

**FACT SHEET**  
**U.S. Environmental Protection Agency, Region 9**  
**Draft Underground Injection Control Class I Non-Hazardous Permit**  
**Permit Number R9UIC-CA1-FY19-1R**  
**Northern California Power Agency**

**Location:**

The two (2) Existing Wells and one (1) Proposed Backup Well covered by this Draft Permit are located within the limits of the City of Lodi, in Section 24, Township 3 North, Range 5 East, in San Joaquin County, California.

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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 Underground Injection Control (UIC) Class I Non-hazardous Industrial Waste Disposal Well Permit (“Draft Permit”), proposed to be issued to the Northern California Power Agency (NCPA or “Permittee”). Pursuant to EPA’s permitting regulations in Title 40 of the Code of Federal Regulations (CFR) § 124.8, the purpose of this fact sheet is to briefly describe the facility and activities being permitted, type of fluids or pollutants to be injected, a brief summary of the basis for permit conditions along with regulatory citations and appropriate supporting references to the record, background information on the permit process, and a description of EPA’s final decision-making process.

## II. Description of the Facility

NCPA owns and operates the Combustion Turbine Project No.2, a 49.9 MW steam injected gas turbine (STIG) power plant, and the Lodi Energy Center (LEC), a 300 MW combined cycle natural gas power plant. The two power plants (together, the “STIG-LEC Facility”) are located in an enclosed complex in the City of Lodi, California that also includes the City's White Slough Water Pollution Control Facility (WPCF).

The STIG-LEC Facility disposes wastewater into two existing injection wells, STIG-1 and LEC-1, which have been permitted since 2009 by EPA as Class I non-hazardous waste injection wells. STIG-1 serves as the injection well for the wastewater from the STIG plant, while LEC-1 serves as the injection well for the wastewater from the LEC plant. Both injection wells also receive wastewater from WPCF and serve as backup injection wells for one another in case of malfunction.

On April 24, 2019, NCPA submitted an application to renew its UIC Class I permit. The application seeks a ten (10) year authorization for continued operation of the STIG-1 and LEC-1 injection wells and requests approval to construct and operate one newly proposed injection well, LEC-2, as a backup to both the STIG-1 and LEC-1 wells. LEC-2's proposed location is within the same enclosed complex as the STIG-LEC Facility and WPCF.

The process water supply for the STIG-LEC Facility is tertiary-treated wastewater from the WPCF. NCPA receives treated wastewater as part of its lease agreement with the City of Lodi. NCPA is required by the lease agreement to inject at least twenty (20) percent of the wastewater received for use at the STIG plant yearly, the remainder of which is returned to the WPCF. In addition, the lease agreement requires the LEC plant to inject one-hundred (100) percent of the water it receives from the WPCF.

The STIG plant wastewater injected into well STIG-1 consists of the process water from the WPCF, brine reject from the ultrafiltration units, brine from the reverse osmosis units, blowdown water from the cooling towers, and both continuous and intermittent blowdown from the heat recovery boilers. NCPA does not inject any other waste streams into well STIG-1; storm water, service water, condensate, and other liquids in the plant drains are collected separately, passed through an oil-water separator, and pumped to the WPCF industrial system. Under the Draft Permit, STIG-1's injection volume may not exceed ten (10) million gallons per month or 357,000 gallons per day.

The LEC wastewater injected into well LEC-1, and into the proposed well LEC-2, consists of the process water from the WPCF and other recovered process wastewater streams that have been concentrated by evaporative losses in the cooling tower, as well as chemicals added to the circulating water to control scaling and biofouling of the cooling tower and to control corrosion of the circulating water piping and intercooler. Under the Draft Permit, LEC-1's injection volume may not exceed ten (10) million gallons per month or 357,000 gallons per day.

If permit renewal is authorized, the STIG-LEC Facility would continue to inject wastewater into the lower sand member of the Domengine Formation, at a depth of approximately 4,200 feet and 4,500 feet below ground surface. This lower sand member of the Domengine Formation is the

permitted injection zone for the existing wells STIG-1 and LEC-1 and will be the injection zone for the proposed backup well LEC-2. The Domengine Formation has greater than 10,000 mg/L total dissolved solids and is confined above by the one-hundred (100) to two-hundred (200) feet thick dark gray marine shale and siltstone of the Nortonville Shale and below by the approximately one-hundred-and-fifty (150) feet thick shale of the Capay Shale Formation.

### **III. Brief Summary of Specific Permit Conditions**

To ensure that the proposed project/injection activity complies with all relevant Safe Drinking Water Act (SDWA) regulations at 40 CFR §§ 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.

#### *Requirements Prior to Drilling, Testing, Constructing, or 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. NCPA provided evidence to EPA of financial assurance for the plugging and abandonment of wells STIG-1, and LEC-1, as required by 40 CFR § 146.10, and the Draft Permit would require that NCPA maintain adequate financial assurance. 40 CFR § 144.52(a)(7). In addition, the Draft Permit calls for adequate notification of activities to EPA to test the wells and the injection formation, and timely reporting of those activities. The Draft Permit also requires NCPA to notify EPA and perform required testing and provide financial assurance prior to constructing, testing, operating, or any other activities for the proposed backup well LEC-2.

