FACT SHEET

U.S. Environmental Protection Agency, Region 9
Draft Class I Non-Hazardous Underground Injection Control Permit
Permit Number R9UIC-CA1-FY17-2R
Panoche Energy Center

Facility Location:
The facility is in the southwest quarter of Section 5, Township 15 South, Range 13 East, approximately 16 miles south-southwest of the City of Firebaugh, Fresno County, California.

Existing Wells:

Well IW1: Located at 36° 39' 2.321" N, 120° 35' 1.777" W
Well IW2: Located at 36° 39' 2.164" N, 120° 35' 5.637" W
Well IW3: Located at 36° 39' 2.264" N, 120° 35' 0.170" W
Well IW4: Located at 36° 39' 3.372" N, 120° 35' 9.076" W

Potential Wells:

Well IW5: Located at 36° 39' 0.201" N, 120° 35' 1.069" W
Well IW6: Located at 36° 39' 0.248" N, 120° 35' 8.834" W

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I. Purpose of the Fact Sheet

The U.S. Environmental Protection Agency, Region 9 (EPA) has prepared this fact sheet for the draft Class I Non-hazardous Underground Injection Control (UIC) Permit (Draft Permit), proposed to be issued to Panoche Energy Center (PEC or the Permittee). Under 40 CFR § 124.8, EPA is required to prepare a fact sheet for every draft UIC permit. The federal regulations require that fact sheets briefly set forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. This fact sheet

includes:

1. A brief description of the type of facility or activity that is the subject of the draft permit;
2. The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being injected;
3. A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record;
4. A description of the procedures for reaching a final decision on the draft permit; and
5. The name and telephone number of a person to contact for additional information.

II. Description of the Facility

Panoche Energy Center (PEC) is a 400-megawatt simple-cycle power plant in an unincorporated area of western Fresno County. The facility is located on a 12.8-acre site within a 128-acre parcel. The site is approximately 16 miles south-southwest of the city of Firebaugh and approximately two miles east of Interstate 5, adjacent to the Pacific Gas & Electric's Panoche Substation.

In October 2017, EPA received a timely application for renewal of PEC's Class I UIC permit, under which the facility is currently regulated by way of an administrative extension. See 40 CFR § 144.37(a). The permit application seeks to renew the permit authorizing the existing four UIC Class I non-hazardous injection wells and two new Potential Wells for a 10-year period of continued injection of PEC's wastewater.

III. Type of Fluids to be Injected

PEC's non-hazardous wastewater is disposed of in the Existing Wells, IW1, IW2, IW3, and IW4. The Permittee is limited to injecting wells fluids that consist of cooling tower blowdown water, reverse osmosis system reject water, evaporative cooler blowdown water, combustion turbine intercooler condensate, enhanced wastewater system water, and oil/water separator discharge water associated with operations of a simple cycle power generation plant that consists of four natural gas-fired combustion turbine generators. If authorized, the fluids authorized to be injected into Potential Wells IW5 and/or IW6 will be identical to those listed above.

This Permit authorizes injection by Existing Wells IW1, IW2, IW3, IW4, and Potential Wells IW5 and IW6 to dispose of these wastewaters into the Panoche Formation at depths ranging between approximately 7,199 to 8,897 feet below ground surface. The Panoche Formation at the location of the wells has greater than 10,000 mg/L total dissolved solids and is confined above by the approximately 1,148-foot-thick Tierra Loma Member of the Moreno Formation and the 308 foot-thick Marca Member of the Moreno Formation.

