

**Throughout this Application, all references to Federal Power, Federal Power Avenal, LLC, and Federal Power Avenal refer to Avenal Power Center, LLC.**

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## 6.4 AGRICULTURE AND SOILS

This section describes the agriculture and soil resources in the vicinity of the Site. Based on the size and nature of the Project and other factors described in this section, the Project will have an incremental impact on agriculture and soil resources that will be less than significant. The Site will occupy land that is designated and zoned industrial and located in an area planned for industrial park development by the City of Avenal. Agricultural practices on lands adjacent to the Site will not be affected by the construction or operation of the Project, except for water conservation measures that have been volunteered by the owner/operator of the surrounding lands to offset groundwater that will be pumped from existing wells for the Project backup water supply (see Section 6.5 - Water Resources).

Grading for the Project is designed to achieve a cut and fill balance, so fill dirt will not need to be imported or exported to construct the Project. Furthermore, no impacted soil is expected to be encountered during construction. A Phase I Environmental Site Assessment report substantiating this conclusion is referenced in Section 6.14 - Waste Management.

Beneficial aspects of the Project relative to agriculture and soils are:

- The Project will be located in an area that is designated and zoned industrial by the City of Avenal. There will be no conversion of land that is designated or zoned for agricultural use.
- The Project is not located on Williamson Act Lands.
- The Project has been designed in consultation with the owner/operator of the agricultural lands adjacent to the Site.
- Project design features assure that ground-level concentrations of air pollutants will have no significant impacts on agriculture and soil resources (see Section 6.2 - Air Quality).
- The Project will provide additional electrical power to assure a reliable supply of energy for California's agricultural and other uses.

### 6.4.1 EXISTING CONDITIONS

The Project area is located on the west side of the San Joaquin Valley, about 200 miles north of Los Angeles and 200 miles south of San Francisco. The area is characterized by rolling hills (Kettleman Hills) to the west and the plains of the San Joaquin Valley to the east. The climate is cool in winter, and hot and dry in summer. Average rainfall is between 6 and 7 inches per year.

Despite the dry climate, the San Joaquin Valley has become one of the most productive agricultural regions in the world. Agricultural productivity has been achieved by the development of water from ground and surface sources, irrigation facilities, and an engineered system of water storage and transport. In the Site region, agricultural water supply is obtained primarily from the California Aqueduct (San Luis Canal) that passes near the Site, and from deep groundwater wells. Lands surrounding the Site are predominantly in agricultural uses typical of the region.

#### 6.4.1.1 Soil Resources

Maps prepared by the United States Department of Agriculture (USDA), Soil Conservation Service (SCS), identify soil types and their distribution in the Project area (USDA, 1986; USDA, 2006). The Project is located in an area of gently sloping and relatively featureless topography. Soils are derived from erosion of the uplands to the west. The entire Site and much of the surrounding land is Wasco sandy loam. Three additional soil types, Milham sandy loam, Kimberlina sandy loam, and Westhaven loam, occur within linear corridors planned for water pipeline and electric transmission line interconnection. The distribution of these soils in the Project vicinity is shown in Figures 6.4-1A and 6.4-1B. The characteristics of these soil types are summarized in Table 6.4-1.

Wasco sandy loam (map symbol 174 in Kings County and Map Symbol 488 in Fresno County) is a very deep, well-drained soil found on alluvial fans and derived primarily from sandstone. The permeability of this soil is moderately rapid, and available water capacity is low to moderate. This soil unit has the characteristics of a silty sand, with its moderately rapid permeability and good drainage. This soil covers the entire Site and does not present any significant hazard to Site development.

The Milham sandy loam (map symbol 144 in Kings County and Map Symbol 451 in Fresno County) is also a very deep, well-drained soil found on alluvial fans. Unlike the Wasco soils, the permeability of this soil is slow, and available water capacity is high to very high. This soil has the characteristics of silty sand in the upper horizon, with clayey sand, silt and clay in the lower horizons. This soil type occurs along portions of the water line routes and a short segment of the electric transmission line route and does not present any significant hazard to development of these linear facilities.

Kimberlina Sandy Loam (map symbol 425) is a very deep, well-drained soil found on floodplains and recent alluvial fans. The permeability of this soil is moderately rapid, and available water capacity is moderate. This soil has the characteristics of a fine sandy loam in the upper horizons, with a moderately alkaline, strongly effervescent silt loam in the lower horizon. This soil occurs along the northern portion of the electric transmission line and does not present any significant hazard to the transmission line.

The Westhaven Loam (map symbol 474) is a very deep, well-drained soil found on alluvial fans and formed in alluvium derived dominantly from calcareous sedimentary rock. The permeability of this soil is moderately slow, and available water capacity is high to very high. This soil unit has characteristics of a loam with subangular blocky structure in the upper horizons and loamy sand and loam with strata of silty clay loam in the lower horizons. This soil occurs at the north end of the electric transmission line and does not present any significant hazard to the transmission line.

Each of the four types of soil that occur at the Site and Project linear corridors have characteristics that meet the soil characteristics of Prime Farmland.

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TABLE 6.4-1

## SUMMARY OF POTENTIALLY AFFECTED SOIL TYPES AND CHARACTERISTICS

MAP SYMBOL <sup>(1)</sup>	SOIL NAME	% SLOPE	DEPTH (inches)	USDA TEXTURE	USCS CLASSIFICATION <sup>(2)</sup>	EROSION FACTORS <sup>(3)</sup>		PERMEABILITY	DRAINAGE	EROSION HAZARD RATING	LAND CAPABILITY <sup>(4)</sup>
						K	T				
144/451	Milham Sandy Loam	0-2	0-14	Sandy Loam	SM	0.32	5	Slow	Well Drained	Slight	IIs-3 Irrigated; VIIs Nonirrigated
			14-32	Loam, Sandy Clay, Loam	CL, SC	0.28					
			32-60	Silty Clay Loam	CL, ML	0.32					
174/488	Wasco Sandy Loam	0-5	0-20	Sandy Loam	SM	0.32	5	Moderately Rapid	Well Drained	Moderate	Iie-4 Irrigated; VIIe Nonirrigated
			20-60	Sandy Loam, Fine Sandy Loam	SM	0.32					
425	Kimberlina Sandy Loam	0-2	0-14	Sandy Loam	SM, SC-SM	.32	5	Moderately Rapid	Well Drained	Slight	I Irrigated; VIIc Nonirrigated
			14-72	Sandy Loam, Fine Sandy Loam	SM, SC-SM	.32					
474	Westhaven Loam	0-2	0-7	Loam	CL	.37	5	Moderately Slow	Well Drained	Slight	I Irrigated; VIIc Nonirrigated
			7-17	Loam	CL	.43					
			17-42	Stratified Loam to Silty Clay Loam	CL	.49					
			42-65	Stratified Loamy Sand to Silty Clay Loam	CL-ML, CL	.43					
			65-72	Stratified Loam to Silty Clay Loam,	CL	.49					

Sources: USDA, 1986; USDA, 2006.

-- Not available.

(1) Soil numbers refer to numbers shown in Figure 6.4-1A and 6.4-1B.

(2) Unified Soil Classification System.

(3) K is a measure of relative susceptibility to sheet and rill erosion by water. It ranges from 0.02 to 0.69, with lower values representing a lower susceptibility to erosion. T represents soil loss tolerance, defined as the maximum amount of erosion at which the quality of the soil as a medium for plant growth can be maintained. Values range from 1 to 5 (tons per acre per year), with 5 representing soils less sensitive to degradation.

