NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

U.S. DEPARTMENT OF ENERGY

April 24, 2013

Ms. Carol Roland-Nawi
State Historic Preservation Officer
California State Department of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296-0001

Dear Ms. Roland-Nawi:

The purpose of this letter is to provide supplemental information on the Hydrogen Energy California (HECA) Project in Kern County, California, and to seek concurrence on the delineation of the Area of Potential Effects (APE) for both archaeological and historic architectural resources in compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA).

On May 8, 2012, U.S. Department of Energy (DOE) transmitted a letter to your predecessor, Milford W. Donaldson, initiating Section 106 consultation under the NHPA. In addition, DOE sought concurrence from your office for the HECA Project's proposed APE for both archaeological and historic architectural resources. On May 25, 2012, Ms. Jenan Saunders, on behalf of Mr. Donaldson, indicated by reply letter that the State Historic Preservation Officer was unable to concur on the delineation of the proposed APE, citing a lack of sufficient information. This letter is intended to provide the required information

Background on the HECA Project

The HECA Project proposed by Hydrogen Energy California LLC consists of an Integrated Gasification Combined-Cycle (IGCC) project, with an Integrated Manufacturing Complex that will produce low-carbon nitrogen-based fertilizer. The HECA Project will gasify a 75 percent coal and 25 percent petroleum coke fuel blend to produce synthesis gas. Syngas produced via gasification will be purified to hydrogen-rich fuel, which will be used to generate low-carbon baseload electricity in a Combined-Cycle Power Block, low-carbon nitrogen-based fertilizers in an integrated manufacturing complex, and carbon dioxide (CO_2) for use in enhanced oil recovery (EOR).

The electricity and other products produced by the HECA Project will have a smaller carbon footprint than similar products produced from traditional fossil fuel sources through a conventional combustion process. This is accomplished primarily by capturing approximately 90 percent of the CO_2 from the gasification process. Captured CO_2 will be transported (via a pipeline) for use in EOR, which results in the sequestration of the CO_2 in secure geologic formations, at the nearby Elk Hills Oil Field (EHOF). EHOF is majority owned and operated by Occidental of Elk Hills, Inc. (OEHI), which will obtain necessary permits for the EOR operations.

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The DOE is providing financial assistance to the HECA Project under the Clean Coal Power Initiative Round 3 via a cost-sharing agreement with HECA LLC, covering project construction and a "Demonstration Period" for the first 2 years of project operations. DOE financial assistance for the construction and operation of the HECA Project during the Demonstration Period constitutes the DOE undertaking for purposes of Section 106 of the NHPA. OEHI's EOR facility discussed above is a necessary component of the Demonstration Period; therefore, it is also subject to compliance with Section 106.

The HECA Project requires certification from the California Energy Commission (CEC). The DOE and CEC will prepare a joint Environmental Impact Statement/Staff Assessment to satisfy the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act.

Description of the Federal Undertaking

The 453-acre HECA Project Site is approximately 7 miles west of the outermost edge of the city of Bakersfield and 2 miles northwest of the unincorporated community of Tupman in western Kern County. The HECA Project Site is currently used for farming, including cultivation of cotton, alfalfa, and onions.

The majority of the excavations (approximately 90 percent) required for construction of the HECA IGCC polygeneration facility are expected to be in the range of 5 to 10 feet below existing grade. Excavation in areas such as the gasification structure, the cooling tower pump basin, and the feedstock unloading bunker will be in the range of 15 to 50 feet below existing grade. Shallow soil-bearing foundations will be used for the majority, if not all, of the foundations. Pile foundations may be used in selected high-load applications, with piles extending approximately 40 feet below existing ground elevations. Temporary construction activities, including equipment storage, offices, construction laydown, parking and offices, will be located on the HECA Project Site and within an adjacent 91-acre Construction Laydown Area. A fence will be constructed around the HECA Project Site and adjacent agricultural lands that will also be purchased by HECA.

The HECA Project also includes the following offsite components:

- Rail Spur – A new rail spur will be constructed to the HECA Project Site to facilitate feedstock and equipment delivery, as well as product and by-product off-take. The rail spur will extend approximately 5.3 miles from the existing San Joaquin Valley Railroad to the HECA Project Site. The excavation for the rail spur will be between 6 inches and 3 feet, with an average depth of less than 2 feet. The exception being where the rail spur is proposed to cross the East Side Canal.

- Electrical Transmission Line – An electrical transmission line will interconnect the HECA Project to a future Pacific Gas and Electric Company (PG&E) switching station to the east of the HECA Project Site (adjacent to the existing Midway–Wheeler Ridge transmission lines). The electrical transmission line is approximately 3.6 miles long, of which 1.5 miles will be located within the HECA Project Site. The foundations of tangent towers (straight line

towers) will be approximately 28 feet in depth. The foundations of turning towers will be approximately 35 feet in depth.

- PG&E Switching Station – A new 230-kilovolt (kV) switching station will be constructed, allowing the Midway–Wheeler Ridge 230-kV Lines No. 1 and 2 to loop into and out of the switching station, and providing interconnection positions for the HECA generator tie line. The electric transmission switching station will be designed, constructed, owned, and operated by PG&E. The area for the switching station is approximately 4 acres in size. The maximum excavation depth is expected to be 9 feet. It is anticipated that dead-end structures would be required on the western and eastern ends of the station to terminate the transmission line from the HECA Project Site, incoming lines from the Midway Substation, and outgoing lines to the Wheeler Ridge Substation.