IV. Brief Summary of Specific Permit Conditions

To ensure that the proposed injection activity complies with all relevant Safe Drinking Water Act (SDWA) regulations at 40 CFR Parts 124, 144, 146, 147, and 148 and to protect public health and underground sources of drinking water (USDWs), EPA is proposing the following conditions for construction, testing, corrective action, operation, monitoring and reporting, plugging and abandonment, and financial assurance in the Draft Permit. The sections below summarize the proposed conditions, requirements, and other permit considerations.

i. Requirements Prior to Operating (Part II, Section A of the Draft Permit)

The UIC regulations require that a permittee choose a financial assurance mechanism from a list of options. PEC provided evidence of financial assurance for the plugging and abandonment of the four existing injection wells (IW1, IW2, IW3, and IW4) to EPA, as required by 40 CFR § 146.63. The Draft Permit also requires that PEC provide EPA documentation of financial assurance for the plugging and abandonment of one monitoring well. EPA's approval of the proposed financial assurance is required before drilling authorization. The Draft Permit would require that PEC maintain the financial assurance for the duration of the permit term. 40 CFR § 144.63. In addition, the Draft Permit calls for adequate notification of activities to test the wells and the injection formation and timely reporting of those activities. 40 CFR § 146.13(c).

If potential additional wells IW5 and/or IW6 are constructed during the term of the Permit, financial assurance requirements must be met prior to construction. No changes to the operating conditions or total volume injected and pressure limitations will be authorized if the additional wells are constructed.

ii. Conditions for Existing Wells (Part II, Section B of the Draft Permit)

The Draft Permit identifies the precise location of the existing injection wells IW1, IW2, IW3, and IW4. Appendix Q of PEC's permit application described the logs and other tests conducted during drilling and construction of the existing wells, including deviation checks, casing logs, and injection formation tests. PEC also conducted formation evaluation wireline logging operations and used those results to estimate and report values for porosity, lithology, formation water resistivity, total dissolved solids (TDS) concentrations, and rock mechanical properties for both the injection and confining zones identified within the permitted geological sequence, and for selected intervals for identification of any USDWs above the injection zone.

The Draft Permit requires PEC to conduct a pressure fall-off test (FOT) to characterize and monitor formation characteristics annually. 40 CFR § 146.13(d)(1). A FOT is a pressure transient test that consists of shutting in an injection well and measuring the pressure drop off over time to assess the pressure buildup in the injection zone.

The Draft Permit sets the maximum allowable injection pressure (MAIP) for the Existing Wells. The values measured at the wellhead proposed in the Draft Permit shall not exceed the values listed below at each well for injection into the Panoche Formation:

IW1: 2,478 psi
IW2: 2,416 psi
IW3: 2,478 psi
IW4: 2,478 psi

If Well IW5 and/or IW6 are constructed, the Permittee must conduct internal and external mechanical integrity tests (MITs) in accordance with the procedures and schedules outlined in the Draft Permit.

In no case shall the Permittee inject at pressures that (i) initiate new fractures or propagate existing fractures in the injection zone or the confining zone, (ii) cause the movement of injection or formation fluids into or between USDWs, or (iii) allow injection fluids to migrate to oilfield production wells.

The Draft Permit also establishes the daily injection rate at each Existing Well, which shall not exceed the values listed below at any time. This rate will be subject to an annual review based on the annual Zone of Endangering Influence (ZEI) determinations performed. 40 CFR § 146.6. If IW5 and/or IW6 are constructed, no increase in the total volume authorized to be injected under this Permit is authorized. 40 CFR § 146.13(a).

IW1: 144,039 gallons
IW2: 172,041 gallons
IW3: 155,147 gallons
IW4: 164,002 gallons

iii. *Corrective Action (Part II, Section C of Draft Permit)*

Prior to EPA granting authorization to inject under this Permit, the Permittee is not required to conduct any corrective action, in accordance with 40 CFR §§ 144.55 and 146.7.