(4) An indication of the suitability of soils for most kinds of field crops. Capability classes are I through VIII. Subclasses are letters e, w, s, or c.

### 6.4.1.2 Agriculture and Prime Farmland

The San Joaquin Valley is a major agricultural region of California. Cropland, orchards and vineyards comprise most of the land in the Site area. The Site is farmed with row crops. Adjacent lands are mostly orchards (planted 2001) with trees generally 15 to 20 feet in height. Mature orchard trees to 30 feet in height occur northwest of the Site on the other side of Avenal Cutoff Road. The vineyard closest to the Site is in the southwest quarter section of Section 17, east of the aqueduct.

The Site and linear facilities will occur on lands within the boundaries of Kochergen Farms, which comprise more than 2,000 acres along the west side of the San Luis Canal (Figure 6.4-2). The natural gas line interconnection will extend outside of the Kochergen Farms property along existing city roads and the right-of-ways and will not affect agriculture. The electric transmission line will extend outside of Kochergen Farms along the existing PG&E regional transmission line corridor and will not affect agriculture except for negligible disturbance for transmission poles. The crop types and irrigation systems in use are shown in Figures 6.4-3A and 6.4-3B. Kochergen Farms does not employ any special cultivation practices (Kochergen, 2001); and no special cultivation practices are in use along the electric transmission line corridor. The existing groundwater wells for Kochergen Farms that will provide a backup water supply for the Project are owned and used by the farm. Section 6.6 of this AFC, Biological Resources, includes a map of agricultural crops within a broader distance, including all lands within 1 mile of the Site.

The Site is located near the northeasternmost corner of the City of Avenal. Site soils meet the soil criteria for Prime Farmland, but the Site is zoned industrial. The Project will be part of the City's planned industrial park that has been sited, in part, to take advantage of access to nearby Interstate 5 and the Kettleman compressor station (City of Avenal, 1992). The industrial zone encompasses City lands southeast of Avenal Cutoff Road. Lands northwest of Avenal Cutoff Road, and lands outside the City limits, are Prime Farmlands. Williamson Act contract lands also occur in these areas (Figures 6.4-4A and 6.4-4B). The only Project features that will occur on Prime Farmland or Williamson Act contract lands are the water pipeline to the existing water wells located north of the Site, and the electric transmission line. The water pipeline will be buried at the edge of the farm field just outside the canal right-of-way and will not impact agriculture. The electric transmission line will be located adjacent to the existing PG&E regional transmission line corridor where it traverses Williamson Act lands and the transmission line land use will be consistent with the Williamson Act.

There are no Farmlands of Statewide Importance in the Site vicinity. The only Unique Farmlands in the Site vicinity are located near Interstate 5, south of the Kettleman compressor station, as shown in Figure 6.4-4A. There are no designated Unique Farmlands or Farmlands of Statewide importance within one mile of the transmission line (California Department of Conservation, 2004). Neither Unique Farmlands nor Farmlands of Statewide Importance will be affected by the Project.

#### 6.4.2 IMPACTS

Significance criteria were determined based on CEQA Guidelines, Appendix G, Environmental Checklist Form, and on performance standards or thresholds adopted by responsible agencies.

An impact may be considered significant if the Project results in:

- Substantial soil erosion or loss of topsoil.
- Substantial conflict with agricultural activities in the Project area.
- Conversion of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, to nonagricultural use.
- Conflict with existing zoning for agricultural use or a Williamson Act contract.
- Changes that could individually or cumulatively result in loss of lands zoned for agriculture to nonagricultural use.

##### 6.4.2.1 Construction Impacts

Project construction will include excavation, grading, equipment laydown, plant construction, interconnection construction and other necessary activities. Parking, laydown and construction activities at the Site are expected to encompass approximately 85 acres of the 148-acre Site during peak construction. This includes approximately 25 acres that will be occupied by onsite facilities when construction is completed.

Project design features will reduce windblown dust during construction, through moisture-conditioning of soils during grading and application of water on roads and active laydown areas (see Section 6.4.2.4). The potential for soil erosion will be minimized through implementation of Best Management Practices (BMP) in accordance with the state NPDES General Permit for Stormwater Discharges From Construction Sites (Water Quality Order 99-08-DWQ). As a result of dust control measures and erosion BMPs, the short-term construction impacts of dust and erosion will be less than significant.

The Project is being designed to balance the amount of cut and fill during construction (see Section 2.3.18). Therefore, it is expected that only minor imports of select material (e.g., aggregate for base material) will be required. No export of excess soil is expected.

#### 6.4.2.2 Operations Impacts

Following construction, the Site will operate with BMPs to minimize erosion in accordance with the state NPDES General Permit for Stormwater Discharges Associated With Industrial Activities (Water Quality Order 97-03-DWQ). With BMP measures employed, the impact of the Project related to erosion of soils will be less than significant.

There will be no accelerated soil loss from wind or water erosion because all areas to be disturbed are currently in active agriculture where soils are frequently tilled or otherwise disturbed, providing a loose soil surface susceptible to erosion and winnowing. The Site landscaping plan for operations is provided in Section 6.13 - Visual Resources. The Project will stabilize approximately 17 percent (25 acres) of the existing active agriculture area through the placement of structures, pavement and gravel surfacing, and non-irrigated grasses. In addition, the presence of these features and associated drainage controls will shorten runoff flow path lengths compared to existing flow paths that are continuous across the Site. The majority of the Site will remain in similar agricultural practices to existing conditions with no change to soil erodibility factor, slope steepness, vegetative cover or erosion control practices. With these factors remaining the same, the reduced slope length will decrease runoff-related soil loss from the areas of continued farming use, with no change to wind erosion susceptibility. In addition to the reduced soil loss from areas of the Site that remain in agriculture, the developed areas of the Site will be covered by structures or surfaced with concrete, asphalt, gravel or non-irrigated grasses, and these surfaces will have much lower erodibility factors and engineered drainage to control erosion. Therefore, the developed areas will be less susceptible to runoff- and wind-related soil loss than under existing agricultural conditions. Considering these factors, the Project is expected to reduce soil loss from the Site compared to existing conditions.

The Project design returns the majority of the 148-acre Site to agricultural use following construction as part of the landscaping plan (see Section 6.13 – Visual Resources). The displacement of agriculture on a portion of the Site is less than significant because the Site is in an area that is designated and zoned for industrial development. There will be no loss of lands designated or zoned for agriculture. Furthermore, the impact of zoning Prime Farmland with

industrial use was already evaluated by the City of Avenal when it adopted its General Plan in 1992, eliminating the need to analyze the impact of building on Prime Farmland in accordance with its zoning classification in this particular instance.

The water line interconnections to the existing groundwater wells will traverse Prime Farmlands and Williamson Act contract lands. The water line routes have been designed in consultation with Kochergen Farms to minimize conflict with agricultural operations. The water line routes primarily follow the edges of fields outside the limits of the areas normally planted. Based on the linear nature of the pipelines and their placement in a manner not to impact farming operations, impact on Prime Farmlands will be less than significant.

