuttle vans would need to travel along Avenues 7 and 7 ½ in order to reach the worksite from the staging areas within Storage Field for work along the electric power line corridor. Shuttle vans would not need to travel through the city of Firebaugh to reach designated points along the corridor.

Electric power line installation and related construction traffic is anticipated to occur between Months 6 and 10, and will be concurrent with peak periods of construction at the central compressor station and pipeline. An estimated 20 workers would access the power line work sites using the roadway networks described above for the Storage Field, except that workers would primarily use Chowchilla Canal Road instead of Road 16 to access this segment of the power line alignment. Access to power line construction along Avenue 3 in the vicinity of the central compressor station would likely be via Road 16. The number of worker vehicles and equipment deliveries related to power line construction would be substantially less than what is anticipated for the compressor station (i.e., an estimated 20 worker vehicles; various utility trucks and a limited requirement for heavy equipment such as a backhoe, cement trucks, and a dump truck). Power line construction would likely overlap with the peak month of compressor station activity (Month 8). The estimated vehicle trips noted above for worker vehicles are sufficiently conservative to account for these equipment deliveries. The volumes of traffic generated to deliver workers and

equipment to the electric power line would not be substantial compared to available capacity and existing volumes on the roads involved.

Operation and Maintenance

The Project would generate traffic primarily during construction, as discussed above. The amount of traffic generated during normal operations and maintenance would be negligible because there would be up to 10 workers and a limited number of deliveries. Impacts on local roadways during operations and maintenance would be less than significant.

All Phases of Construction Traffic

Construction activity in the Project Area would generate an additional 816 trips per day, taken together during Months 8 through 10. Peak hour trips would increase of approximately 729 trips assuming that no employees carpool to the staging area and that employees are commuting in the peak hour and not during the should of the peak which is more likely. Trips would be dispersed to a number of local roads. The number of trips would not be substantial compared to the available capacity and existing volumes on the roads. The proposed use of shuttle vans for employee transport and the use of the railroad to transport the needed pipes to the staging areas would reduce the potential traffic and number of trips significantly. The use of the railroad to transport the pipe to the staging area will reduce freeway and highway and interchange traffic levels. The Project also includes the use of staging areas on both sides of the San Joaquin River, which would reduce the number and circuity of trips to each construction area.

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Construction

Certain road segments currently exceed the applicable LOS during peak hours, as indicated in Table 3.16-4. The results of an LOS analysis completed for the project are shown in Table 3.16-4. Project-related traffic was added to existing peak hour traffic conditions on the Project Area vicinity roadway segments, and the resulting traffic counts were compared to the applicable thresholds of acceptability. Madera County uses LOS D as a threshold of acceptability for roadway and intersection operations (Madera County 2000), and Caltrans and Fresno County use LOS C as the threshold of acceptability for roadway and intersection operations (Fresno County 2000). Interstate 5 is under the jurisdiction of Caltrans, and SR 33, SR 180, and portions of SR 99 are located in Fresno County; therefore, LOS C is the appropriate threshold. SR 99 at Avenue 7 and Avenue 7½ and 7 are in Madera County; therefore, LOS D is the appropriate threshold for these roadways.

During the peak two months of construction, the Project may cause LOS standards to be exceeded in the peak hours at three road segments as follows:

- State Route 33 in Firebaugh at 12th Street/Ness Avenue,
- State Route 99 at State Route 180 South, and
- State Route 99 at Shaw Avenue.

The LOS exceedence would be a temporary impact.

The proposed Project incorporates use of shuttle vans and Mitigation Measure Traffic-1 would further reduce the temporary LOS impacts. The Applicants would implement a Traffic Control Plan (Mitigation Measure Traffic-1). Implementation of the Traffic Control Plan would minimize Project traffic impacts during the peak months of construction by restricting the construction vehicle trips to non-peak hours to the extent feasible. Impacts would be less than significant with the implementation of mitigation.

Table 3.16-4: Project Impact on Key Roadways During Peak Construction Months (Months Eight and Nine)

Roadway	Location	Existing Peak Hour Traffic (all lanes)	Project Traffic	Total Peak Hour Traffic (all lanes)	Capacity All Lanes (LOS C)	Capacity All Lanes (LOS D)	Exceed Applicable LOS Without Project?	Exceed Applicable LOS With Project?
I-5	SR 33 North	5,200	90	5,290	6,200	n/a	No	No
SR 33	W California Avenue	250	90	340	790	n/a	No	No
SR 33	Firebaugh, 12th Street/ Ness Avenue	1,400	90	1,490	790	n/a	Yes	Yes
SR 33	SR 180 East	620	90	710	790	n/a	No	No
SR 180	SR 33 North	700	90	790	790	n/a	No	No
SR 180	Belmont Avenue	570	90	660	790	n/a	No	No
SR 180	West Panoche Road	590	90	680	790	n/a	No	No
SR 180	James Road	590	135	725	790	n/a	No	No
SR 99	SR 180 South	6,600	135	6,735	5,140	n/a	Yes	Yes
SR 99	Shaw Avenue	5,700	90	5,790	5,140	n/a	Yes	Yes
SR 99	Avenue 7	5,900	135	6,035	n/a	6,340	No	No
Avenue 7 ½	Road 9	600	90	690	n/a	1,350	No	No
Avenue 7	Firebaugh Boulevard	300	135	435	n/a	1,350	No	No
Avenue 7	SR 99	380	135	515	n/a	1,350	No	No

SOURCE: Entrix 2008

Operation and Maintenance

Project operations traffic would not cause exceedence of the LOS standards on roadways in the Project area. The Project would create an estimated 10 permanent employment positions, resulting in an estimated 20 worker vehicle trips per day.

Storage Field and Facilities. Routine deliveries to and from the central compressor station during normal operations would generate additional daily trips. Worker vehicles and routine deliveries to and from the central compressor station would access the site via Avenue 7 and Road 16, consistent with the construction routing described above. These trips would vary from day to day, however, and would likely not exceed an additional 20 trips per day, except during infrequent periods of major maintenance and repair. These trips would not cause exceedence of LOS standards.

Gas Pipeline. Routine pipeline inspections would typically involve a single utility vehicle driving on or near the permanent ROW, generally on farm roads off of the main roads except where turning movements are needed to access the ROW from local roadways. These trips would not cause exceedence of LOS standards.

Electric Power Line. Routine inspections and periodic maintenance at the power line corridor would generate additional infrequent trips to these Project areas. These trips would not cause exceedence of LOS standards.

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?

Project implementation would not result in any change in air patterns or increase in traffic or result in any safety risks to aviation or crews. The nearest municipal airport is located in Mendota, approximately 10 mi west of the proposed Storage Field surface facilities and 1.5 mi northeast of the intersection of SR 180 and SR 33. The other three nearby airstrips are located between 10 and 13 mi from the intersection of SR 180 and SR 33. The Project's tallest proposed structures are the proposed electric power line and include 2 approximately 120-ft-tall, engineered tubular steel poles and several 70-ft-tall wood poles in an existing power line corridor. At the central compressor station, there would be 2 approximately 60-ft-tall wood poles to serve the electrical substation and buildings within the compressor station site. These permanent structures would not require a change in air traffic patterns, result in substantial safety risks, or constitute an obstruction to air traffic. Short-term use of a drilling rig during construction would require notification to the Federal Aviation Administration (FAA) due to the height of the drill rig (approximately 150 ft); though towers with heights in excess of 200 ft generally require FAA obstruction permits and lighting (FAA Part 77 Regulations).

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Construction

Construction activities could temporarily interfere with the normal function of roadways, the potential exists for increased traffic safety hazards during Project construction from:

- Conflicts between construction vehicles (with slower speeds and wider turning radii than autos) and vehicles, bicyclists, or pedestrians using the roadways;
- Conflicts between the movement of traffic and construction activities, particularly where traffic is routed into the travel lane adjacent to the work zone;
- Confusion of drivers during one-lane, two-way traffic operation; and
- Distraction of drivers related to construction activities.

Figure 3.16-1 shows several key intersections at major roads along the project haul routes, as well as turn-off locations from these roads onto agricultural roads or minor County roads (e.g., SR 33 at Lincoln Avenue, and SR 180 at San Mateo Avenue).

Gas Storage Field and Facilities. Construction of Project facilities within the Storage Field would be well-removed from public roads and would not cause a traffic hazard.

Designated truck routes would be used to haul Project materials outside of the Project Area. Flaggers and other traffic control measures would be used as specified in the *Manual of Uniform Traffic Control Devices* to facilitate the safe turning movements of trucks from Avenue 7 onto Road 16, and from other Project Area vicinity roadways into work areas. Impacts would be less than significant.