Corrective action may be required after permit issuance to address any wells within the area of review that may allow migration of fluids into USDWs. EPA will use the annual FOT results and re-calculation of the ZEI, along with USDW monitoring results from the monitoring well, as described in Section V. Monitoring, Recordkeeping, and Reporting of Results below, to determine the potential need for any future corrective action.

iv. *Well Operation (Part II, Section D of the Draft Permit)*

PEC must demonstrate that Existing Wells IW1, IW2, IW3, and IW4 have mechanical integrity and that the proposed injection fluid is not hazardous. PEC shall demonstrate that there are not significant leaks: 1) in the casing and tubing that would allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may otherwise adversely affect the health of persons (internal mechanical integrity); and 2) through the casing

wellbore annulus or vertical channels adjacent to the injection wellbore (external mechanical integrity). 40 CFR § §144.12 and 146.8(a)(2).

The Draft Permit requires periodic MITs via a casing/tubing annular pressure test at least once every five (5) years, continuous pressure monitoring in each well, and a radioactive tracer and a temperature log (or other approved diagnostic tool or procedure) annually. 40 CFR § 146.8(b). The tubing/casing annulus pressure of the wells will be continuously monitored and recorded to verify that internal mechanical integrity of the wellbore is maintained during operations, as required by 40 CFR § 146.8(a). Radioactive tracer and temperature surveys will be conducted to verify the absence of significant fluid movement through vertical channels adjacent to the wellbore. Loss of mechanical integrity of any of the permitted wells would require PEC to send notification to EPA and take action to restore and confirm mechanical integrity of the well.

The Draft Permit also requires that PEC operate Existing Wells IW1, IW2, IW3, and IW4 in a manner that will not (i) initiate or propagate fractures in the injection zone or the confining zone, (ii) allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may otherwise adversely affect the health of persons per 40 CFR § 144.12, or (iii) allow injection fluids to migrate to oilfield production wells.

PEC must document any particulate filters used upstream of the injection wells. Injection fluids may include chemical additives for the purpose of facility and well operation and maintenance, and must be reported to EPA, if used.

After permit issuance, and annually at the same time thereafter, the Permittee shall review the ZEI calculation based on any new data obtained from the FOT and static reservoir pressure observations and shall provide to EPA a copy of the modified ZEI calculations, along with all associated assumptions and justifications, with the next Quarterly Report.

v. *Monitoring, Recordkeeping, and Reporting of Results (Part II, Section E of Draft Permit)*

The Draft Permit requires continuous monitoring of injection fluid temperature, injection rate, daily injection volume, total cumulative volume, well head injection pressure, and annular pressure in each injection well. The injectate must be sampled quarterly to determine the quantities/values of the following constituents using EPA-approved methods: inorganics (major anions and cations); solids (TDS and total suspended solids); general and physical parameters (temperature, turbidity, pH, conductivity, hardness, specific gravity, alkalinity, biological oxygen demand, density, and viscosity); trace metals; volatile organic compounds; and semi-volatile organic compounds. 40 CFR § 146.13(b). Pursuant to the Draft Permit, PEC is required to maintain all operational and monitoring records, and to submit four (4) quarterly reports to EPA each year that include the results of the required monitoring, among other things. 40 CFR § 146.13(c). Monitoring requirements, (both parameters and frequency) for the potential new injection wells are the same as those for the existing injection wells.

USDW Monitoring

Pursuant to 40 CFR §§ 146.13 (b) and (d), the Permittee shall install one (1) monitoring well to perform chemical analysis (as described below) and measure specific conductance and formation pressure in order to identify any potential changes in the USDW in the vicinity of one (1) nearby abandoned well. The monitoring well shall be located within 100 feet to the south-southwest of the Silver Creek 18 Well, an abandoned oil and gas exploratory well that penetrates through the Panoche injection formation. EPA is requiring USDW monitoring near the Silver Creek 18 well to help determine whether there is any impact on the lowermost USDW, including potential fluid migration from the injection zone, as a result of PEC's injection activities. The abandoned Silver Creek 18 well does not have a cement plug between the injection zone and the lowermost USDW so there is a possibility that this well could be a conduit for fluids to migrate from the over-pressured injection zone to the shallower USDW. The draft permit requires the Permittee to submit a monitoring well construction plan within 60 days of permit issuance, construct the well within 120 days of receiving EPA approval of the plan, and monitor the USDW in the near vicinity of the Silver Creek 18 well.