The electric transmission line interconnection to the existing Gates substation will traverse Prime Farmlands and Williamson Act contract lands where the transmission line is near and north of Avenal Cutoff Road. The transmission line route is designed to follow the existing PG&E regional transmission line corridor to minimize conflict with agricultural operations. Agricultural operations will continue beneath the transmission line. The use of Williamson Act contract lands for electric transmission lines is consistent with the Williamson Act. The long term impact to available crop area within Prime Farmlands and Williamson Act land will be de minimis (less than one acre). Based on these considerations, the impact of the transmission line to Prime Farmlands will be less than significant.

Federal and state ambient air quality standards have been established to protect not only human health, but to prevent damage to plants and wildlife in both natural and agricultural ecosystems. The two Project-related criteria pollutants with the greatest potential for effects on these ecosystems are ozone (O<sub>3</sub>) and NO<sub>2</sub>. Only NO<sub>2</sub> will be emitted directly by the combustion of fuels. Ozone is generated over many hours and miles by a complex series of chemical reactions between nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC). As discussed below, potential effects of Project emissions on agricultural or natural plants, or on wildlife, will be below a level of significance. Additional detail is provided in Section 6.2 - Air Quality.

For both O<sub>3</sub> and NO<sub>2</sub>, national secondary ambient air quality standards, specifically designated to protect against effects other than human health, were set equal to primary ambient air quality standards. Studies have shown that concentrations of these pollutants in excess of ambient air quality standards are needed to produce significant impacts on sensitive plants (Heck and Brandt, 1977). For example, the lowest 4-hour average NO<sub>2</sub> concentration needed to affect sensitive

plants is 3,760 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The California 1-hour  $\text{NO}_2$  ambient air quality standard has been  $470 \mu\text{g}/\text{m}^3$ , but is being lowered to  $338 \mu\text{g}/\text{m}^3$  upon final action by the Office of Administrative Law (ARB, 2007). Based on results of the air quality analysis, maximum ground-level ambient concentrations of  $\text{NO}_2$  due to Project operations will be lower than ambient air quality standards. Therefore, no significant impact on agricultural or natural plant species is expected to occur from Project emissions.

Similarly, concentrations higher than ambient air quality standards are needed to produce significant effects on animals. For example,  $940 \mu\text{g}/\text{m}^3$  of  $\text{NO}_2$  was used for 4 hours to degranulate lung mast cells in rats (Coffin and Stokinger, 1977). As discussed in Section 6.2 - Air Quality, the maximum ground-level ambient air quality concentrations of  $\text{NO}_2$  expected to result from the Project are lower than ambient air quality standards. Therefore, no significant impact on wildlife or domestic animal species is expected to occur from Project emissions.

The air quality analysis demonstrates that Project emissions will not result in significant impacts (see Section 6.2 - Air Quality). Therefore, the characteristics of productivity of agricultural lands near the Site will not be significantly impacted by Project operation.

#### 6.4.2.3 Cumulative Impacts

The list of activities with potential for cumulative impacts is provided in Section 6.1.4. The Great Valley Ethanol Plant project will be located on lands zoned industrial and, therefore, will not convert agricultural lands. The Panoche Energy Center, if constructed would convert approximately 12.8 acres of prime farmland to non-agricultural use. The Starwood Power-Midway Peaking Project, if constructed, would convert 5.6 acres of prime farmland to non-agricultural use. Compared to the extensive agricultural acreage in the San Joaquin Valley, the combined impact of these projects will be negligible. Furthermore, the long term impact of the Avenal Energy Project to available crop area within Prime Farmlands and Williamson Act lands will be de minimis (less than one acre). Consequently, there will be no potential for significant cumulative direct impacts.

With proposed Avenal Energy operations under the regulatory oversight of the SJVAPCD, and LORS that will apply to the Project and other projects with potential for cumulative impacts, cumulative air emissions will not adversely impact agricultural use. Air emission control equipment utilized for the Project will ensure that cumulative impacts to air quality are less than significant.

#### 6.4.2.4 Project Design Features

The following are design and/or operational features that have been incorporated into the Project that help to limit impacts to agriculture and soils to a level that is less than significant:

- Soils will be moisture-conditioned during grading, and roads and laydown areas will be watered during construction activities. This will minimize windblown dust.
- Project construction and operations will occur in compliance with the state NPDES permits for construction and industrial activities. These permits require that BMPs be implemented with erosion and sediment control measures appropriate for the Site.
- A construction grading plan will be prepared in accordance with local guidelines and the Storm Water Pollution Prevention Plan.
- The water line interconnections to existing groundwater wells have been designed in consultation with Kochergen Farms to minimize conflict with agricultural operations. The water line routes primarily follow the edges of fields outside the limits of the areas normally planted.
- The electric transmission line interconnection to the existing Gates substation is designed to follow the existing PG&E regional transmission corridor to minimize conflict with agricultural operations.
- Air emission control equipment will be installed to reduce power plant emissions that could affect agricultural uses.

#### 6.4.3 MITIGATION MEASURES

Based on the analysis of potential impacts and Project design and operational features, no mitigation measures are required.

#### 6.4.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Based on the above analysis of impacts and Project design and operational features, no significant unavoidable adverse impacts will occur to agriculture or soils.

#### 6.4.5 LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

LORS pertaining to agriculture and soils are identified in Table 6.4-2, along with names of the administrative agencies and the Project's approach to compliance. Construction and operation of the Project will comply with applicable LORS related to agriculture and soil issues through a

three-fold process that includes Storm Water Pollution Prevention Plans for construction and operation, a construction grading and drainage plan, and a comprehensive erosion control plan. These measures simultaneously satisfy appropriate local ordinances and state regulations, as summarized in Table 6.4-2.

There are no permits or approvals required for the Project related to Agriculture. There is no agricultural agency that would have authority over the Project if not for the authority of the Commission to certify sites. The Kings County and Fresno County Agricultural Commissioners were contacted during Project planning. Contact information is provided in Table 6.4-3. Section 6.5.5 discusses the schedule for filing NOIs to comply with the State General NPDES Permits for storm water runoff from construction and operations.