Electric Power Line and Gas Pipeline. Pipeline construction would involve the use of trenching, conventional boring, and HDD. Conventional boring would be used to cross roads, including SR 33, West Panoche Road, SR 180 (Whitesbridge Avenue), UPPR tracks, and San Mateo Avenue. Using HDD methods under the UPPR tracks would require an encroachment permit from the UPRR. The UPRR requires HDD and time reservation for any construction near or on their ROW as well as a permanent easement and use lease. Construction crews working on drilling on or near the railroad would be required to be railroad-safety trained. UPRR flaggers may be required.

Pipeline and electric power line construction would occur along roads. Temporary lane closures are not anticipated during pipeline installation based on the proposed alignment and construction methods under and near roadways. At least one lane would remain open at all times in the unlikely event that a lane closure would be required, and other measures outlined above in the Traffic Control Plan (Mitigation Measure Traffic-1) would be implemented, such as the use of flaggers to safely direct traffic around the closure, advance signage, speed controls, and notifications of detours if needed. Impacts would be less than significant with the implementation of mitigation.

Operation and Maintenance

The Project would not include any design features that would affect traffic circulation or cause substantial new traffic hazards during operation and maintenance. The pipeline would be buried; the compressor facilities, wells, and ancillary structures would be sited in remote areas removed from public roads; and the proposed electric power line would be located mostly along an existing electric distribution line corridor. Any new access road, if necessary, would likely be relatively straight, and would be 20 ft wide in order to accommodate maintenance-related traffic. Impacts would be less than significant and no mitigation would be required.

e) Result in inadequate emergency access?

Construction

A limited number of residences and commercial/industrial developments are located along the Project roadways. Pipeline construction could temporarily restrict access to adjacent properties. Temporary lane closures are not anticipated, but could be required during construction. At least one lane would remain open at all times. Other provisions of the proposed Traffic Control Plan (Mitigation Measure Traffic-1) would be implemented as appropriate to mitigate for any potential impact to emergency access to the sites or to the residences. Requirements of the Plan include advance notification to adjacent property owners and emergency service providers as to where property access would be blocked, excavation plating, emergency vehicles being granted access via one open lane, short detours, and alternate routes. Impacts would be less than significant with the implementation of Mitigation Measure Traffic-1.

Operation and Maintenance

Gas Storage Field and Facilities. The Storage Field is located in a remote area and would not block roads. Facilities would not affect emergency access. There would be no impact.

Gas Pipeline. The gas pipeline would be buried, and would have no long-term impacts on emergency access.

Electric Power Line. The electric power line would be located along existing roadways and existing power line corridors and would not affect emergency access.

f) Result in inadequate parking capacity?

Project construction would occur in a rural agricultural area. Construction vehicles and equipment, including worker vehicles, would be parked within the construction zone or at the designated off-road staging areas. Workers would be van shuttled to and from the staging areas to avoid over-

parking the roadside. No existing on-street or off-street parking facilities would be affected. The Project would have no impact on parking capacity.

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Construction

Short-term construction workers and long-term employees would drive to the site because alternative transportation is not available. Van shuttles would be used to deliver and pick up employees working on Project construction. This is consistent with both Fresno and Madera County's policies to encourage alternative transportation, carpooling and vanpooling. It is likely that employees would carpool to and from the site, particularly if coming long distances such as from the Bay Area or Sacramento, even though it is assumed for the traffic analysis that each employee would drive their own vehicle to the construction staging areas. No impacts would occur.

Operation

The Project would not conflict with adopted policies, plans, or programs supporting alternative transportation because no bus lines, bike lanes, or other forms of alternative transportation are present in the Project area. The Project operations would not increase transit demand due to the small number of new permanent employment positions that would be generated and the remote, sparsely populated location of Project facilities, which would not justify expansion of alternative transit systems. No impacts would occur.

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3.17 Utilities and Service Systems

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
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?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☒	☐	☐
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☒	☐	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☒	☐	☐

3.17.1 ENVIRONMENTAL SETTING

Water Supply

The San Joaquin Valley is currently experiencing water shortages that affect the agricultural operations and other water uses in the region. Pumping within the Sacramento-San Joaquin Delta has been shut down for periods of time because of many years with low precipitation. This has limited the water available for agricultural, commercial, and residential use (Entrix 2008).

Fresno County

The majority of domestic water supply in Fresno County comes from groundwater, which is accessed through public and private wells. The Fresno County Community Health Department permits, monitors, and inspects small public and state water systems through its water surveillance program.

The portion of the project located within Fresno County is located within the Westlands Water District (WWD). The WWD provides agricultural water supply and encompasses more than 600,000 acres of farmland in western Fresno and Kings Counties. Approximately 600 family-owned farms that average 900 ac in size are served by the WWD.

Water is delivered to the WWD through the Central Valley Water Project, which is a federal water project that stores water in large reservoirs in Northern California for use by cities and farms throughout California. Water is released from Central Valley Project reservoirs, pumped from the Sacramento-San Joaquin Delta, and delivered over 70 mi through the Delta-Mendota Canal to the San Luis Reservoir. Water is released from San Luis Reservoir and delivered to farmers within the WWD through the San Luis and Coalinga canals during spring and summer. Water travels through 1,034 mi of underground pipe and more than 3,300 water meters to the farmers after leaving the federal canals (WWD 2008).

Madera County

Madera County has 45 water districts responsible for water supply, water quality, and wastewater treatment. The portion of the project located within Madera County is located within three of these 45 water districts: Hidden Lakes (Maintenance District 1), Sumnar Hill (Service Area 16), and Columbia Canal Company.

Hidden Lakes (Maintenance District 1) receives water from Millerton Lake and is permitted to withdraw a maximum of 200 ac-ft of water per year. Millerton Lake is fed from snow melt and stream runoff from the San Joaquin River Watershed. The water is received through an underwater intake structure and treated by filtration and disinfection before being distributed to the customers. The water system consists of a 60 gallon-per-minute (gpm) surface water treatment plant built in 1986. Two pumps in the lake supply the plant with raw water and two pumps at the plant supply a 135,000-gallon storage tank with treated water. It is then distributed by gravity flow to the district. The distribution system is steel pipe. The water system is chlorinated to maintain disinfection (Madera County 2008a).

Sumnar Hill (Service Area 16) is permitted through the Bureau of Reclamation (Entrix 2008). Water for the service area is supplied by the San Joaquin River, which is fed by water released by the Friant Dam. The source of this water is snow melt and stream runoff. The system consists of two submersible pumps in the river that supply two parallel surface water treatment plants. The plants are capable of a combined production of 180 gpm. Water is then stored in two storage tanks with a combined capacity of 160,000 gallons. Boost pumps supply a pressurized distribution system utilizing plastic pipe. The system operates well, though it is considered high maintenance due to the many plant adjustments needed to accommodate the rapid changes in river water quality. Future water shortages may be anticipated at build out due to the volume of water currently used, especially during the summer months. The system does have generator backup to run the boost pumps for the pressure system and the treatment plant (Madera County 2008b).

The Columbia Canal Company encompasses land west of the Chowchilla Canal and north of the San Joaquin River. It is a non-profit company and is not managed by Madera County.

Wastewater

There are several wastewater treatment facilities in the Project Area region. Table 3.17-1 lists the existing wastewater facilities in the Project Area, their total capacity, and their remaining capacity.

Storm Water

The proposed Project is located in a sparsely developed and topographically level agricultural area. There are no municipal storm water drainage facilities. Rainwater and irrigation runoff typically flows from fields to agricultural ponds, canals, and irrigation ditches. There are several locations on or near the proposed project alignment that contain these drainage features.

Table 3.17-1: Wastewater Facilities in the Project Area

Wastewater Facility	Total Capacity	Remaining Capacity
Fresno-Clovis Regional Wastewater Treatment Plant	80 mgd	12 mgd
Firebaugh Wastewater Treatment Facility	1.5 mgd	0.66 mgd
Kerman Wastewater Treatment Facility	2.0 mgd	0 mgd
Mendota Wastewater Treatment Facility	2.5 mgd	956,000 gpd

Notes:
mgd: million gallons per day
gpd: gallons per day

SOURCE: Entrix 2008

Solid Waste

Non-Hazardous and Recyclable Solid Waste

Four active solid waste disposal sites are located within Fresno and Madera Counties:

- **City of Clovis Landfill:** Located in Clovis, approximately 33 mi from the proposed compressor station location
- **Coalinga Disposal Site:** Located in Coalinga, approximately 46 mi from the proposed compressor station location
- **American Avenue Disposal Site:** Located in Tranquility, approximately 10 mi from the proposed compressor station location
- **Fairmead Solid Waste Disposal Site:** Located in Chowchilla, approximately 19 mi from the proposed compressor station location

There are three additional sites that provide construction and demolition waste recycling services (CIWMB 2007):

- **Cedar Avenue Recycling and Transfer Station:** Located in Fresno, approximately 29 mi from the proposed compressor station location
- **Rice Road Recyclery and Transfer Station:** Located in Fresno, approximately 27 mi from the proposed compressor station location
- **Mammoth Recycling Facility and Transfer Station:** Located in Chowchilla, approximately 19 mi from the proposed compressor station location

Table 3.17-2 describes each of the above facilities in terms of their landfill classification, disposal rate, and remaining capacity. There are three landfill classifications:

- **Class I Landfill:** Licensed to receive hazardous waste
- **Class II Landfill:** Licensed to receive both non-hazardous municipal solid waste and limited types of hazardous solid and liquid wastes
- **Class III Landfill:** Licensed to receive non-hazardous municipal solid waste

Hazardous Waste

Chemical Waste Management operates the Kettleman Hills Hazardous Waste Facility. The facility is located 55 mi southwest of Fresno and approximately 58 mi from the proposed compressor station location. A total of 499 ac of the 1,600-ac chemical waste disposal and treatment facility have been approved to receive solid, semi-solid, and liquid hazardous and extremely hazardous wastes. This 499-ac portion of the facility has a remaining capacity of 6 million cubic yards as of October 4, 2000 (CIWMB 2008).