- Natural Gas Supply – A natural gas interconnection will be made with an existing PG&E natural gas pipeline north of the HECA Project Site. The natural gas pipeline is approximately 13 miles in length. The excavation for the natural gas pipeline is expected to be approximately 7 feet. At the interconnection, a metering station will be constructed. The metering station will be up to 100 feet by 100 feet, and will be surrounded by a chain link fence. The metering station will be excavated to approximately 6 feet.

- Water Supply Pipelines – The Project will use brackish groundwater supplied from the Buena Vista Water Storage District, northwest of the HECA Project Site. The raw water supply pipeline will be approximately 15 miles in length. The process water line will be in a trench expected to be up to 5 feet in depth, with the trench being excavated in the road atop the levee adjacent to the West Side Canal. Potable water for construction, drinking, and sanitary use will be delivered from a new West Kern Water District potable water production site approximately 1 mile east of the HECA Project Site. The potable water pipeline will be placed in a trench excavated to a depth of 6 feet.

The OEHI Project will include construction and operation of the following three primary EOR components during the Demonstration Period:

- CO_2 Pipeline – The CO_2 pipeline will transfer the CO_2 captured during gasification from the plant at the HECA Project Site south to the EHOF for EOR and resulting simultaneous sequestration (storage). The CO_2 pipeline is approximately 3.4 miles in length. Most of this pipeline will be installed in a trench excavated to an average depth of approximately 7 feet. Some sections will require the use of horizontal directional drilling (HDD) to avoid interference with water conveyance features, including the California Aqueduct and the West Side Canal. The depth of these HDD crossings is expected to be 50 to 100 feet below current ground surface elevations.

- CO_2 EOR Processing Facility – The CO_2 EOR processing facility will permanently occupy approximately 61 acres in the EHOF. Up to 50 feet of excavation may be required in some areas for grading associated with the CO_2 EOR processing facility. The maximum depth of excavation for associated equipment foundations is expected to be approximately 6 feet below grade.

- Satellite Gathering Stations – Three Satellite Gathering Stations (satellites) will provide primary separation of the oil/water and gas from the production well stream during the Demonstration Period. The satellites will use existing pipelines as well as existing producing and injection wells. New pipelines may also be installed in certain locations, however no detailed design information is available at this time. Each Satellite Gathering Station is expected to be 230 by 200 feet. The maximum depth of excavation for the Satellite Gathering Stations is expected to be 10 feet.

Proposed Area of Potential Effects

For purposes of the Section 106 consultation, DOE proposes to define the APE for archaeological resources as all areas where ground-disturbing activities will occur in relation to the HECA and OEHI Projects. More specifically, the APE includes all Project components as well as all areas within 200 feet from Project facilities and 50 feet from the construction right-of-way of all Project linears (i.e., process/potable water, natural gas, electrical transmission, rail spur, and carbon dioxide). DOE proposes to define the APE for historic "built environment" resources as inclusive of the footprint of all HECA and OEHI Project components and an additional 0.5 mile around all aboveground Project components.

The APEs for archaeological and historic architectural resources defined above, in particular the inclusion of buffer areas, are consistent with the requirements of the CEC, which has exclusive authority for licensing thermal power plants in California with a generating capacity of 50 megawatts or more.

Table 1 lists the Project components and the areas used to establish both the vertical and lateral extent of the APEs.

Attached are figures depicting the proposed APEs for both archaeological and historic architectural resources.

Cultural Resource Inventory Results to Date

As of the date of this letter, several efforts to inventory cultural resources within the APEs proposed for the HECA and OEHI Project components have been conducted. Table 2 provides the archaeological resources currently identified within the HECA Project components and their physical relationship to the proposed APE as defined for archaeological resources. The applicant's intent is to avoid all identified archaeological resources. DOE is actively working with CEC and the Applicant to develop appropriate avoidance measures.

Table 1
APE by Project Component

Project Component	Maximum Depth of Disturbance (feet)	Approximate Acres/ Length	Archaeological Buffer per CEC Guidelines (feet)	Historic Architecture per CEC Guidelines Buffer (miles)
HECA IGCC Polygeneration Facility	**50**	**453 acres**	**200**	**0.5**
Rail Spur	**3**	**5.3 miles**	**50**	**0.5**
Electrical Transmission Line	**35**	**2.1 miles**	**50**	**0.5**
PG&E Switching Station	**9**	**4 acres**	**200**	**0.5**
Natural Gas Supply	**7**	**13 miles**	**50**	**0 (none required)**
Process Water Pipeline	**5**	**15 miles**	**50**	**0 (none required)**
Potable Water Pipeline	**6**	**1 mile**	**50**	**0 (none required)**
CO_2 Pipeline	**7 (trenching) 50 to 100 (HDD)**	**3.4 miles**	**50**	**0 (none required)**
CO_2 EOR Processing Facility	**50**	**61 acres**	**200**	**0.5**
Three Satellite Gathering Stations	**10**	**1 acre each**	**50**	**0.5**

Note: Per CEC Guidelines, below ground installations do not require a buffer area to be added to the Historic Architecture APE.

Cultural resources inventory efforts conducted to date have also included surveys for historic architectural resources. Table 3 lists the historic architectural resources currently identified within the HECA Project components and their relationship to the APE as defined for historic architectural resources. Two of the identified historic architectural resources have been found eligible for inclusion to the National Register of Historic Places and/or California Register of Historical Resources. However, neither of these resources will be affected by Project implementation.

Cultural resources inventory efforts within the APE as defined for the OEHI Project components are on-going and the results of these investigations along with those completed for the HECA Project will be forwarded to you when a formal finding of effects has been developed.