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TABLE 6.4-2

## AGRICULTURE AND SOILS LORS AND COMPLIANCE

JURISDICTION	LORS/AUTHORITY	ADMINISTERING AGENCY	REQUIREMENTS/ COMPLIANCE	APPROACH TO COMPLIANCE <sup>(1)</sup>	AFC SECTION
Federal	Federal Water Pollution Control Act of 1972; Clean Water Act of 1977 (including 1987 amendments).	Central Valley RWQCB under direction of SWRCB.	Meet discharge requirements relative to sediment due to accelerated erosion.	Perform construction and operations under NPDES General Permits for construction and industrial activities, respectively.	Sections 2.3.17, 6.4.2.1, 6.4.2.2, 6.4.2.4, 6.5.2.1, 6.5.2.2 Pages 2-43 to 2-45, 6.4-6 to 6.4-7, 6.4-10, 6.5-12, 6.5-14 to 6.5-15
	U.S. Department of Agriculture, Soil Conservation Service (SCS), <i>National Engineering Handbook</i> (1983) §2 and 3.	National Resources Conservation Service (formerly Soil Conservation Service).	Standards for planning, design and construction of soil conservation practices.	SCS guidance is considered in Project design. The soils that occur at the site and linear corridors do not pose a hazard to the Project.	Section 6.4.1.1 Table 6.4-1 Pages 6.4-2 to 6.4-4
State	PRC Division 15 Chapter 6 §25500 et seq.; CCR Title 20 Chapter 5 §1701 et seq. and Appendix B	California Energy Commission.	Submission of information to Commission concerning potential environmental impacts.	Submission of AFC.	Section 6.4 Pages 6.4-1 to 6.4-14
	PRC §21000 et seq.; Guidelines for Implementation of CEQA, 14 CCR §15000-15387, Appendix G.	California Energy Commission.	Evaluate erosion or siltation and conversion of agricultural lands.	Site is zoned Industrial. Linear facilities are designed to minimize impact to lands zoned agricultural, including Prime Farmlands. There will be no loss of lands zoned for agriculture. The Project will reduce erosion compared to existing conditions.	Sections 6.4, 6.4.1.1, 6.4.1.2, 6.4.2.1, 6.4.2.2, 6.4.2.4 Pages 6.4-1 to 6.4-10
	California Porter-Cologne Water Quality Control Act of 1972; California Water Code §13260-13269; 23 CCR Chapter 9.	California Energy Commission; Central Valley RWQCB; SWRCB.	Protect water quality by appropriate design, sizing and construction of erosion and sediment controls. Obtain waste discharge requirements for potential surface water pollution from Project area run-off.	Perform construction and operations under NPDES General Permits for construction and Industrial Activities, respectively.	Sections 2.3.17, 6.4.2.1, 6.4.2.2, 6.4.2.4, 6.5.2.1, 6.5.2.2 Pages 2-43 to 2-45, 6.4-6 to 6.4-7, 6.4-10, 6.5-12, 6.5-14, 6.5-15
Local	None applicable.	None applicable.	None applicable.	None applicable.	None applicable.
Industry	None applicable.	None applicable.	None applicable.	None applicable.	None applicable.

<sup>(1)</sup> Pursuant to CCR Title 20, Appendix B(i)(1)(B): Each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the Commission to certify sites and related facilities.

TABLE 6.4-3

## AGENCY CONTACTS FOR AGRICULTURAL RESOURCES

AGENCY AND CONTACT	PERMITTING/APPROVAL AUTHORITY
Kings Agricultural Commissioner and Sealer of Weights and Measures Tim Niswander 680 North Campus Drive Suite 8 Hanford, California 93230 Tel: (559) 582-3211, ext. 2831	Advisory.
Fresno Agricultural Commissioner and Sealer of Weights and Measures Jerry Prieto, Jr. 1730 South Maple Avenue Fresno, California 93702 Tel: (559) 456-7510	Advisory.
City of Avenal Steve Sopp Community Development Director 919 Skyline Boulevard Avenal, California 93204 Tel: (559) 386-5766	Advisory.

## 6.4.6 REFERENCES

Air Resources Board (ARB). *Ambient Air Quality Standards*.

<http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>. February 22, 2007.

California Department of Conservation (CDC), Farmland Mapping and Monitoring Program. *Prime and Unique Farmlands and Important Farmlands Map, La Cima Quadrangle*. 1988.

CDC, Farmland Mapping and Monitoring Program. *Fresno County and Kings County Important Farmland Map*. 2004.

City of Avenal. General Plan. 1988.

City of Avenal. General Plan. 1992.

City of Avenal. General Plan. 2005.

City of Avenal. Municipal Zoning Ordinance. 2005.

Coffin, D.L. and H.E. Stokinger. "Biological Effects," Chapter 5 in *Part B - Effects on Biological Systems, Volume II - The Effects of Air Pollution, Air Pollution* (Third Edition), edited by A.C. Stern. Academic Press, New York. 1977.

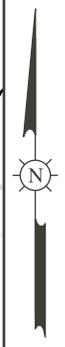
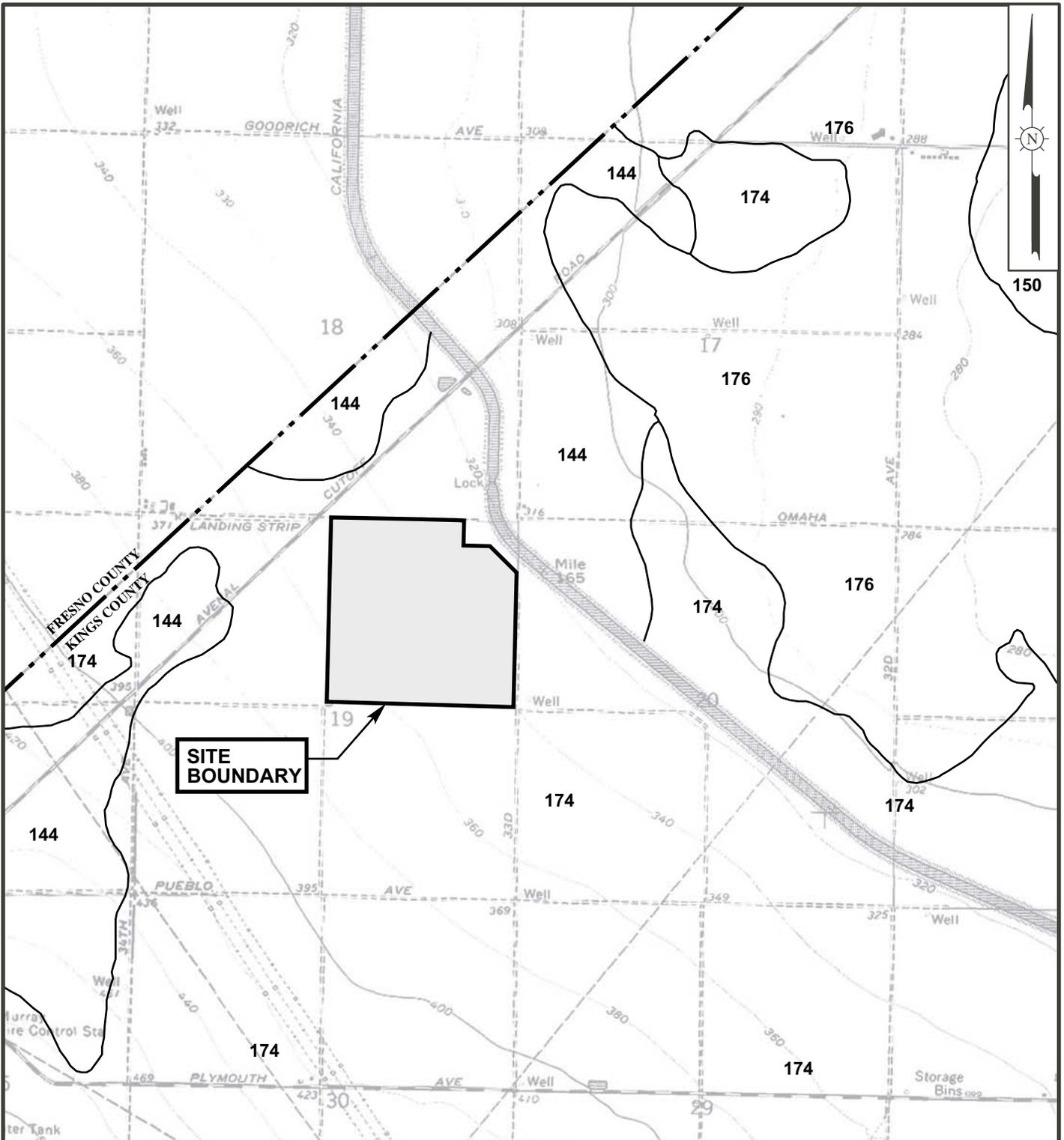
Heck, W.W. and C.S. Brandt. "Effects on Vegetation: Native, Crops, Forests," Chapter 4 in *Part B - Effects on Biological Systems, Volume II - The Effects of Air Pollution, Air Pollution* (Third Edition), edited by A.C. Stern. Academic Press, New York. 1977.