Table 3.17-2: Solid Waste Disposal Facilities in Fresno and Madera Counties

Facility	Landfill Classification	Permitted Disposal Rate (tons per day)	Remaining Capacity (cubic yards)
City of Clovis Landfill	Class III	600	2,121,641 (as of November 18, 2003)
Coalinga Disposal Site	Class III	200	1,930,062 (as of July 29, 2005)
American Avenue Disposal Site	Class II and III	2,200	29,358,535 (as of July 29, 2005)
Fairmead Solid Waste Disposal Site	Class III	1,100	5,552,894 (as of January 1, 2004)
Cedar Avenue Recycling and Transfer Station	n/a	3,100	n/a
Rice Road Recyclery and Transfer Station	n/a	400	n/a
Mammoth Recycling Facility and Transfer Station	n/a	500	n/a

SOURCE: CIWMB 2008

3.17.2 REGULATORY SETTING

Federal

Clean Water Act of 1972

The CWA of 1972 and its subsequent amendments outline the basic protocol for regulating discharges of pollutants to waters of the United States. It is the primary federal law regulating water quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA is enforced by the USEPA through regional water quality control boards and was enacted "… to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA authorizes states to adopt water quality standards and includes programs addressing both point and non-point pollution sources. It gives the USEPA the authority to implement pollution control programs, such as setting wastewater standards for industry and water quality standards for surface waters, and established the NPDES. A discharge of pollutants to navigable waters is prohibited unless the discharge is in compliance with a NPDES permit under Section 402.

State

Water

The Project Area is located within the jurisdiction of the SWRCB and the Central Valley RWQCB. Both regional water quality control boards formulate policies, implement water discharge regulations and conduct permitting and enforcement. Regulations pertaining to water are discussed in greater detail in Section 3.8: Hydrology and Water Quality.

Solid Waste

The Project is subject to Title 14 of the California Code of Regulations, which outlines standards for solid waste handling and disposal.

The Regional Integrated Waste Management Act (Assembly Bill 939), enacted in 1989, established an integrated waste management planning hierarchy to provide guidance on solid waste source reduction, recycling and composting, and environmentally safe transformation and land disposal. It required cities and counties to adopt a Source Reduction and Recycling Element

into their General Plans, and to divert 50 percent of solid waste generated in the city or county from landfills or transfer facilities by the year 2000.

The CIWMB formulates policies and regulations pertaining to solid waste. The California Department of Toxic Substances Control issues permits for the transport of hazardous wastes.

Local

Fresno County General Plan

The Public Facilities and Services Element of the Fresno County General Plan (2000) contains several relevant policies pertaining to utilities and the proposed Project. These policies are intended to ensure that adequate utilities are available to serve new development; to encourage the use of water conservation practices; to protect existing canals and natural channels; and, to prioritize the American Avenue Landfill for municipal waste disposal. Applicable policies are as follows:

- **PF A.4** The County shall encourage the placement of irrigation canals and utility lines underground as urban residential, commercial, and industrial development takes place.
- **PF E.13** The County shall encourage the use of natural storm water drainage systems to preserve and enhance natural drainage features.
- **PF E.21** The County shall require the use of feasible and practical BMPs to protect streams from the adverse effects of construction activities, and shall encourage the urban storm drainage systems and agricultural activities to use BMPs.
- **PF F.7** The County has designated the American Avenue Landfill as the regional landfill to serve the incorporated and unincorporated areas of the county. The publicly-operated Coalinga and Clovis landfills may continue to operate provided the sites are operated economically and in compliance with all environmental laws and regulations. Existing publicly-operated landfills may be expanded.

Fresno County Ordinance Code

Fresno County has adopted the following ordinances (Fresno County 2007) that are applicable to solid waste disposal:

- **Chapter 8.25 Construction and Demolition Debris Disposal Ban.** This ordinance bans the disposal of construction and demolition debris at the American Avenue Disposal Site and the Coalinga Disposal Site. Exceptions to this ban include cases where the debris is pre-processed at a construction and demolition debris processing facility and where loads contain more than 50 percent of construction and demolition debris and there is no adequate local market infrastructure.
- **Chapter 8.28 Industrial Wastes.** This ordinance requires a permit for the disposal of all industrial waste. An inspection of the facility by a Health Officer is required to determine if the facility would create a hazard to public health is required before a permit will be issued.

Madera County General Plan

The Madera County General Plan (1995) also provides a number of relevant policies pertaining to utilities and the proposed Project. These policies are intended to ensure that adequate utilities are available to serve new development; to require the use of existing water systems where available; to restrict high water demand uses in areas with severe water table depression; to protect water quality from storm water runoff; to encourage the use of water conservation practices; to promote

solid waste reduction and recycling; and to promote compliance with the County's Integrated Waste Management Plan. Applicable policies are as follows:

- **3.C.2** The County shall approve new development based on the following guidelines for water supply:
    a) Urban and suburban development should rely on community water systems
    b) Rural communities should rely on community water systems. Individual wells may be permitted in cases where no community water system exists or can be extended to the property but development will be limited to densities which can be safely developed with wells.
    c) Agricultural areas should rely on public water systems where available, otherwise individual water wells are acceptable.
- **3.C.3** The County shall limit development in areas identified as having severe water table depression to uses that do not have high water usage or to uses served by a surface water supply.
- **3.C.6** The County shall promote efficient water use and reduced water demand by:
    a) Requiring water-conserving design and equipment in new construction;
    b) Encouraging water-conserving landscaping and other conservation measures;
    c) Encouraging retrofitting existing development with water-conserving devices; and
    d) Encouraging use of recycled or grey water for landscaping.
- **3.D.2** The County shall promote efficient water use and reduced wastewater system demand by:
    a) Requiring water-conserving design and equipment in new construction;
    b) Encouraging retrofitting with water conserving devices; and
    c) Designing wastewater systems to minimize inflow and to the extent economically feasible.
- **3.F.2** The County shall promote maximum use of solid waste source reduction, recycling, composting, and environmentally-safe transformation of wastes.
- **3.F.6** The County shall require that all new development complies with applicable provisions of the Madera County Integrated Waste Management Plan.
- **3.5.2** The County shall work with local gas and electric utility companies to design and locate appropriate expansion of gas and electric systems
- **3.J.3** The County shall require proposed new development in identified underground conversion districts and along scenic corridors to underground utility lines on and adjacent to the site of proposed development or, when this is infeasible, to contribute funding for future undergrounding.

Madera County Code

Madera County has adopted the following ordinances (Madera County 2007) that are applicable to solid waste disposal:

- **7.24.070 Depositing hazardous material.** This ordinance requires that hazardous materials not be deposited in and approved dumpsites or any other property without first obtaining the permission from the Health Officer.
- **7.24.140 Disposal site – Methods of disposal.** This ordinance requires that all waste be disposed of in designated landfills or in a method that is acceptable to the Health Department and County Engineer.

- **7.24.160 Agricultural or industrial waste.** This ordinance requires that any agricultural or industrial waste be kept or disposed of in a sanitary condition such that no health problems or nuisances are created.
- **7.24.200 Use of county dump site by nonresidents.** This ordinance prohibits the use of any County dumpsite for disposal of waste that was generated outside the county line.
- **7.24.220 County dump site – Permit required.** This ordinance requires a permit to deposit, leave, or distribute waste at or near the County dump site.

3.17.3 ENVIRONMENTAL IMPACTS

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance to evaluate whether a development project may result in significant environmental impacts. Appendix G states that a development project could have significant impacts on utilities if the Project would:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board

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

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

d) Have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed

e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments

f) Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs

g) Not comply with federal, state, and local statutes and regulations related to solid waste

Impact Discussion

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Construction

Hydro-test water used to test the integrity of the proposed gas pipeline during construction would not be considered wastewater. The hydro-test water would come in contact with the proposed pipeline and would be returned to the water purveyor after use or be allowed to infiltrate locally, as water quality would be expected to meet standards for infiltration after use. The only source of wastewater during construction would be that associated with portable restroom facilities used by construction crew. These portable restrooms would be periodically serviced and would not exceed wastewater treatment requirements. There would be no significant impact to wastewater or its treatment and no mitigation would be required.