Table 2
Archaeological Resources Currently Identified Within the Proposed APE

Primary # (P-15) or Temporary Designation	Site Type	Prehistoric/ Historic	Associated Project Component	NRHP/ CRHR Status	Within APE per CEC Guidelines	Within Close Proximity to APE
89	Lithic and Trash Scatter with Human Remains	Prehistoric/ Historic	Process Water Pipeline	Not Evaluated	No	Yes
171	Burial Mound	Prehistoric	Process Water Pipeline	Not Evaluated	Yes	No
179	Burial Mound	Prehistoric	Process Water Pipeline	Not Evaluated	No	Yes
2485 and BS-IF-003	Lithic Scatter	Prehistoric	Process Water Pipeline	Not Evaluated	No	Yes
3108	Lithic Scatter	Prehistoric	Natural Gas Pipeline and Rail Spur	Not Evaluated	Yes	No
HECA-2008-1	Lithic and Shell Scatter	Prehistoric	Process Water Pipeline	Not Evaluated	Yes	No
HECA-2009-2	Lithic Scatter	Prehistoric	CO_2 Pipeline	Not Evaluated	Yes	No
HECA-2009-9	Lithic Scatter	Prehistoric	Process Water, Well Field	Not Evaluated	Yes	No
HECA-2009-10	Lithic Scatter	Prehistoric	Process Water, Well Field	Not Evaluated	Yes	No
HECA-2010-1	Lithic Scatter	Prehistoric	Electrical Transmission/ Switching Station	Not Evaluated	Yes	No
HECA-2010-2	Foundation and Trash Scatter	Historic	Natural Gas Pipeline and Rail Spur	Not Evaluated	Yes	No

Notes:

APE = Area of Potential Effects
CO_2 = Carbon Dioxide
CRHR = California Register of Historical Resources
HECA = Hydrogen Energy California
NRHP = National Register of Historic Places

Table 3
Historic Architectural Resources Currently Identified Within the Proposed APE

Address or Resource Name	Year Built	Associated Project Component	NRHP/CRHR Status
Relocated Structures North of SR 58	Unknown, moved to site after 1973	Natural Gas Pipeline and Rail Spur	Ineligible
Southern Pacific McKittrick (Asphalto) Branch	1893	Natural Gas Pipeline and Rail Spur	Ineligible
Pacific Gas & Electric/Southern California Edison Transmission Lines & Towers	ca. 1943-53 ca. 1956-68 ca. 1968-73	Natural Gas Pipeline and Rail Spur	Ineligible
6010 Buerkle Road	1964	Natural Gas Pipeline and Rail Spur	Ineligible
35034 Stockdale Highway	ca. 1940s	Natural Gas Pipeline and Rail Spur	Ineligible
Works Projects Administration Culverts	1940	Project Site, Natural Gas Pipeline, and Rail Spur	Ineligible
7307 Adohr Road (Adohr Farms)	1930	Project Site, Natural Gas Pipeline, and Rail Spur	Ineligible
7307 Adohr Road (Palm Farms)	1953	Project Site, Natural Gas Pipeline, and Rail Spur	Ineligible
7345 Adohr Road	1930	Project Site, Natural Gas Pipeline, and Rail Spur	Ineligible
Old Headquarters Weir	1911	Project Site and Process Water Pipeline	Eligible
California Aqueduct	1961-72	Project Site and CO_2 Pipeline	Eligible
6122 Tule Park Road	1941	Project Site and Electrical Transmission/ Switching Station	Ineligible
Tupman Water Plant	ca. 1935, 1974-81	Electrical Transmission/Switching Station	Ineligible
Canals	1876-1918	Various	Ineligible

Notes:
APE = Area of Potential Effects
CO_2 = Carbon Dioxide
CRHR = California Register of Historical Resources
HECA = Hydrogen Energy California
NRHP = National Register of Historic Places