Kochergen, J. and M. Kochergen. Personal Communications. 2001.

United States Department of Agriculture (USDA). *Soil Survey of Kings County, California*. Prepared by the Soil Conservation Service (SCS). 1986.

USDA. *Soil Survey of Fresno County, California. Western Part*. Prepared by the SCS. 2006.

United States Environmental Protection Agency. *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals*. Office of Air Quality Planning and Standards, EPA 450/2-81-078. December 12, 1980.



**SOIL MAP UNITS**

- 144** MILHAM SANDY LOAM
- 150** PANOCHE LOAM
- 174** WASCO SANDY LOAM
- 176** WESTHAVEN LOAM



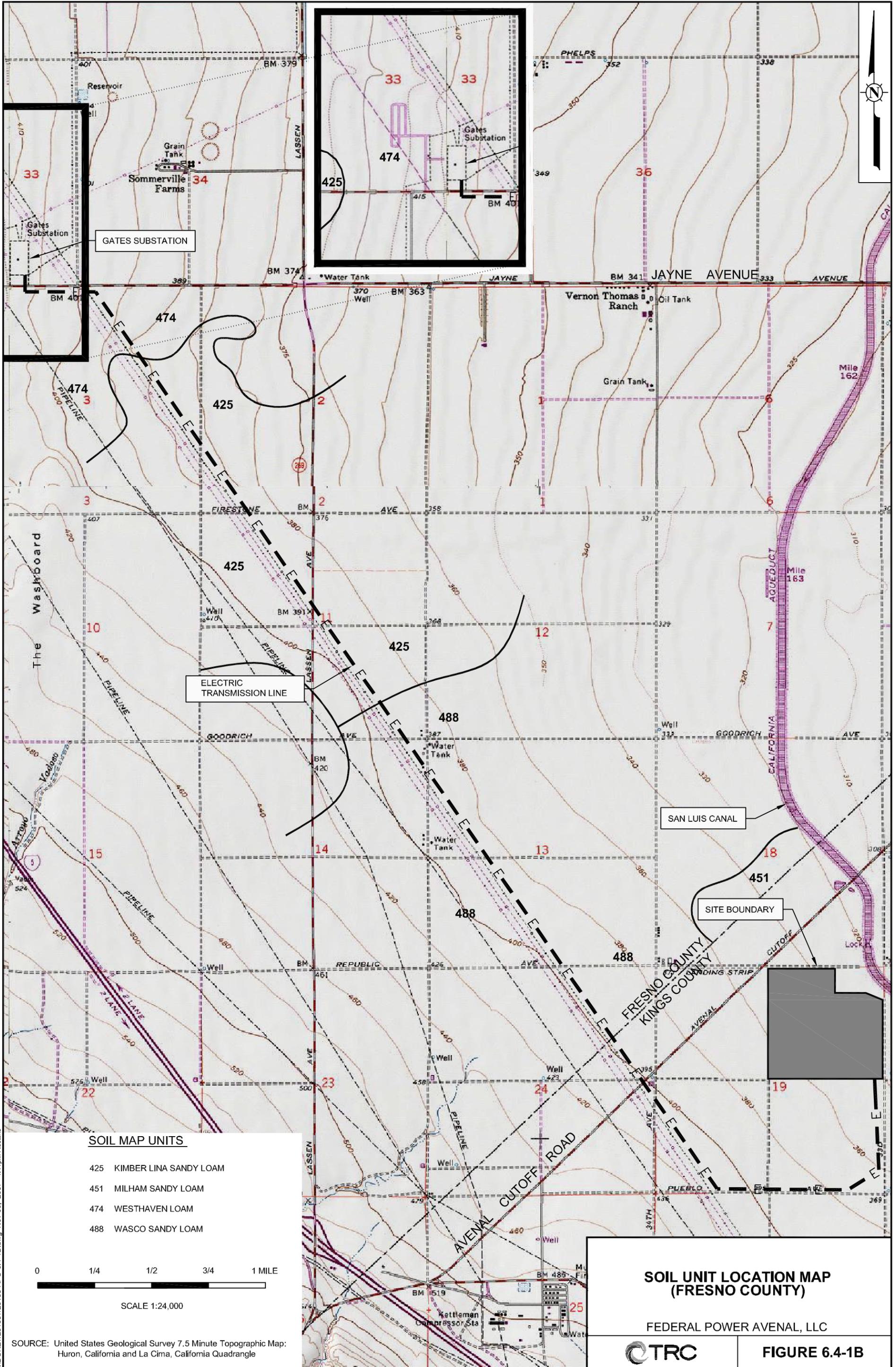
REFERENCE:  
 U.S. DEPARTMENT OF AGRICULTURE, SOIL  
 CONSERVATION SERVICE, SOIL SURVEY OF KINGS  
 COUNTY, CALIFORNIA, LA CIMA QUADRANGLE, 1986.

**SOIL UNIT LOCATION MAP  
 (KINGS COUNTY)**

FEDERAL POWER AVENAL, LLC

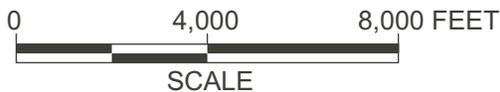
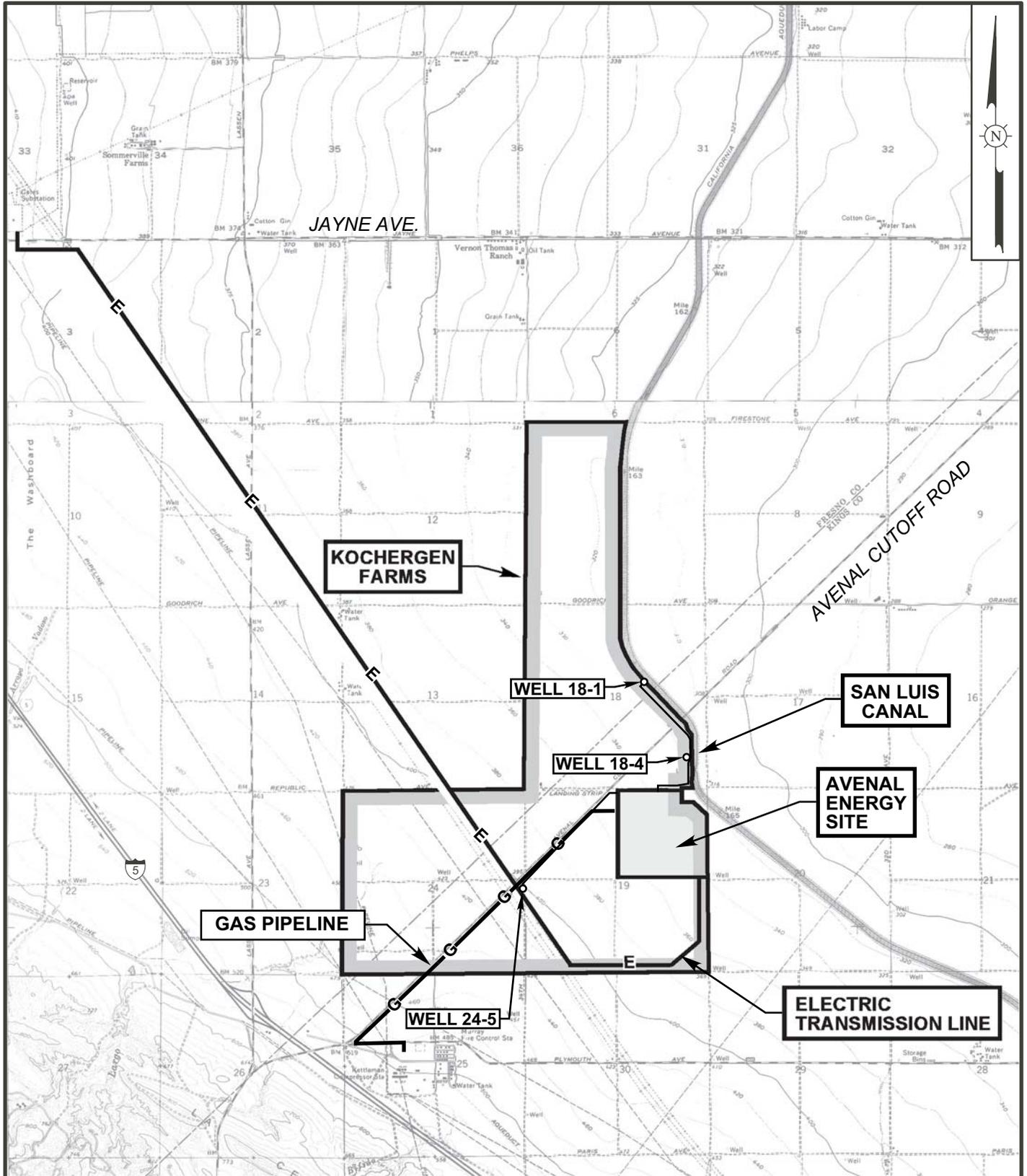
**AVENAL ENERGY**