Operation and Maintenance

The wastewater associated with operation would be restroom wastewater. The sanitary disposal system at the central compressor station would include a tank that would be periodically serviced, and the sanitary waste would be disposed of at an appropriate offsite facility. Wastewater

generated by the project would be minimal and would not exceed wastewater treatment requirements. There would be no significant impact to wastewater or its treatment and no mitigation would be required.

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?

Construction

The Project would require a one-time use of locally available water during construction to test the integrity of the pipeline. This water would either be returned to the water purveyor or allowed to infiltrate into the ground in compliance with applicable regulations. Applicable regulations for handling of hydro-test water are addressed in Section 3.8: Hydrology and Water Quality. Portable restrooms for construction crew would generate wastewater, as discussed above. No new municipal water or wastewater treatment facilities would be required, nor would construction result in the expansion of existing facilities. There would be no significant impact to water or wastewater treatment or facilities as a result of the project construction and no mitigation would be required.

Operation and Maintenance

Groundwater would be provided to the central compressor station during operations via a new well in the Project Area, and would be treated onsite. The limited number of onsite personnel would be served by an onsite sanitary disposal system that includes a tank that would be periodically cleaned and waste would be disposed at an appropriate offsite facility. The small volume of wastewater would not require new or expanded treatment facilities. Salt water that would be generated during gas withdrawal operations would be injected into a new onsite salt water disposal well to a safe depth well below fresh water aquifers and would not require treatment. There would be no significant impact to water or wastewater treatment or facilities as a result of project operations and maintenance and no mitigation would be required.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Construction

Potential impacts of the pipeline on the rate and volume of surface runoff will be negligible due to the limited area of disturbance during construction and construction methods that would restore pre-disturbance permeabilities and drainage patterns, as defined in the Grading and Drainage Plan (Mitigation Measure Hydrology-6). No new facilities would have to be constructed and no existing facilities would have to be expanded as a result of construction of the Project and no mitigation would be required.

Operation and Maintenance

No storm water drainage systems are present in the vicinity of the proposed Project, other than natural and man-made channels. The conceptual design plans for the proposed Project show that approximately 3 ac of impervious surface would be created. The creation of 3 ac of impervious surfaces would not cause excessive amounts of runoff in the relatively level, largely undeveloped area. Three acres represents 0.06 percent of the total area of the Storage Field, and any minor runoff would be absorbed by the surrounding farm roads or agricultural lands. Applicable regulations and preliminary design plans for handling of storm water runoff are further addressed in Section 3.8: Hydrology and Water Quality. The construction of new storm water drainage facilities would not be required; no impact would occur and no mitigation would be required.

d) Have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Construction

Gas Storage Field and Facilities and Electric Power Line. Construction of the gas Storage Field and associated facilities and the electric power line would require water for fugitive dust suppression on access roads and general construction needs. Water use would be higher in periods of drought and/or during dry and windy days. Mitigation Measure Utilities-1 requires the Applicants to prepare a Water Conservation and Solid Waste Minimization Plan. This plan would require the Applicants to improve access roads to the proposed compressor station and proposed well sites from main access roads with an all-weather surface material that would greatly reduce the amount of water required for fugitive dust suppression. Impacts would be less than significant with the implementation of mitigation.

> **Mitigation Measure Utilities-1:** The Applicants shall develop a Water Conservation and Solid Waste Minimization Plan. The plan shall be submitted to the CPUC for CPUC staff review and approval at least 30 days prior to the start of the construction phase of the Project. The plan shall include but not be limited to the following:
>
> a) The pipeline shall be tested in at least three segments, and the water from one segment shall be reused, if feasible, in one or both of the other two segments.
>
> b) The Applicants shall improve existing roads within the Gill Ranch Storage Field that access the injection/withdrawal well sites and the central compressor facility from the existing main access roads with all-weather surface material to reduce the amount of water that would be used for dust suppression in compliance with air quality regulations.
>
> c) Onsite operation personnel shall be served by an onsite sanitary disposal system that includes a tank that shall be periodically cleaned and wastes disposed of at an appropriate offsite facility.
>
> d) Drought-tolerant landscaping shall be used if landscaping is installed.
>
> e) The Applicants shall provide adequate onsite trash collection and service to maintain a healthy and sanitary environment.
>
> f) The Applicants shall maintain proper storage and containment of solid waste.
>
> g) The Applicants shall provide adequate separation receptacles to facilitate recycling.
>
> h) The Applicants shall use post-consumer recycled products to the extent feasible during construction and operation.
>
> i) The Applicants shall reuse and/or recycle construction and demolition waste including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard to the extent feasible. If recycling and/or reuse is not feasible, Applicants shall properly dispose of construction and demolition waste.

Gas Pipeline. The Project would require a one-time use of locally available water during construction to test the integrity of the pipeline. Hydrostatic testing would require up to an estimated 4.6 million gallons of water, as discussed in Section 3.8: Hydrology and Water Quality. The Project Area region is experiencing water shortages that affect the agricultural operations and other water uses regionally; any new groundwater extraction could exacerbate this water shortage.

Potential hydro-test water sources include local purveyors, local groundwater, municipal sources, secondary-treated wastewater, or imported water (via truck). It is likely that hydrotest water would be available from local sources such as WWD or other groundwater wells outside of WWD territory, based on discussions with local purveyors. Spent water would be returned to the purveyor upon completion of the test if the water were obtained from a local purveyor. Groundwater, if used,

would be treated, if necessary, and re-injected upon test completion and would be available for reuse.

It is unlikely that municipal water would be needed because of the likely availability of local water sources and the higher cost of alternative municipal water. Water from a municipal source would only be used if adequate supplies were available from the municipal source. Water obtained from municipal sources and trucked to the construction area, in the unlikely event that municipal water is used, would not be returned. No long-term impacts to the water supply would occur, even after consideration of the current water shortage condition, because of the low probability of using the municipal supply source and the one-time nature of water use.

The pipeline would be tested in three segments. Implementation of Mitigation Measure Utilities-1 would require the water used for the testing of one segment to be reused for the testing of one or both of the remaining segments, if feasible. This would greatly reduce the amount of water required for testing the integrity of the pipeline and would reduce impacts.

Impacts on water supplies during construction of the pipeline for all water sources would be less than significant with implementation of mitigation.

Operation and Maintenance

Adequate water supply would be available during the operation and maintenance phase from the local groundwater sources, and no new or expanded entitlements or resources would be required. An estimated volume of 300 gpd would be supplied from a new well installed in the Storage Field. This water would be used for minor industrial processes and as potable water for personnel and minimal landscaping, if landscaping is installed. This water demand is low relative to other industrial, commercial and agricultural applications in the region. Water use during operation could have some potential to strain water supplies in the Project Area region during severe droughts. Implementation of Mitigation Measure Utilities-1 would reduce any potential impacts to less than significant levels.

e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Construction

Hydro-test water used to test the integrity of the proposed gas pipeline during construction would not be considered wastewater. The hydrotest water would only come in contact with the proposed pipeline and would be returned to the water purveyor or allowed to infiltrate into the ground after use, as appropriate. The hydrotest water would not be sent to a wastewater treatment provider or impact the capacity of that provider's facility in any way. The only source of wastewater during construction would be that associated with portable restroom facilities used by construction crew. These portable restrooms would be periodically serviced and wastewater would be transported to an appropriate treatment facility. Wastewater would be transported to the Fresno-Clovis Regional Wastewater Treatment Plant and/or other nearby wastewater treatment plants, which have adequate capacity to serve the Project. Impacts would not occur.

Operation and Maintenance

Wastewater produced by the employees at the central compressor station would be handled on-site in a tank which would be periodically drained and transported offsite to an appropriate facility. The volume of wastewater generated by the Project would be on the order of a few hundreds of gallons per day. Wastewater would be transported to the Fresno-Clovis Regional Wastewater Treatment Plant or another wastewater treatment plant, where there is sufficient remaining capacity to accommodate Project-generated wastewater. A number of other wastewater treatment

facilities are also present in the communities near the Project Area that could accommodate Project-generated wastewater. The Project would not result in a determination by the local wastewater treatment providers that they have inadequate capacity to serve the Project's projected demand in addition to the providers' existing commitments. There would be no impact, and no mitigation is required.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Construction

The majority of the solid waste generated by Project construction would be excavated materials, such as soils, sand, rocks, and other earth debris. Lesser amounts of asphalt, concrete, and brick could also require disposal. Non-hazardous solid waste generated would be accommodated by several sites depending upon the material. Asphalt and concrete would be hauled to the nearest appropriate recycling facility. Dirt spoils would be reused for backfill or hauled to a disposal facility, or to locations requesting fill materials. Removed vegetation would be mulched onsite and spread along the pipeline ROW, or otherwise disposed, as required by individual landowners in accordance with the Agricultural Impact Mitigation Plan (Mitigation Measure Agriculture-1). All other non-hazardous solid waste, such as brick, fines, rock, sand, and stone could be accommodated at the landfills and recycling facilities described in Table 3.17-2. Mitigation Measure Utilities-1 requires the Applicants to develop a Water Conservation and Solid Waste Minimization Plan. This plan would require the Applicants to recycle and reuse materials as feasible in order to reduce the amount of solid waste being transferred to landfills.