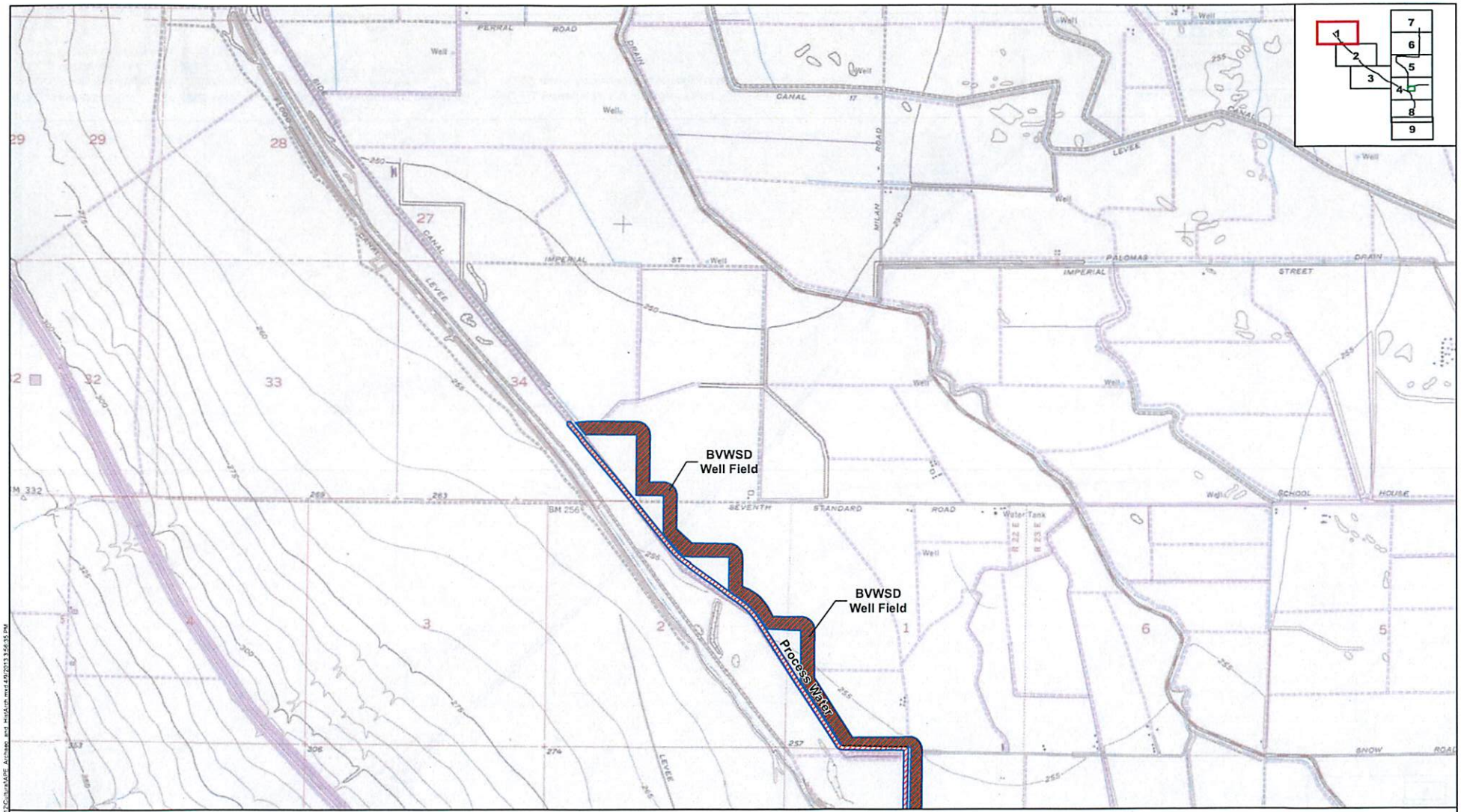
As discussed at the beginning of this correspondence, DOE is providing supplemental information on the proposed federal undertaking and is requesting your concurrence on the delineation of the respective APEs for both archaeological and historic architectural resources. DOE looks forward to working with you as part of the Federal Section 106 consultation process. For overall environmental project questions, please contact me at (304) 285-5219 or by email at fred.pozzuto@netl.doe.gov. Should you have technical questions, please contact the NEPA contractor, Mr. Dale Shileikis at (415) 243-3826, or by email at dale.shileikis@urs.

Sincerely,

Fred Pozzuto
Environmental Manager/
NEPA Compliance Officer

Enclosures:

cc: G. Roark – California Energy Commission
M. Mascaro – HECA – SCS Energy
D. Shileikis – URS Corporation
M. Coalmer – Occidental of Elk Hills, Inc.



Project Site
Construction Staging Area
Rail Laydown Yard
Controlled Area Fenceline

Natural Gas Valve Station
Electrical Switching Station
BVWSD Well Field
HDD Entry/Exit Pits

OEHI CO2 EOR Project
EOR Processing Facility & Satellite Gathering Stations

Archaeological Area of Potential Effects
Historic Architectural Area of Potential Effects

N

0 1,000 2,000 FEET

Sources: USGS (30'x60' quads: Taft 1982, Delano 1982). Copyright © 2011 National Geographic Society, i-cubed

AREA OF POTENTIAL EFFECTS

April 2013
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Hydrogen Energy California (HECA)
Kern County, California

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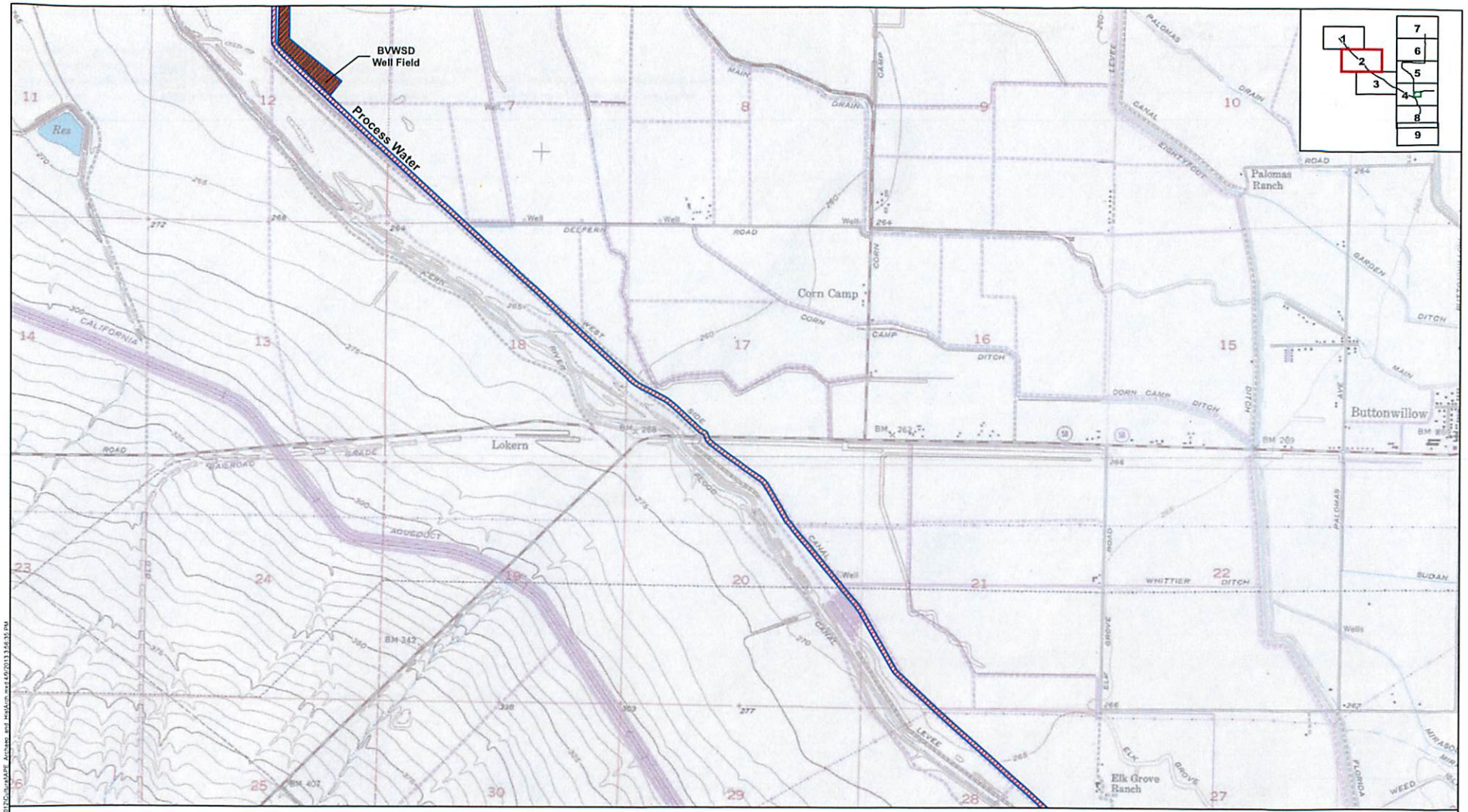
FIGURE 1 - SHEET 1