#### *Conditions for Existing Wells and Proposed Backup Well Construction (Part II, Section B of the Draft Permit)*

The Draft Permit identifies the precise locations of the existing wells STIG-1 and LEC-1 and the planned location of the proposed backup well LEC-2. NCPA's permit application described the logs and other tests that will be conducted during drilling and construction of the proposed backup well LEC-2, including deviation checks, casing logs, and injection formation tests. NCPA also will conduct core sampling and formation evaluation logs and tests and use those results to estimate and report values for porosity, permeability, compressibility, static formation pressure, effective thickness, lithology, and rock mechanical properties for both the injection and confining zones identified within the permitted geological sequence. The Draft Permit also includes schematics for the existing wells and a draft schematic for the proposed backup well. It requires NCPA to submit an updated well schematic for the proposed backup well prior to commencing drilling and construction of the well. Drilling or constructing of the proposed backup well LEC-2 requires additional approval from EPA.

The Draft Permit requires NCPA to conduct a Step-Rate Test (SRT) on the proposed backup well LEC-2 to establish the maximum allowable injection pressure, as well as a pressure fall-off test (FOT) to determine and monitor formation characteristics. 40 CFR § 146.13(d)(1). SRTs are

used to determine the maximum safe injection pressure without fracturing the reservoir rock. FOTs are pressure transient tests that consist 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 also requires NCPA to install and maintain the monitoring devices necessary to obtain samples of the injection fluids, and to continuously measure and record the injection pressure, annulus pressure, flow rate, and injection volumes for the existing wells and the proposed backup well, if it becomes operational. NCPA must give advance notice to EPA of any planned physical alterations or additions to any of these wells. 40 CFR § 144.51(l)(1).

The Draft Permit authorizes continued operation of existing wells STIG-1 and LEC-1, and the construction and operation of proposed backup well, LEC-2, contingent upon meeting specified permit conditions. NCPA shall submit updated information for the proposed backup well LEC-2 and must receive written EPA approval prior to commencing drilling and construction of the well.

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

Applicants for Class I injection well permits are required to identify the location of all known wells within the injection wells' Area of Review (AOR) which penetrate the injection zone. 40 CFR § 144.55. EPA has initially determined a fixed radius of one (1) mile for the AOR. 40 CFR § 146.6(b). NCPA's application at Attachment C indicated there are three (3) known wells within the (1) mile AOR that penetrate the injection zone and that they were appropriately plugged and abandoned, thus the Draft Permit would not require NCPA to conduct any corrective action prior to EPA granting authorization to inject under this Permit. However, the Draft Permit requires NCPA to re-evaluate the AOR and the potential need for corrective action on an annual basis by calculating the Zone of Endangering Influence (ZEI), which is the lateral distance in which the pressures in the injection zone may cause the migration of the injectate into a USDW, based upon the methodology set forth in 40 CFR § 146.6(a). If the ZEI extends beyond the AOR, NCPA must identify any wells requiring corrective action that are within the ZEI and submit to EPA a list of the wells, along with their locations and construction data. Corrective action may include, but is not limited to re-entering, plugging, and abandoning any production, exploratory, or other wells which penetrate the injection zone and are located within the ZEI. 40 CFR §§ 144.55 and 146.7. NCPA may not commence corrective action activities prior to submitting a plan to EPA and receiving written approval.

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

NCPA must demonstrate that the existing wells STIG-1 and LEC-1 have mechanical integrity and that the proposed injection fluid is not hazardous. Additionally, prior to the approval to inject into the proposed backup well LEC-2, NCPA must conduct a mechanical integrity test (MIT) to demonstrate that the well has mechanical integrity. Mechanical Integrity is demonstrated when there are no significant leaks in the casing, tubing or packer and there is no significant fluid movement into a USDW through vertical channels adjacent to the well bore. 40 CFR § 146.8(a). 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 operating well, and a radioactive

tracer and a temperature log (or other approved diagnostic tool or procedure) annually to ensure protection of USDWs. 40 CFR §146.13(b). The tubing/casing annulus pressure of each operating well will be continuously monitored and recorded to verify that internal mechanical integrity of the wellbore is maintained during operations, as required by 40 CFR § 144.51(q). Radioactive tracer and temperature surveys will be conducted to verify the absence of significant fluid movement through vertical channels adjacent to the wellbore. NCPA must also submit to EPA cementing records and cement evaluation logs after installing and cementing casing, conducting a cement squeeze job, or any well cement repair of any approved injection well. Loss of mechanical integrity of any well authorized by the Draft Permit requires NCPA to send notification to EPA and take action to restore and confirm mechanical integrity of the well.