There is limited potential for encountering hazardous wastes during construction, as discussed in Section 3.8: Hazards and Hazardous Materials. Hazardous wastes, if encountered, would be disposed of at an appropriate facility, such as the Kettleman Hills Hazardous Waste Facility in nearby Kings County. Impacts related to the capacity of landfills in regard to construction would be less than significant with the implementation of mitigation.

Operation and Maintenance

Small amounts of debris, trash, and other non-hazardous wastes would be generated during routine operations, and during maintenance activities. There is considerable remaining capacity in the 4 nearby landfills (over 38 million cubic yards). Materials would be recycled and reused to the extent feasible, as required by the Water Conservation and Solid Waste Minimization Plan (Mitigation Measure Utilities-1). Impacts on area landfills related to Project operation and maintenance would be less than significant with the implementation of mitigation.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

The Project would comply with all applicable regulations regarding solid waste. Fresno and Madera Counties in particular are legally obligated to maintain a 50 percent diversion rate under Assembly Bill 939. Solid waste would be recycled or reused as feasible in order to comply with this requirement, as required in the Water Conservation and Solid Waste Minimization Plan (Mitigation Measure Utilities-1). Impacts would be less than significant with the implementation of this plan.

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3.18 Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Does the project:				
a) 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?	☐	☒	☐	☐
b) 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)?	☐	☒	☐	☐
c) Have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Impact Discussion

a) 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?

The proposed Project has the potential to impact a number of special status species. Impacts would be avoided by establishing 100-ft disturbance-free buffers around all elderberry shrubs and by boring under all onsite waterways. Mitigation measures would be required for species such as, but not limited to, blunt-nosed leopard lizards (*Gambelia sila*), breeding and colonial roosting birds, burrowing owls, and San Joaquin kit foxes (*Vulpes macrotis mutica*). Impacts to special status plant and wildlife species would be less than significant with implementation of mitigation.

Construction of the proposed Project would not impact any riparian habitat or other sensitive natural community. All onsite waterways and their riparian habitat would be avoided using boring techniques. Entry and exit pits would be set back a minimum of 100 feet from the edge of the riparian habitat. No other sensitive natural community is present within the Project boundary or would be impacted as a result of the Project. Impacts to riparian habitat and other sensitive habitats would be less than significant with implementation of mitigation.

Project construction would primarily result in temporary impacts to upland habitats or disturbed land during the gas pipeline and transmission line installation. Minor permanent impacts would

result from the construction of the gas Storage Field facilities, but these areas are currently agricultural fields providing low quality habitat for wildlife. Impacts would be less than significant with mitigation incorporation.

The construction, operation, and maintenance associated with this Project would have little to no effect on home range and dispersal movements of native wildlife using onsite habitats. Those species that currently move through the project area are likely to do so following construction and during operation and maintenance activities. This Project would result in a less than significant effect on regional wildlife movements.

The construction of the proposed project may include ground disturbing activities that could result in the loss of integrity of cultural deposits, the loss of cultural and/or historic information, and the alteration of site setting to a historical resource, if these resources are present. Degradation of the cultural resource would thus be considered a significant impact because the resource is considered eligible for the CRHR or NRHP. None of the resources noted within the various project components have been evaluated for eligibility for CRHR or NRHP, with the exception of the built environment at Watson's Ferry and Jack's Resort. Documented cultural resources not evaluated for CRHR or NRHP eligibility would be evaluated for eligibility for the CRHR or NRHP if they cannot be avoided, per the mitigation measures discussed in Section 3.6. Additional mitigation is outlined to reduce impacts to cultural resources to less than significant levels.

b) 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)?

Introduction

The CEQA Guidelines (Section 15130(a)) require a discussion of the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. The CEQA Guidelines note that the cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-only impacts and should be guided by the standards of practicality and reasonableness.

The CEQA Guidelines (Section 15130(b)) identify that the following elements are necessary for an adequate cumulative analysis:

- A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including if necessary, those projects outside the control of the Lead Agency, or a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact. This information is provided in Table 3.18-1.
- A summary of expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available. Definition of the geographic scope of the area affected by the cumulative effect with a reasonable explanation of the geographic limitation used.
- A reasonable analysis of the cumulative impacts of the relevant projects, and an examination of reasonable options for mitigating or avoiding any significant cumulative effects of a proposed Project.

Related Projects

The cumulative projects included in this analysis are provided in Table 3.18-1. Figure 3.18-1 shows the cumulative projects in relation to the proposed Project. There are several projects planned at the County level in Fresno and Madera Counties as well as projects planned for the Cities of Kerman, Firebaugh and Mendota. Table 3.18-1 lists the projects by jurisdiction and type.

Cumulative Impacts

All defined mitigation would reduce any potential impacts from the proposed Project to less than significant levels. Several environmental resources would have no potential for aggregation of less than significant impacts to create a significant impact because of the nature of other proposed activities that could occur in the Project region. These resources include:

- Aesthetics
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Utilities and Service Systems

Resources with the potential for cumulative impacts include:

- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Transportation and Traffic

Resources with No Significant Cumulative Impacts

Aesthetics. The proposed Project is located in a remote area with sparse population, and would result in the construction of facilities that would contrast with the surrounding agricultural terrain. The Project would result in an incremental increase in the industrial character of the immediate surroundings. Impacts of the proposed Project would be considered less than significant with implementation of mitigation described in Section 3.2.

None of the development projects described in the cumulative project list would be located adjacent to or in close proximity to the proposed Project Area. Other proposed industrial projects, such as the Starwood and Panoche energy projects, would be sited adjacent to existing industrial facilities and/or sited in locations that are remote from public viewing areas, thereby reducing any potential cumulative effects on visual resources. The proposed Project would not significantly contribute to any potential cumulative impacts to aesthetic resources.

Land Use and Planning. The proposed Project would be consistent with General Plans for both Madera and Fresno Counties, and would not conflict with any applicable land use policy or regulation. It would not contribute to cumulative impacts to land use.

Table 3.18-1: Cumulative Projects

Project Name	Project Components and Schedule	Location	Status
City of Kerman			
Kerman Neighborhood Shopping Center	75,000-square-foot retail space on 8.5 acres (9 parcels) Construction start expected in 2009 and completion expected in 3 to 5 years	Southeast (SE) corner of Whitesbridge Avenue (SR 80) and Madera Avenue (SR 145)	Approved
Autumn Ridge Senior Facility	34-bed senior facility with 28 units Construction delayed Completion schedule unknown	Stanislaus Ave. between Golden Rod and 16th (Stanislaus needs to be extended and 16th Street has not yet been constructed)	Approved
Northeast Annexation Project	48 acres total 3 commercial tracts 106 combined single family homes and apartment units 20-acre school site (includes 10 acres for joint City/County District ball field and playground) Project is being developed in stages	Corner of Golden Rod and SR 180	No final permits for development to date
Rite-Aid Pharmacy	17,300-square-foot Rite-Aid pharmacy Construction begins early 2009 Expected completion end of 2009	Northeast (NE) corner of Kearney and Madera (SR 145)	Approved
La Quinta Inn	58-unit motel Construction may begin early 2009	Intersection of Madera Avenue (SR 145) and Whitesbridge Avenue (SR180)	Approved
City of Mendota			
Cleantech of America	5-Megawatt solar power facility on 40 acre parcel Construction schedule unknown	SE portion of Mendota east of SR 33, co-located with existing biomass facility	Approved
City of Firebaugh			
El Sendoro Ranch	579 single family residence lots 5 neighborhood parks 11 acres of future Planned Unit Development Construction schedule unknown	NE portion of Firebaugh, between SR 33, Behymer Avenue, and Clyde Fannon Road	Approved
Lake Joallan	122 residential lots 4 parks Construction delayed Completion schedule unknown	SE portion of Firebaugh adjacent to San Joaquin River	Approved