AREA OF POTENTIAL EFFECTS

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Hydrogen Energy California (HECA)
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FIGURE 1 - SHEET 2

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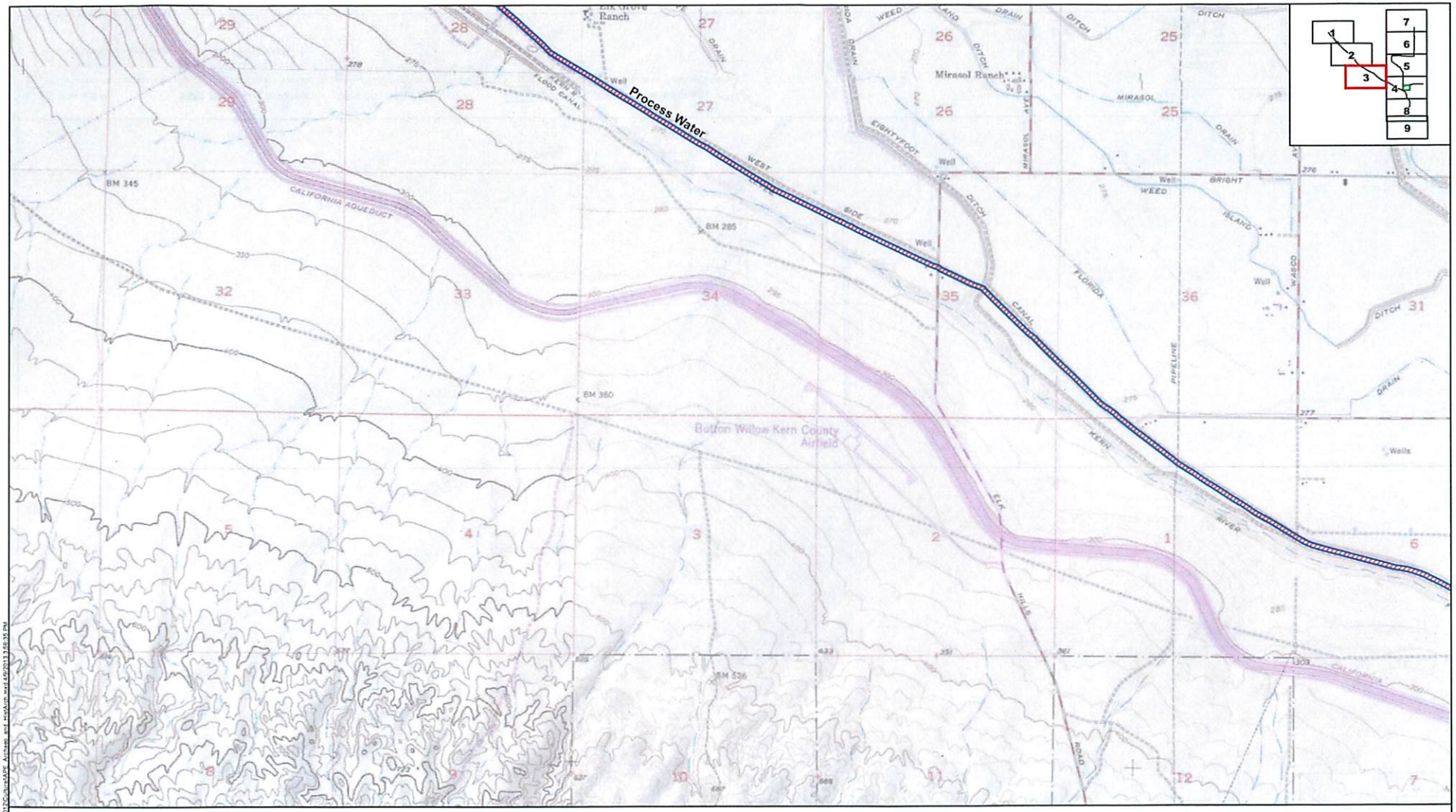