**FIGURE 6.4-1A**



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SOURCE: United States Geological Survey 7.5 Minute Topographic Map: Huron, California and La Cima, California Quadrangle



REFERENCE: U.S.G.S 7.5 MINUTE TOPOGRAPHIC SERIES MAPS OF HURON, CALIFORNIA, DATED 1971, AND LA CIMA, CALIFORNIA, DATED 1978.

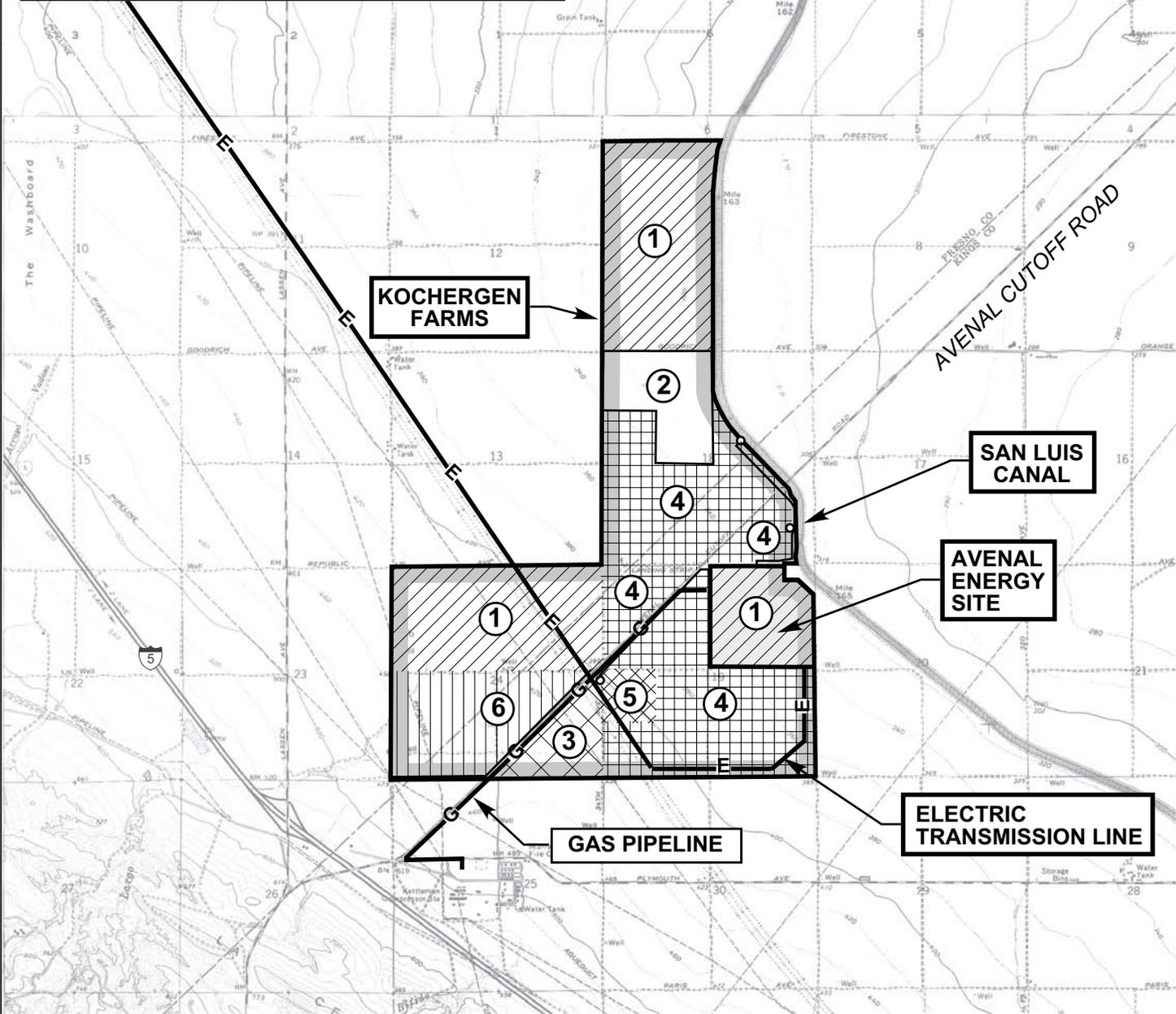
**KOCHERGEN FARMS**

**FEDERAL POWER AVENAL, LLC**

**AVENAL ENERGY**

**FIGURE 6.4-2**

AREA	CROP TYPE	IRRIGATION
1	Row crops (rotating crop types, mostly cotton and tomatoes)	Sprinklers (3 AF/ AC)
2	Almond Orchard	Drip (2.75 AF/ AC)
3	Citrus	Microsprinklers (2.75 AF/ AC)
4	Almond Orchard	Microsprinklers (2.75 AF/ AC)
5	Agricultural Composting	Not Applicable
6	Orange Grove	Microsprinklers (2.75 AF/ AC)