Table 3.18-1 *(Continued)*: Cumulative Projects

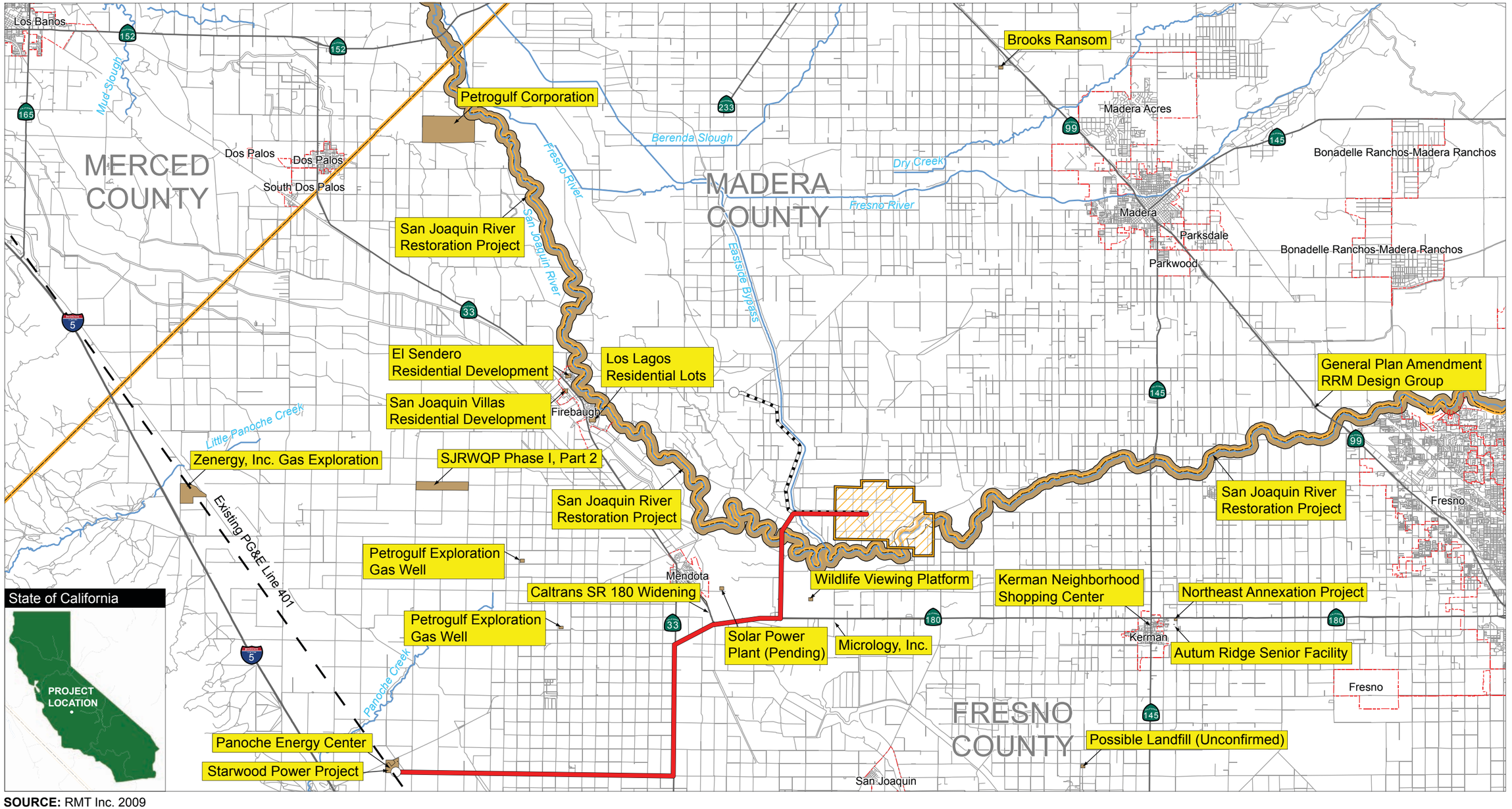
Project Name	Project Components and Schedule	Location	Status
Los Lagos (formerly Valle Del Sol)	186 residential lots 1 park Project being developed in stages	SE portion of Firebaugh east of Helm Canal Road, south of Firebaugh High School	No final permits for development to date
San Joaquin Villas	21 condominium units Construction expected Spring 2009 Expected completion end of 2009	Northwest (NW) portion of Firebaugh, east side of SR 33, approximately 0.3 miles north of intersection with Clyde Fannon Road	Approved
County of Fresno			
Zenergy, Inc. Gas Exploration Well	Exploratory gas well and production facilities on an 0.85-acre portion of a 13.45-acre parcel A 20,328-foot pipeline would connect the production site with an existing pipeline located SE of the subject parcel if natural gas is discovered	15 miles west of the City of Firebaugh. North side of West Shields Avenue between Interstate 5 and West Oxford Ave	Approved; no permits issued to date
Petrogulf Corporation	Exploratory gas well and production facilities on an 0.86-acre portion of a 322.22-acre parcel 1,400-ft pipeline would connect the production site with the existing Arroyo Pipeline, located on the sample parcel of land, f natural gas is discovered	Approximately 10 miles west of the City of Firebaugh. West side of Fairfax Avenue between West Carmellia Avenue and Mint Road	Approved; pump and electrical permits issued
Microgy, Inc.	Biogas Facility and approximately 6 miles of 6--inch diameter gas pipeline on private land Construction schedule unknown	SE corner SR 180 and James Road, approx 8 miles west of the City of Kerman and approximately 3 miles east of San Mateo Avenue	Approved
Kelpetro Operating, Inc	3 exploratory oil wells	Approximately 19 miles SE of Kerman; SE intersection of South Grantland and Cerini Avenue, near community of Lanare	Proposed; under review
Petrogulf Corporation	Exploratory gas well	Approximately 5 miles NW of Mendota; SE corner of West Shields Avenue and North Lyon Avenue	Proposed; under review
Petrogulf Corporation	Exploratory gas well	Southwest (SW) intersection of Whitesbridge Avenue and North Washoe approximately 4.5 miles SW of Mendota	Proposed; under review
Not known	Wildlife viewing platform	1.5 miles NE of intersection of SR 180 and San Mateo Avenue	Under review

Table 3.18-1 *(Continued)*: Cumulative Projects

Project Name	Project Components and Schedule	Location	Status
Not known	Landfill	4.5 miles SW of Kerman; near intersection of American Avenue and Lassen Avenue	Status unknown
San Joaquin River Water Quality Improvement Project Phase I, Part 2	Acquisition of up to 2,900 acres of land to expand the existing 4,000-acre Phase I In-Valley Treatment/ Drainage Reuse Facility	7 miles west of Russell Avenue and east to approximately Fairfax Avenue	Under review
Caltrans	SR 180 road widening between Fresno/Kings Slough and Mendota	SR 180 between Fresno/Kings Slough and the City of Mendota	Under construction
Panoche Energy Center	400-Megawatt peaker power plant Fresno County	West Panoche Road, approximately 2.5 northeast of Interstate 5	Under construction
Starwood Power Project	120-Megawatt peaker power plant	West Panoche Road, approximately 2.5 miles NE of Interstate 5	Under construction
County of Madera			
Brooks Ransom	Grain storage warehouse and rail offloading facilities with an average of four trucks per day	West side of Avenue 20 1/2, approximately 0.4 miles south of the intersection Avenue 20 1/2 and Road 21	Under review
General Plan Amendment	Amendment to the 1995 General Plan to designate the boundaries of a future planning area, Joaquin Bend	NE, NW and SE sides of the intersection of Avenue 7 and Highway 99	Under review
Rezoning and General Plan Amendment	Rezoning and General Plan Amendment for commercial use	Intersection of Road 15 ½ and Hwy 152, Chowchilla, approximately 20 miles north of Avenue 7 and Road 16 intersection	Approved
Andrew Quady Winery	General Plan Amendment to allow winery	North side of Avenue 13, approximately 0.1 mile from intersection with Road 24, Madera; approximately 10 miles NE of Avenue 7 / Road 16 intersection	Under review
Costa View Farms	Dairy	SE corner of Avenue 17 and Road 12, Madera	Approved
Frank Borges	Dairy	SE corner Avenue 14 and Road 9, Madera, approx. 10 miles NW of Avenue 7 / Road 16 intersection	Approved
Jose Soares	Dairy	East side Road 1, approximately 1.5 miles south of intersection with Avenue 21, Madera, approximately 20 miles NW of Avenue 7 / Road 16 intersection	Approved

SOURCE: Entrix 2008

Figure 3.18-1: Cumulative Projects and the Proposed Project Elements



SOURCE: RMT Inc. 2009

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Mineral Resources. Implementation of the proposed Project would not preclude recovery of mineral resources in the project area. The proposed Project would not contribute to potential cumulative impacts that may result in the loss of mineral resources.

Noise. The proposed Project is not expected to contribute to long-term cumulative impacts on ambient noise levels in the Project Area vicinity with the implementation of the proposed Noise Control Plan. Construction activities would be generally limited to day-time hours and would be short-term in nature.