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Archaeological Area of Potential Effects
Historic Architectural Area of Potential Effects

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0 1,000 2,000 FEET

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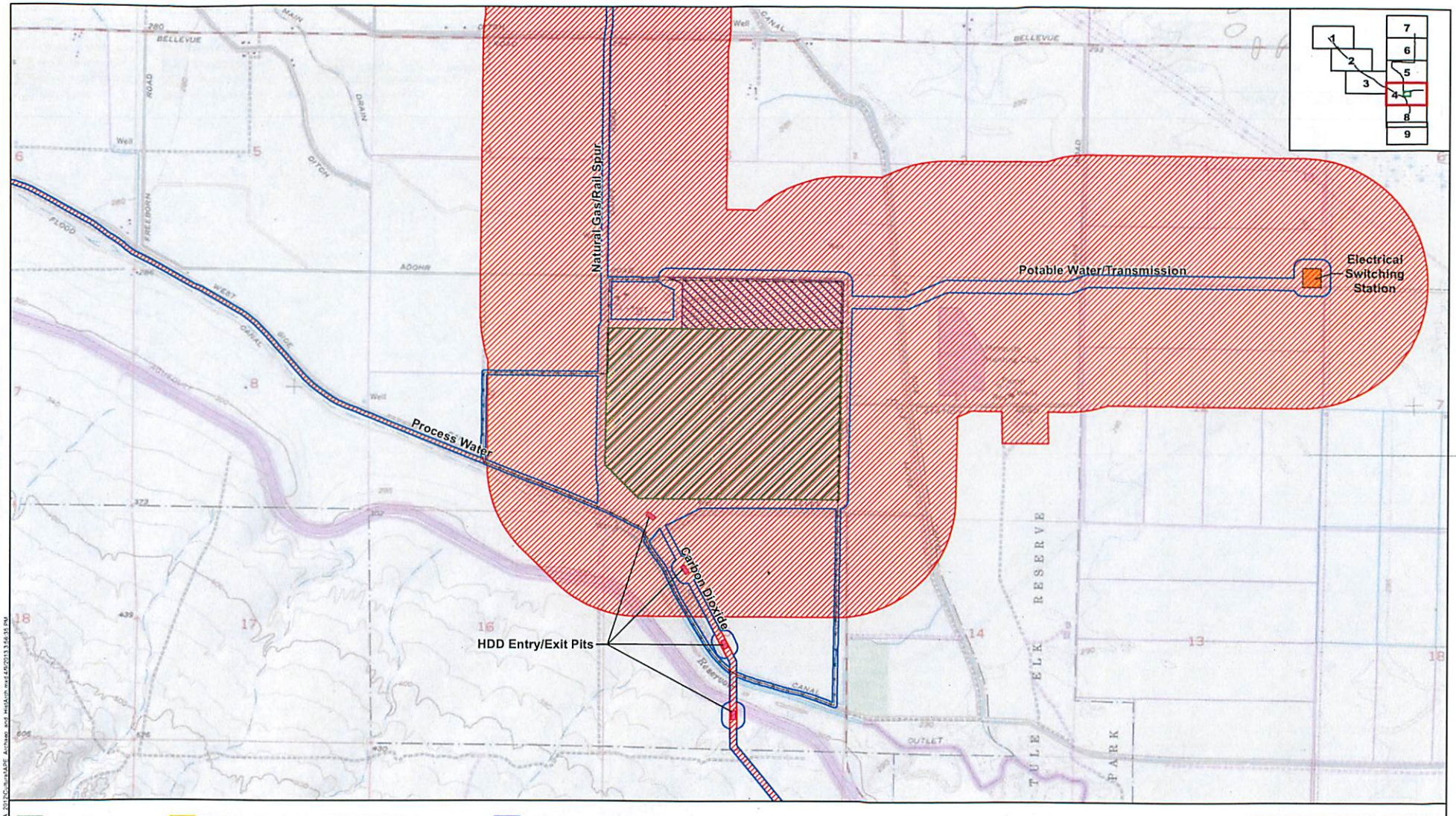
Hydrogen Energy California (HECA)
Kern County, California

URS

FIGURE 1 - SHEET 3



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Hydrogen Energy California (HECA)
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FIGURE 1 - SHEET 4