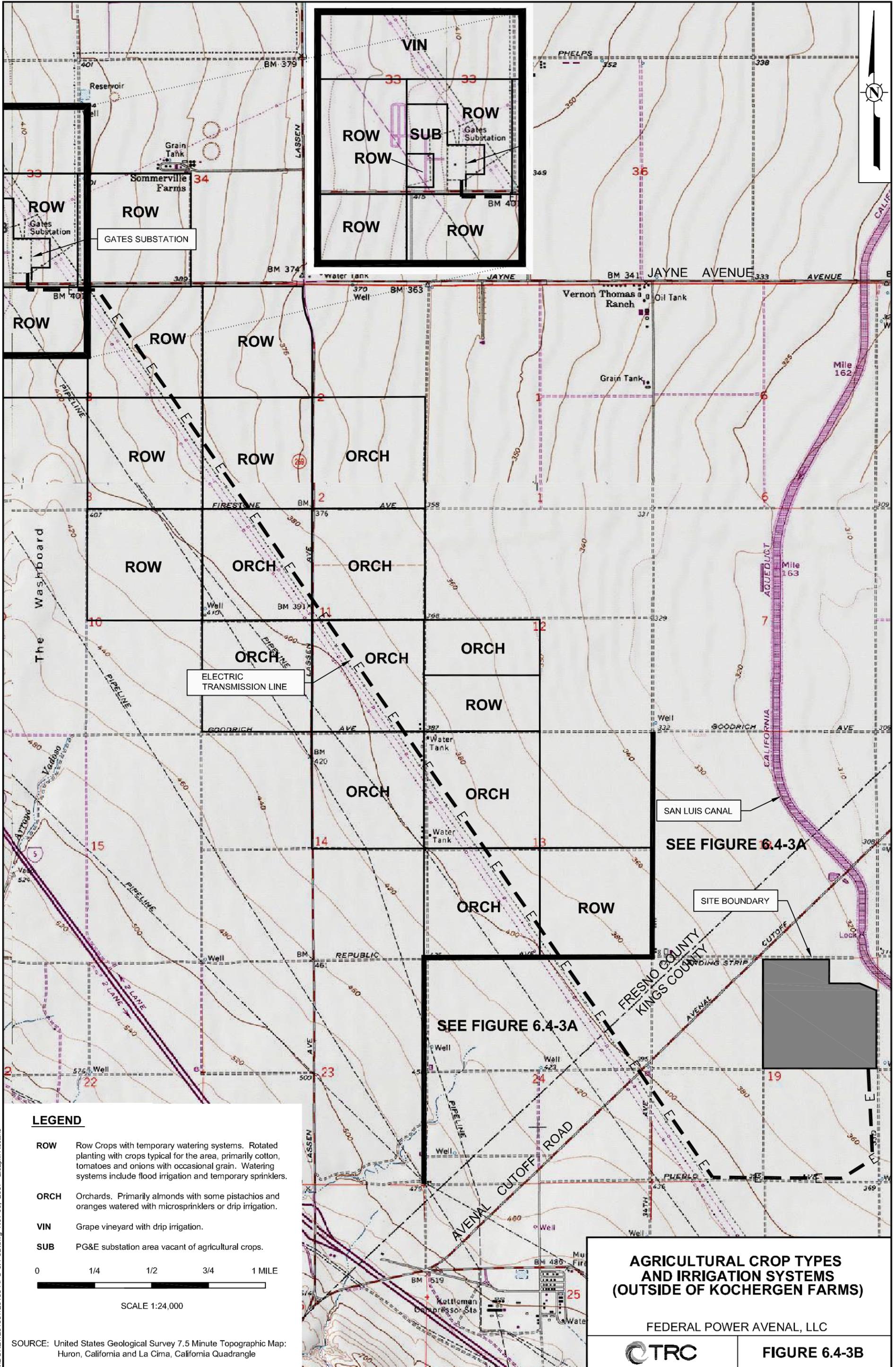


REFERENCE: U.S.G.S 7.5 MINUTE TOPOGRAPHIC SERIES MAPS OF HURON, CALIFORNIA, DATED 1971, AND LA CIMA, CALIFORNIA, DATED 1978.

**AGRICULTURE CROP TYPES AND IRRIGATION SYSTEMS (KOCHERGEN FARMS)**

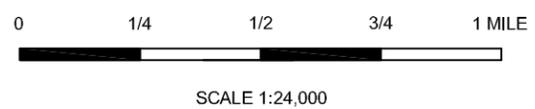
FEDERAL POWER AVENAL, LLC

<b>AVENAL ENERGY</b>	<b>FIGURE 6.4-3A</b>
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**LEGEND**

- ROW** Row Crops with temporary watering systems. Rotated planting with crops typical for the area, primarily cotton, tomatoes and onions with occasional grain. Watering systems include flood irrigation and temporary sprinklers.
- ORCH** Orchards. Primarily almonds with some pistachios and oranges watered with microsprinklers or drip irrigation.
- VIN** Grape vineyard with drip irrigation.
- SUB** PG&E substation area vacant of agricultural crops.



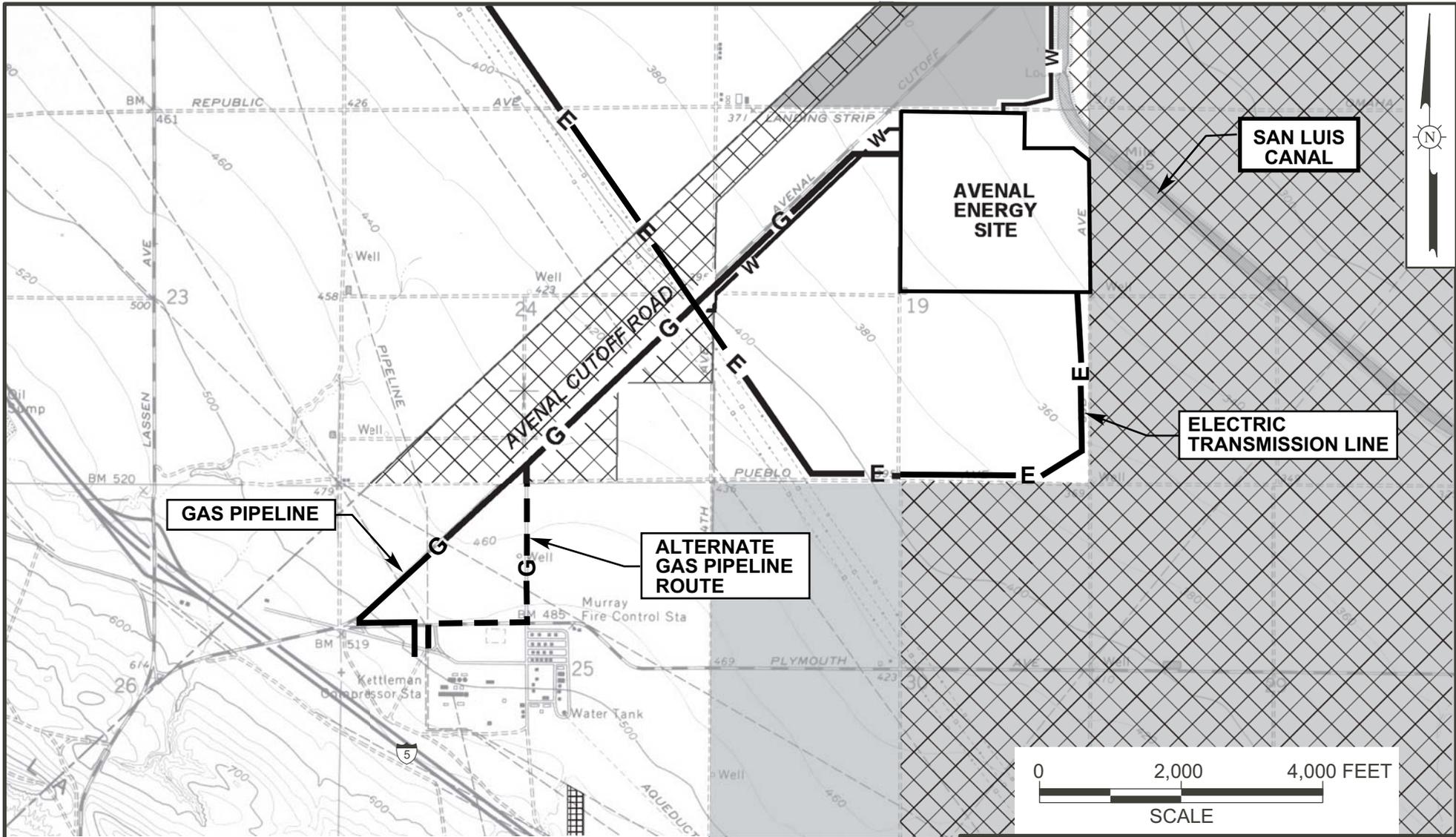
SOURCE: United States Geological Survey 7.5 Minute Topographic Map: Huron, California and La Cima, California Quadrangle