Three projects listed in cumulative project list are estimated to have the potential to be constructed during the same time as the proposed Project. These projects are located over 1 mile from the proposed Project site, and the proposed Project would not cumulatively contribute to noise impacts from these projects. The Mendota Airport, a general aviation airport on the west side of Mendota, is located approximately 2.4 miles north of the nearest residences that are also located near the proposed Project (residences on the south side of SR-180 near Fresno Slough). Noise contours for the airport extend approximately 2 miles beyond either end of the main runway. Potential cumulative noise impacts during construction would be less than significant based on the location of the proposed Project in relation to the airport runway and the location of potential sensitive receptors.

Population and Housing. The proposed Project would result in less than significant impacts to population and housing due to the short-term nature of construction, the availability of temporary construction worker housing and long-term resident housing, and the relatively small permanent work force that would be required. The proposed Project, once operational, would not encourage or discourage growth of the local community and would have no impact on population and housing. The Project would not contribute to cumulative impacts on population and housing.

Public Services. The proposed Project would result in less than significant impacts to public services. Related projects in the region would have very minor impacts on public services, as these projects would not require additional public service capacity. Cumulative impacts related to public services and utilities would not occur.

Recreation. Impacts to recreation as a result of the proposed project have been found to be less than significant with mitigation. These impacts would be focused at the Mendota Wildlife Management Area and would be temporary. No other projects listed as related projects are located within a significant distance of the Mendota Wildlife Management Area. The proposed Project would not cumulatively contribute to impacts to recreation.

Utilities. Implementation of the projects listed in the cumulative project list could result in potential cumulative impacts to utilities, particularly local water supplies and wastewater facilities. The proposed Project will obtain water from existing entitlements in the project area, however, and would not require the services of a municipal wastewater treatment facility. The Project would not contribute to any potential cumulative impacts to local utilities or public services.

Resources with Some Potential for Aggregation of Impacts

Agricultural Resources. The proposed project would permanently convert 20.35 ac of farmland to non-agricultural use. This impact would be less than significant based on analysis in Section 3.3. The vast majority of acreage that is proposed for development listed in the cumulative project list is in areas designated for urban development or areas that are not presently in agricultural use. The combined projects' total amount of agricultural land expected to be converted into other uses represents a very small percentage of the agricultural lands in Fresno and Madera counties, and proponents for other projects involving conversion of agricultural land would likely be required to participate in a land conservation program or another type of mitigation program. Potential cumulative impacts would be considered less than significant.

Air Quality. The San Joaquin Valley Air Basin is currently a non-attainment area for ozone and particulate matter. Air emissions during construction and operation of the proposed Project, as previously discussed in Section 3.4, are anticipated to be well below significance levels defined by the San Joaquin Valley Air Pollution Control District after incorporation of design features and required mitigation, such as use of electric-driven compressors and the preparation of a Dust Control Plan.

An estimated six development projects (two in the City of Kerman and four in the City of Firebaugh) could potentially overlap construction schedules with the proposed Project. It is unlikely that all four of the projects in Firebaugh would coincide with the proposed Project's construction schedule because these four projects are residential projects and the housing industry has slowed significantly in the past year. Each of the cumulative projects would be required to adhere to applicable regulations, and may be required to implement Best Management Practices (BMPs) and various mitigation measures to further reduce air emissions during construction. Measures would likely include fugitive dust control, use of low-emission fuels, and installation of filters on heavy equipment. Any potential cumulative air quality impacts are anticipated to be adverse but short-term (lasting only the duration of construction) and less than significant.

The proposed Project would generate GHG emissions, which would contribute to potential cumulative impacts of GHG emissions on global climate. In the absence of an adopted significance threshold, the potential contribution of the proposed Project to cumulative GHG impacts is evaluated by whether or not the Project would impede or conflict with the emissions reduction targets and strategies prescribed in or developed to implement AB 32, the Global Warming Solutions Act of 2006, and also whether it would exceed the proposed significance threshold established in the CARB Staff Proposal from October 2008 (7,000 MT CO_2 equivalent per year of direct GHG emissions).

A Project's consistency with the implemented programs and regulations to achieve the statewide GHG emission reduction goals established under AB 32 cannot be evaluated explicitly because they are still under development. The Climate Change Scoping Plan (Scoping Plan) approved by the CARB on December 11, 2008 included recommended strategies and sector targets for implementation to meet the goals of AB 32. Consistency with these strategies is assessed to determine if the proposed Project's contribution to cumulative GHG emissions would be considerable.

The Scoping Plan recommends strategies that should be implemented by various state and local agencies to reduce GHG emissions. The Scoping Plan also incorporates the CARB-approved list of early reduction measures that can be implemented by January 1, 2010. The Scoping Plan strategies and early action measures that are relevant to the proposed Project's design features and operation are:

- Vehicle Climate Change Standards
- Building Energy Efficiency Standards
- Low-Carbon Fuel Standard
- "Do-it-Yourself" Automotive Refrigerants
- Proper Tire Inflation

Four of the five above strategies and early action measures would apply to vehicles driven by Project workers. It should be noted that these Project features are not considered to be APMs or mitigation measures because these features are consistent with rules and regulations that are likely to be implemented before the Project is implemented.

Greenhouse gas emissions from construction equipment and employee vehicles used to commute to the project site would be 1,457 MT CO_2 equivalent (1,355 MT from construction equipment and 102 MT from employee vehicles). All feasible mitigation measures should be used to achieve maximum GHG reductions, given that California is currently emitting more GHGs than the target established by AB 32. Mitigation Measures Air Quality-2, Air Quality-3, Air Quality-4, and Utilities-1 would result in lower fuel combustion emissions during construction and other collateral benefits with respect to GHG emissions.

> **Mitigation Measure Air Quality-2:** Construction workers shall meet at staging areas and be transported (in carpools) to jobsites, as practicable. These staging areas will be located in Fresno and Madera County.
>
> **Mitigation Measure Air Quality-3:** Unnecessary construction vehicle and equipment idling shall be minimized. Construction foremen shall include briefing to crews on vehicle use as part of pre-construction conferences. Those briefings shall include discussion of limiting idling.
>
> **Mitigation Measure Air Quality-4:** All off-road construction diesel engines shall meet Tier 2 California Emission Standards for Off-Road CI Engines.

The estimate of GHG emissions from construction equipment were based on implementation of mitigation measures AQ-3 and AQ-4. The GHG emissions from employee vehicles would be reduced by approximately 10 tpy if the number of vehicle miles traveled were reduced by 10 percent due to implementation of AQ-2.

Operation of the proposed project would also result in GHG emissions. The primary sources of direct GHG emission during operation would be the process heaters, dehydrator reboilers, and thermal oxidizers. These sources would emit approximately 91 percent of the direct GHG emissions associated with operation of the project. It is important to note that the GHG emissions were estimated based on 11 days/year of operation for the process heaters and 165 days of operation for the dehydrator reboilers and thermal oxidizers. The direct GHG emissions from this Project during operation would be 5,509 $MTCO_2$ eq per year, which is below the proposed CARB significance threshold of 7,000 $MTCO_2$ eq per year during operation.

In addition to the draft 7,000 MT CO_2 threshold, the operation emissions must be analyzed as to whether or not they would impede or conflict with the emissions reduction targets and strategies developed to implement or prescribed in AB 32, the Global Warming Solutions Act of 2006. All feasible mitigation measures should be used to achieve maximum GHG reductions, given that California is currently emitting more GHGs than the target established by AB 32.

The Scoping Plan identifies GHG reduction measures to be implemented by the oil and gas industry. One set of measures would include improved leak detection, process modifications, equipment retrofits, installation of new equipment, and BMPs. While details of these measures are not provided in the Scoping Plan, it refers to the technologies being implemented through the US EPA's Natural Gas STAR Program. The Natural Gas STAR program is a voluntary partnership that encourages oil and natural gas companies to adopt cost effective technologies and practices that improve operational efficiency and reduce emissions of methane. Mitigation Measure Air Quality-5 would reduce impacts related to leaks and similar losses of methane from the proposed Project.

> **Mitigation Measure Air Quality-5:** The Applicants shall participate in US EPA's Natural Gas STAR Program. A memorandum of understanding (MOU) with the US EPA shall be signed prior to initial startup of the compressor station. Within 6 months after signing the MOU, the Applicants shall prepare an implementation plan that includes best management practices (BMPs) identified by the Natural Gas STAR program for transmission and distribution facilities. The implementation plan shall incorporate Partner Reported Opportunities that cost-effectively reduce methane emissions. Within 45 days after completion of one calendar year of

participation in the program, the Applicants shall submit an annual report documenting the previous year's emission-reduction activities and corresponding methane emission reductions. Copies of all documents shall be submitted to the CPUC.

The Scoping Plan also includes a strategy to increase the Renewable Portfolio Standard for all electrical generation by 33% by 2020. Renewable energy includes, but is not limited to, wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.