Chemical analysis for the samples collected from the monitoring well will be analyzed for the following: TDS, alkalinity, anions and cations, trace metals, hardness, pH, specific gravity, total sulfide, oil and grease, and total metals. This analysis shall be performed monthly for the first year of monitoring, and quarterly thereafter.

vi. *Plugging and Abandonment (Part II, Section F of the Draft Permit)*

PEC will be required to plug and abandon IW1, IW2, IW3, and IW4, as provided in the Plugging and Abandonment Plan in Attachment Q of their permit application and Appendix G of the Draft Permit, which PEC submitted pursuant to 40 CFR §144.51(o). After a cessation of injection operations for two (2) years in any permitted injection well, PEC must plug and abandon the inactive well(s) in accordance with the Plugging and Abandonment Plan unless PEC notifies EPA of its intent to reactivate the well(s), has demonstrated that the well(s) will be used in the future, and describes actions or procedures to ensure that the well(s) will not endanger USDWs during the period of temporary abandonment, as required by 40 CFR § 144.52(a)(6). The inactive well(s) must pass an initial internal MIT before EPA authorizes temporary abandonment status. EPA may change the manner in which the injection wells will be plugged if the well(s) is modified during its permitted life, or if the proposed Plugging and Abandonment Plan for the well is not consistent with EPA requirements for construction or mechanical integrity.

vii. *Financial Assurance (Part II, Section G of the Draft Permit)*

PEC is required to maintain adequate financial assurance to guarantee the closure of existing wells IW1, IW2, IW3, and IW4. 40 CFR § 144.63(b). The financial assurance mechanism and amount will be reviewed annually and updated as needed. Prior to the installation of the monitoring well, financial assurance must also be provided for EPA approval.

Prior to EPA authorizing construction of the Potential Wells IW5 and/or IW6, the Permittee is required to provide adequate financial assurance to guarantee proper closure of the well(s).

viii. *Duration of Permit (Part II, Section H of the Draft Permit)*

EPA proposes to issue the Permit and the authorization to inject for a period of ten (10) years unless terminated under the conditions set forth in Part III, Section B.1 of the Draft Permit. 40 CFR §144.36.

V. Permit Process

i. *Application and Review Period*

The EPA Region 9 Water Division Director has authority to issue permits for underground injection activities under 40 CFR § 144.31. PEC is applying for UIC Permit Number R9UIC-CA1-FY17-2R for the continued operation of existing Class I injection wells IW1, IW2, IW3, and IW4 to dispose of non-hazardous waste waters generated from the PEC power plant.

In October 2017, EPA received a permit application from PEC to renew the authorization to inject into Existing Wells IW1, IW2, IW3, and IW4. An updated application was prepared by PEC and submitted to EPA in March 2019. After completing a thorough technical review of all submitted information, EPA has determined that the information provided by PEC is sufficient to prepare the Draft Permit. The Draft Permit, if finalized, would authorize injection of non-hazardous waste waters into Existing Wells IW1, IW2, IW3 and IW4 for ten (10) years. Upon meeting the requirements for construction plans, testing and financial assurance, Potential Wells IW5 and IW6 may be approved under this Permit.

Based on our review of the operational standards, monitoring requirements, and existing geologic setting, EPA believes the activities allowed under the proposed Draft Permit are protective of USDWs, defined at 40 CFR §144.3, as required under the SDWA.

ii. *Consideration of Other Federal Laws*

As part of the permitting process, under 40 CFR § 144.4, EPA is required to consider other federal laws, including Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act (NHPA).

A. Endangered Species Act

Under Section 7 of the ESA, the EPA is required to ensure that any action authorized by the Agency does not jeopardize the continued existence of any endangered or threatened species or adversely affect any critical habitat. The EPA is consulting with the US Fish and Wildlife Service to ensure that existing and future operations at the PEC facility comply with the ESA.