**AGRICULTURAL CROP TYPES AND IRRIGATION SYSTEMS (OUTSIDE OF KOCHERGEN FARMS)**

FEDERAL POWER AVENAL, LLC

**TRC** **FIGURE 6.4-3B**

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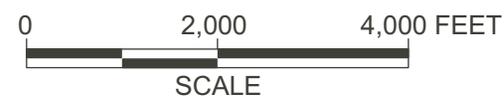
**GAS PIPELINE**

**ALTERNATE GAS PIPELINE ROUTE**

**AVENAL ENERGY SITE**

**SAN LUIS CANAL**

**ELECTRIC TRANSMISSION LINE**



**NOTE:**  
THERE ARE NO FARMLANDS OF STATEWIDE IMPORTANCE WITHIN THE MAP AREA. THE INDUSTRIAL ZONED AREA WITHIN THE CITY OF AVENAL IS NOT DESIGNATED AS PRIME FARMLAND IN THIS MAP DUE TO THE INDUSTRIAL ZONING.

**SOURCES:**  
1. WILLIAMSON ACT LANDS FROM MAP PROVIDED BY KINGS COUNTY PLANNING AGENCY, OCTOBER 2, 1998.  
2. PRIME AND UNIQUE FARMLANDS FROM IMPORTANT FARMLAND MAP, DEPARTMENT OF CONSERVATION, FARMLAND MAPPING AND MONITORING PROGRAM, LA CIMA QUADRANGLE, 1998. (FRESNO COUNTY NOT INCLUDED)

**REFERENCE:** U.S.G.S 7.5 MINUTE TOPOGRAPHIC SERIES MAP OF LA CIMA, CALIFORNIA, DATED 1978.

**LEGEND**

-  WILLIAMSON ACT CONTRACT LANDS
-  PRIME FARMLANDS
-  UNIQUE FARMLANDS

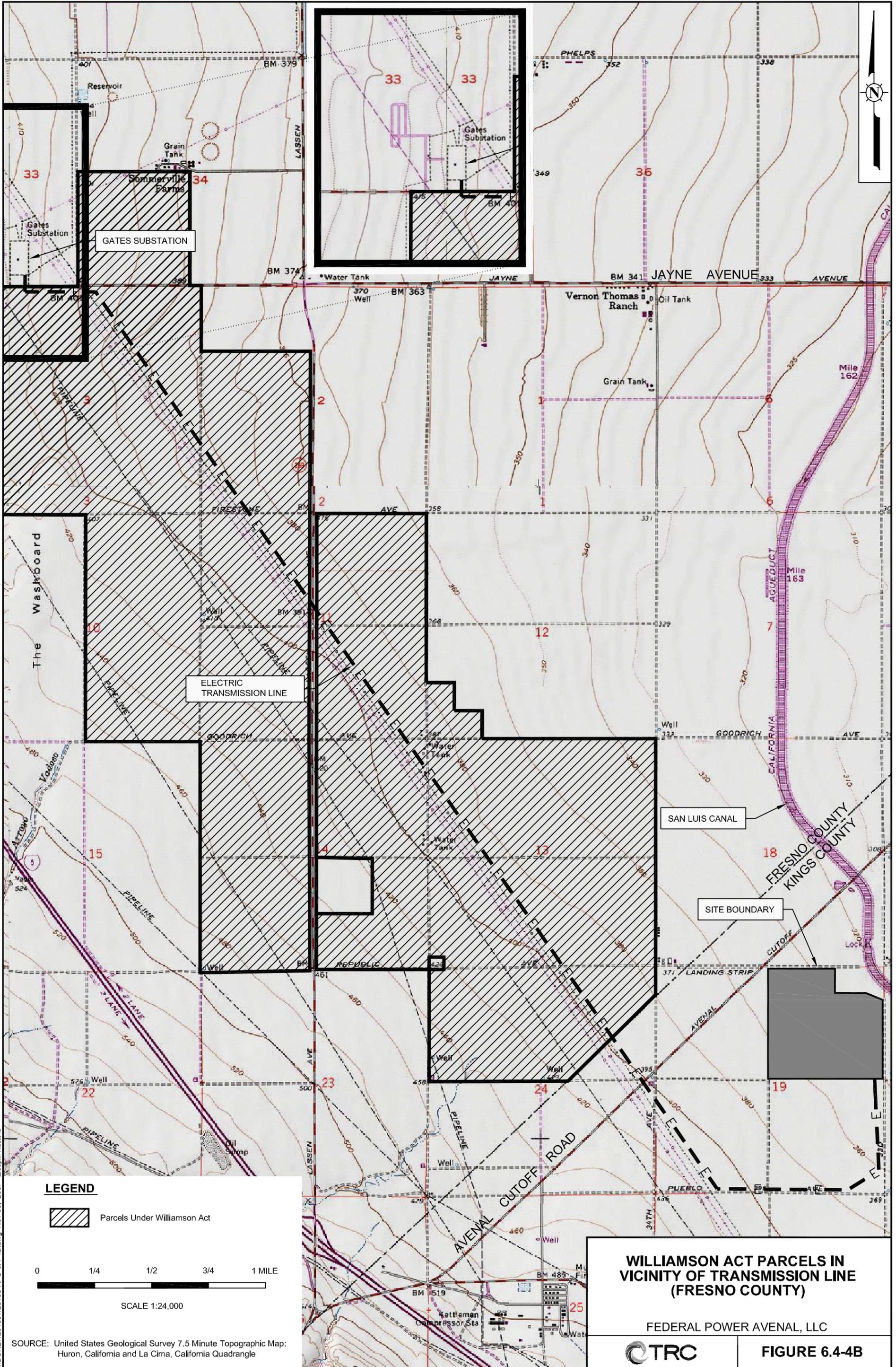
**WILLIAMSON ACT PARCELS AND UNIQUE FARMLANDS (KINGS COUNTY)**

FEDERAL POWER AVENAL, LLC

**AVENAL ENERGY**

**FIGURE 6.4-4A**

6.4-8



**LEGEND**

 Parcels Under Williamson Act

0 1/4 1/2 3/4 1 MILE

SCALE 1:24,000

SOURCE: United States Geological Survey 7.5 Minute Topographic Map: Huron, California and La Cima, California Quadrangle

**WILLIAMSON ACT PARCELS IN VICINITY OF TRANSMISSION LINE (FRESNO COUNTY)**

FEDERAL POWER AVENAL, LLC



**FIGURE 6.4-4B**

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