The compressor station would use electric-powered compressors, which would not directly emit GHGs. Compressors in storage applications are typically natural-gas fueled reciprocating engines driving reciprocating compressors. The Applicants' decision to use electric compressors rather than gas-driven compressors would reduce the Project's estimated direct GHG emissions by 13,000 to 16,000 MT CO_2 equivalent per year. The remaining emissions would be completely offset by participation in PG&E's ClimateSmart Program, as described in Mitigation Measure AQ-6, and as shown in Table 3.18-2.

In keeping with the targets under the Scoping Plan, Mitigation Measures Air Quality-6 through Air Quality-11 are proposed to minimize the GHG emissions associated with electrical usage by the Proposed Project. Impacts to global climate change are not considered cumulatively considerable with implementation of these mitigation measures.

Mitigation Measure Air Quality-6: GRS shall enter into an agreement with Pacific Gas & Electric Company (PG&E) to participate in the ClimateSmart™ Program. A copy of the agreement shall be provided to CPUC prior to the start of operation of the compressor station. If a future program renders this agreement redundant (e.g., if GRS can demonstrate that the same benefits are achieved via PG&E's participation in a future cap and trade program), then the GRS agreement may be terminated, subject to review and approval by the CPUC.

Mitigation Measure Air Quality-7: The Applicants shall use alternate fuels, such as biodiesel, where feasible (e.g. fire water pump).

Mitigation Measure Air Quality-8: GRS shall conduct a greenhouse gas emissions and facility wide energy efficiency audit.

Mitigation Measure Air Quality-9: The Applicants shall replace breakers within 30 days once sulfur hexafluoride (SF_6) leakage rates exceed one percent.

Mitigation Measure Air Quality-10: GRS shall develop a sulfur hexafluoride (SF_6) inventory and participate in the SF_6 Emission Reduction Partnership for Electric Power Systems.

Implementation of these mitigation measures would result in a reduction in GHG emissions as shown in Table 3.18-2. The actual reductions that would be achieved cannot be determined until the Applicants have entered into the Agreements or conducted the audits described in the above mitigation measures; therefore, the information in this table is for illustrative purposes only, based on assumptions included as noted in the table.

Biological Resources. Potential impacts to biological resources, including special status plant and animal species and native plant communities, that may result from construction activities associated with the proposed Project are anticipated to be less than significant with the implementation of the proposed mitigation measures, as discussed in Section 3.5 and under question (a), above.

Other projects are proposed or approved to begin construction in the surrounding communities, and construction of at least two of these projects may occur at the same time as the proposed Project. The implementation of these projects could result in short-term cumulative impacts to biological resources in the Project region, particularly to native plant communities and wildlife

Table 3.18-2: Mitigated GHG Emissions from Operations

Description	Proposed Emissions (MT CO_2 equiv/year)	Mitigation Measure	Percent Reduction	Reduction in Emissions Due to Mitigation (MT CO_2 equiv/year)
Indirect Emissions				
Electricity Consumption	10,560	AQ-6	100	10,560
Direct Emissions				
Natural Gas Storage[1]	327	AQ-5	10[3]	33
Process Heaters	806[2]	AQ-8	10[3]	80
Dehydrator Reboilers	2,115[6]	AQ-8	10[3]	211
Thermal Oxidizers	2,115[6]	AQ-8	10[3]	211
Electrical Equipment	38	AQ-9, AQ-10	20[4]	7
On-road vehicles	93	APMs	5	4
Emergency Backup Generators and Fire Water Pump	15	AQ-7	100[5]	15
TOTAL (Direct and Indirect Emissions)	**16,069**		**69**	**11,121**

Notes:

[1] Includes fitting leaks, methanol injection, and corrosion inhibitor injection

[2] Assumes 11 days/year operation

[3] Assumed 10 percent for illustrative purposes because actual reductions cannot be quantified until Applicants have developed BMPs for participation in Natural Gas STAR program, and conducted a GHG emissions audit and energy efficiency audit.

[4] U.S. High Global Warming Potential Gas Emissions 1990–2010: Inventories, Projections, and Opportunities for Reductions June 2001, U.S. EPA

[5] Emissions from non-biomass fuels would be eliminated. Does not include emissions from biogenic fuel sources.

[6] Assumes 165 days/year operation.

habitat. These projects are also likely to be subject to mitigation measures that would reduce these impacts. The Project's contribution to potential cumulative impacts on biological resources during construction activity would be less than significant.

Cultural Resources. The proposed Project has the potential to affect cultural and paleontological resources as a result of excavation and other ground disturbance. BMPs and mitigation measures would be implemented to reduce potential impacts to known and unknown cultural and paleontological resources during construction to less than significant levels.

Other development projects that may involve excavation in the general vicinity of the proposed Project include Microgy's gas transmission pipeline trench (SR 180 near St. James Avenue, 3 miles east of San Mateo Avenue) and a solar energy development near Mendota.

The Microgy project has a permit condition that would require cultural resource monitoring, and it is presumed that the solar farm development, as well as any other local or regional developments

(such as residential developments in Firebaugh and other local communities), would also include provisions for cultural resource monitoring. Cumulative impacts would not be expected.

Geology and Soils. Surface disturbance associated with pipeline construction and surface facility construction as discussed in Section 3.7, could contribute to erosion, soil compaction, and loss of topsoil in the Project vicinity. Pipeline installation could result in ground disturbance and potential for erosion. All impacts to geology and soils are expected to be less than significant with the implementation of the Erosion and Sediment Control Plan other mitigation measures, and compliance with applicable building regulations.

Each of the projects included in the cumulative project list would likely be required to implement equivalent measures to reduce erosion and soil loss prior to receiving building and grading permits. One project that may result in construction activity in the same immediate area as the proposed Project is the San Joaquin River Restoration Project. The precise location and scale of the restoration project construction activities (and future effects on the river) are not known at this time, and the proposed project schedule would not likely overlap with restoration activities in the area. Cumulative impacts to geology and soils would be less than significant.

Hazards and Hazardous Materials. Impacts related to hazards and hazardous materials related to the proposed Project would be less than significant with implementation of mitigation. Other energy projects planned in Fresno County include the Panoche Energy Center and Starwood Power Project located near the PG&E Line 401, north of the proposed Project tie-in location. Construction of the Panoche Energy Center is nearly complete and construction of the Starwood Power Project is on hold. Construction activities related to these projects are not anticipated to overlap and cumulative impacts with regard to hazardous material storage and use during construction would be less than significant. The potential for upset conditions involving hazardous materials and public exposure to hazards would increase as these projects become operational. All projects would be required to comply with federal, state, and local safety regulations to minimize risk to the surrounding public. The proposed Project is not expected to contribute to cumulative impacts related to hazards and hazardous materials.

Hydrology and Water Quality. Potential cumulative impacts to hydrology and water resources could result if construction of the proposed Project and projects listed in the cumulative project list occurred at the same time. Impacts would result from cumulative erosion and storm water impacts. It is estimated that two development projects located in the City of Kerman (the Kerman Neighborhood Shopping Center and, La Quinta Inn, and one residential project in the City of Firebaugh) have the potential to be constructed during the same time frame as the proposed Project. These projects would be located in areas that have been previously disturbed, and would likely be subject to BMPs and mitigation measures to prevent impacts to water quality (e.g., Erosion and Sediment Control Plan or equivalent measures such as a Construction Storm Water Pollution Prevention Plan for most projects). Any potential cumulative impacts to water quality would be short-term and less than significant with implementation of mitigation.

Transportation and Traffic. The proposed Project construction vehicles would use a variety of roadways to access the worksites such that no individual roadway segments or intersections would experience a further reduction in existing service levels during peak hours. Implementation of the proposed Traffic Control Plan would further reduce the potential for peak-hour level of service cumulative impacts on project area roadways to less than significant levels.

Three development projects (two in the City of Kerman and one in the City of Firebaugh) have the potential to be constructed in the same general time frame as the proposed Project. The potential for cumulative traffic impacts, other then to peak-hour level of service, exists on SR 180 and other project roadways, particularly at a key intersection in Firebaugh if construction of any of the proposed development projects overlaps with the proposed Project. It is anticipated that these

projects would include various roadway improvements, permit conditions, and mitigation measures designed to reduce project-related traffic impacts and other community impacts during construction, and during the life of these projects. The proposed Project would have less than significant impact and potential cumulative impacts are considered less than significant with implementation of BMPs and various mitigation measures at the time of construction of each of the listed cumulative projects.

c) Have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Project-related environmental impacts have been identified for the following resource areas with potential to cause direct or indirect impacts upon human beings:

- Agricultural Resources
- Air Quality
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

Implementation of all mitigation measures and Applicant Proposed Measures in this document, in addition to adherence to all applicable regulations, would reduce these potential impacts to less than significant levels.

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