B. National Historic Preservation Act (NHPA)

The historic preservation review process mandated by Section 106 of the NHPA is outlined in regulations issued by the federal Advisory Council on Historic Preservation titled, "Protection of Historic Properties" at 36 CFR Part 800. In considering these requirements, the EPA must determine whether the proposed federal permit is an undertaking and whether it has the potential to cause effects on historic properties. Issuance of a federal permit is considered a federal undertaking; therefore, the EPA is required to meet the statutory responsibilities under Section 106, which include delineating the area of potential effects and documenting steps taken to identify historic properties, if any, that may be affected by this undertaking. In addition, Section 106 of the NHPA requires federal agencies to consult with federally recognized tribes to ensure that Indian tribes which attach religious or cultural significance to historic properties that may be affected by an undertaking are provided a reasonable opportunity to participate in the process.

On May 21, 2020, EPA offered the Table Mountain Rancheria Indian tribe an opportunity to consult on the proposed UIC permit action. EPA received a response from the tribe on August 25, 2020 that no consultation was requested.

Pursuant to the requirements of Section 106 of the NHPA, and in consultation with the California State Historic Preservation Office, EPA is currently evaluating potential effects on historic properties as a result of the issuance of the draft Class I UIC permit and will make a determination prior to issuing a final permit decision.

iii. *Public Participation*

The public has thirty (30) days to review and comment on the Draft Permit. 40 CFR § 124.10. The Draft Permit, public notice, this fact sheet, PEC's permit application, and other supporting documents are available for public review online at www.regulations.gov under docket number EPA-R09-OW-2021-0147. These documents are also available at the following EPA Region 9 webpage: https://www.epa.gov/uic/underground-injection-control-region-9-az-ca-hi-nv-mp-gu.

EPA is providing notice of the public comment period to the local community by publication in the Fresno Bee newspaper on April 11, 2021 and the comment period ends on May 11, 2021. During this period, all written comments on the Draft Permit can either be submitted online at www.regulations.gov under docket number EPA-R09-OW-2021-0147 or e-mailed to Michele Dermer at dermer.michele@epa.gov, who is also available by phone at (415) 972-3417 to answer any questions about the Draft Permit. If you are unable to submit comments electronically, or if you require assistance submitting comments, please reach out to Ms. Dermer at the email or phone number listed above.

All persons, including the applicant, who object to any condition of the Draft Permit or EPA's decision to prepare a Draft Permit must raise all reasonably ascertainable issues and submit all reasonable arguments supporting their position by the close of the comment period. 40 CFR § 124.13. EPA has not scheduled a public hearing but may do so if there is a significant degree of

public interest in the Draft Permit. 40 CFR §§ 124.11 and 124.12. In the event EPA schedules a hearing, EPA will provide thirty (30) day notice of the hearing.

iv. *Final Decision-Making Process*

After the close of the public comment period, EPA will review and consider all comments relevant to the Draft Permit and application. EPA will send a response to comments to the applicant and each person who has submitted written comments or requested notice of the final permit decision. EPA will also post the response to comments document on www.regulations.gov under docket number EPA-R09-OW-2021-0147.

The response to comments will contain: a response to all comments on the Draft Permit; EPA's final permitting decision; any permit conditions that are changed and the reasons for the changes; and procedures for appealing the decision. The final decision shall be to either issue or deny the Draft Permit. The final decision shall become effective no sooner than thirty (30) days after the service of the notice of decision. Within thirty (30) days after the final permit decision has been issued, any person who filed comments on the Draft Permit, participated in any public hearing on this matter, or takes issue with any changes in the Draft Permit, may petition the Environmental Appeals Board to review any condition of the permit decision. Commenters are referred to 40 CFR § 124.19 for procedural requirements of the appeal process. If no commenters request a change in the Draft Permit, the Permit shall become effective immediately upon issuance. 40 CFR § 124.15.