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Kern County, California

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FIGURE 1 - SHEET 5

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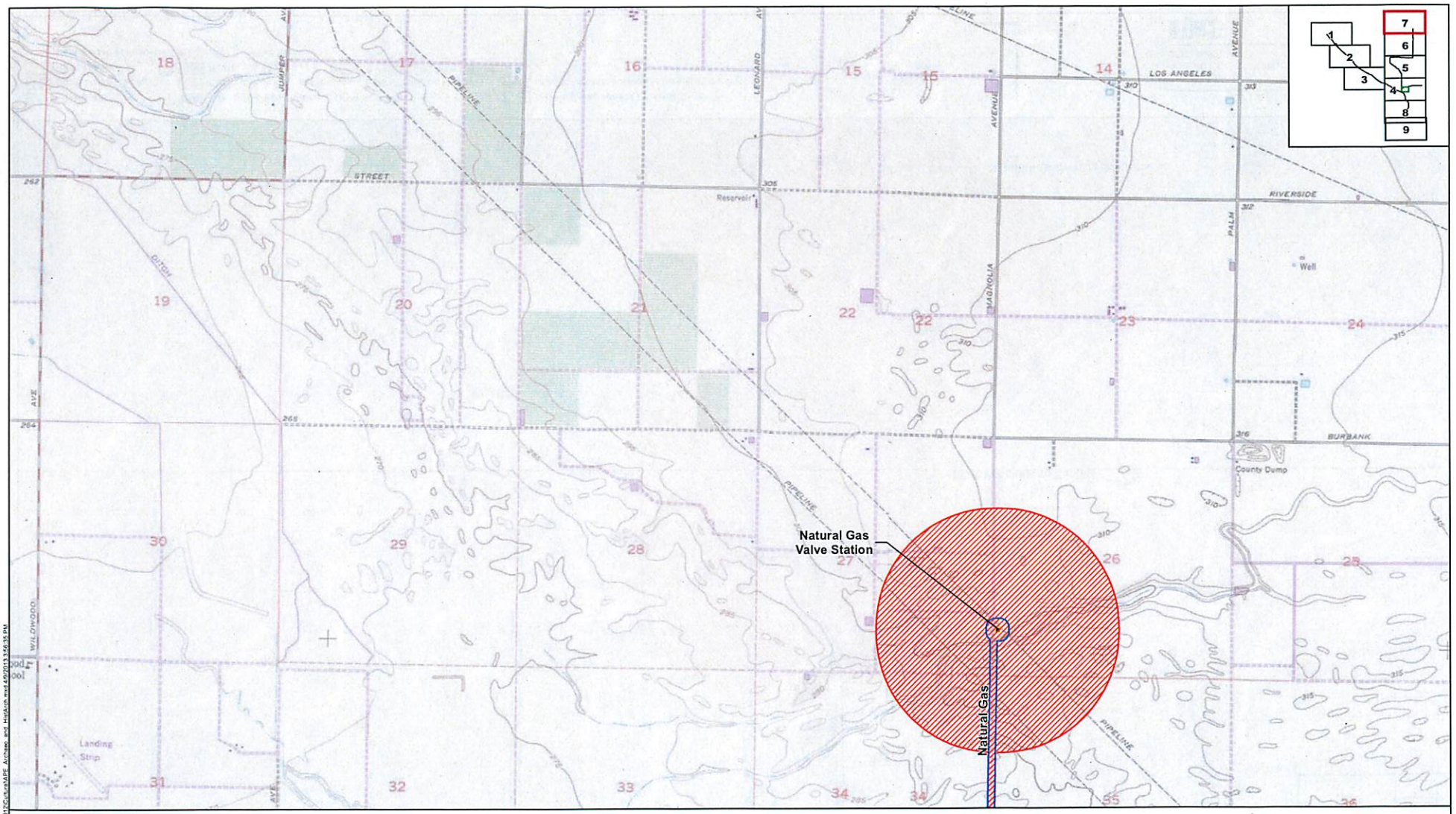
FIGURE 1 - SHEET 6



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Archaeological Area of Potential Effects
Historic Architectural Area of Potential Effects

N

0 1,000 2,000 FEET

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AREA OF POTENTIAL EFFECTS

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Hydrogen Energy California (HECA)
Kern County, California

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FIGURE 1 - SHEET 7

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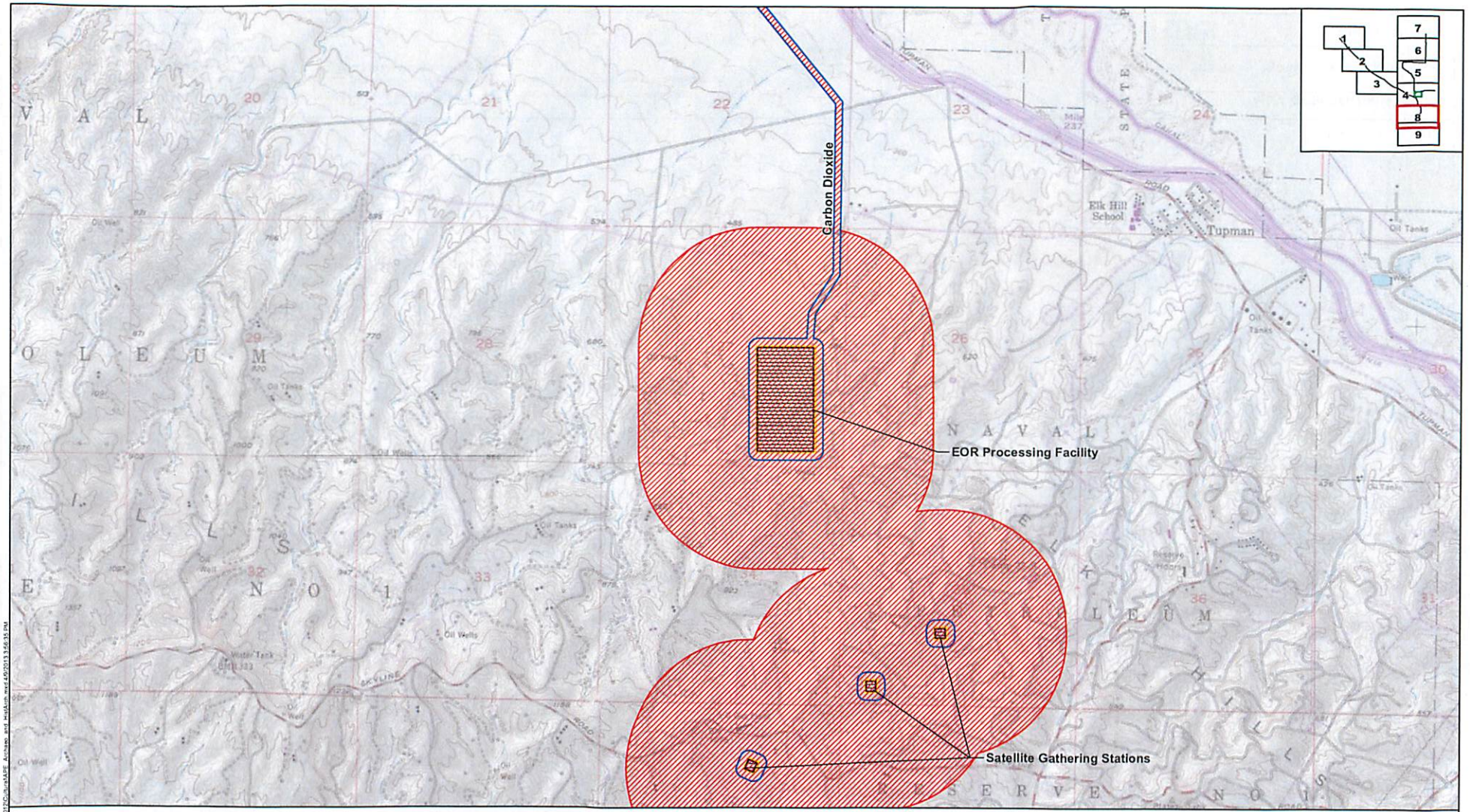

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Kern County, California

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FIGURE 1 - SHEET 8

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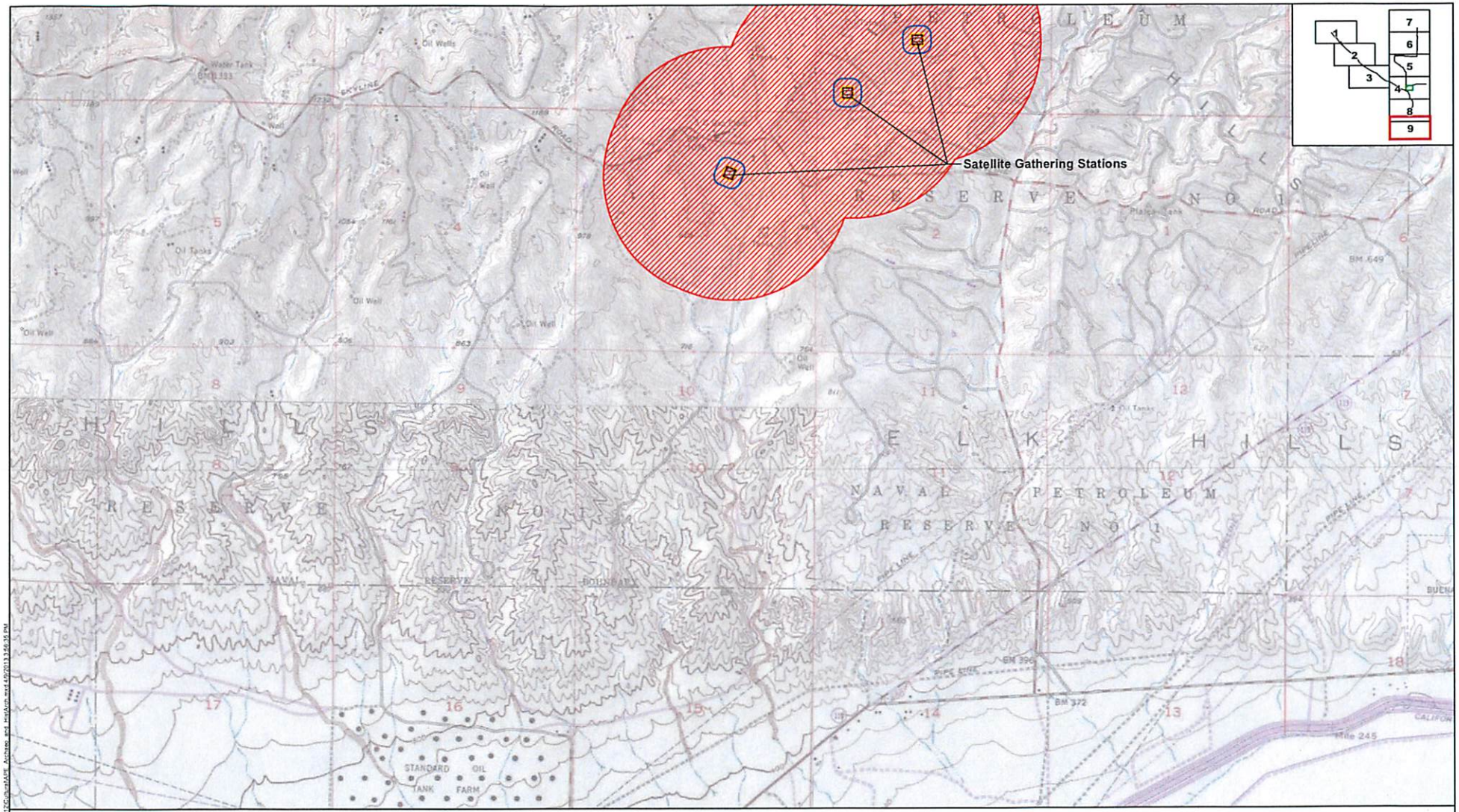

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Historic Architectural Area of Potential Effects

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0 1,000 2,000 FEET

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Hydrogen Energy California (HECA)
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FIGURE 1 - SHEET 9

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