The injection pressure and injection volume limitations in the Draft Permit for the existing wells STIG-1 and LEC-1 are based on the results of the SRT conducted on Well LEC-1 on October 6, 2010, and both limitations were approved by EPA. 40 CFR § 146.13(a). The Draft Permit also requires that NCPA operate each well in a manner that does not initiate or propagate fractures in the injection formation or the confining zone, or cause migration of injection or formation fluids into or between USDWs. Authorized injection fluids will be limited to wastewater collected from various process units at the STIG-LEC Facility and treated wastewater from the WPCF, as described in the Draft Permit. NCPA must document any particulate filters used upstream of any of the approved injection wells.

*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 well authorized by the Draft Permit. The injectate must be sampled quarterly to determine the quantities/values of the following constituents using EPA-approved methods: inorganics (major anions and cations, and trace metals); solids (TDS and total suspended solids); general and physical parameters (temperature, turbidity, pH, conductivity, hardness, specific gravity, alkalinity, biological oxygen demand, density, and viscosity); volatile organic compounds; and semi-volatile organic compounds. 40 CFR § 146.13(b). All sampling analyses must be performed at a certified laboratory. Pursuant to the Draft Permit, NCPA 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).

### Plugging and Abandonment (Part II, Section F of the Draft Permit)

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

### Financial Assurance (Part II, Section G of the Draft Permit)

NCPA established financial assurance for the plugging and abandonment of the existing wells STIG-1 and LEC-1 in the amounts of \$97,975 and \$108,325 respectively, by demonstrating that it met the financial test and corporate guarantee as specified in 40 CFR § 144.63(f)(1)(ii). The financial assurance mechanism and amount will be reviewed annually and updated as needed. EPA may also require NCPA to change to an alternate method for demonstrating financial assurance and to periodically estimate and update the Plugging and Abandonment Plan and/or the cost associated with it.

### 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.

## **IV. Permit Process**

### Application and Review Period

The EPA Water Director has authority to issue permits for underground injection activities under 40 CFR § 144.31. NCPA is applying for UIC Permit Number R9UIC-CA1-FY19-1R to renew its existing UIC Class I nonhazardous permit (No. CA194000002).

EPA received a permit application dated April 24, 2019 from NCPA for the renewal of their existing UIC Class I non-hazardous permit. On May 29, 2019, EPA determined that the permit application was administratively complete and began the technical review of the application. During EPA's technical review, NCPA provided clarifications and supplemental information to modify and update the permit application in response to technical questions from EPA. After completing a thorough review of all submitted information, EPA has determined that the information provided by NCPA is sufficient to prepare the Draft Permit. The Draft Permit, if

finalized, would authorize the continued operation of existing wells STIG-1 and LEC-1 and construction and operation of the proposed backup well LEC-2 for ten (10) years.

Based on our review of the proposed well construction, 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.

### Compliance with other Federal Statutes

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

#### Endangered Species Act (ESA)

Under Section 7 of the ESA, EPA is required to ensure that any action authorized by EPA does not jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat. In July 2019, NCPA submitted to EPA a Biological Evaluation (BE), prepared by Jacobs Engineering (see NCPA's permit application addendums). Included in the BE is a U.S. Fish and Wildlife Service (USFWS) IPaC Trust Resources report, generated on June 27, 2019, which identified ten (10) threatened and endangered species and one (1) critical habitat as potentially occurring in the vicinity of the STIG-LEC Facility.

Due to the industrial nature of the STIG-LEC Facility and lack of suitable habitat onsite, EPA determined that the proposed action will have no effect on the species listed in the IPaC report as potentially occurring in the area. Additionally, although the project area is at the edge of the delta smelt's critical habitat, the Facility is not critical habitat because there are no essential features of the critical habitat onsite, and therefore EPA also determined that there will be no effect on the critical habitat. Listed species with "no effect" determinations do not require review by the USFWS.

#### National Historic Preservation Act (NHPA)

The historic preservation review process mandated by Section 106 of NHPA is outlined in regulations issued by the federal Advisory Council on Historic Preservation (ACHP) titled, "Protection of Historic Properties" at 36 CFR Part 800. Considering these requirements, EPA determines 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, EPA is required to meet the statutory responsibilities under Section 106.

In a letter dated December 15, 2020, EPA consulted with the California State Historic Preservation Office (SHPO) by describing the project, the area of potential effect, steps taken to identify historic properties, and the proposed finding of no historic properties affected by this

undertaking. The SHPO, in a letter dated December 18, 2020, did not object to EPA's finding that no historic properties will be affected by this undertaking.

### 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, NCPA's permit application, and other supporting documents are available for public review online at [www.regulations.gov](http://www.regulations.gov) under docket number EPA-R09-OW-2021-0137.

The public comment period begins on March 20, 2021 and ends on April 20, 2021. During this period, all written comments on the Draft Permit can either be submitted online at [www.regulations.gov](http://www.regulations.gov) under docket number EPA-R09-OW-2021-0137 or e-mailed to Calvin Ho at [ho.yenhung@epa.gov](mailto:ho.yenhung@epa.gov), who is also available by phone at (415) 972-3262 to answer any questions about the Draft Permit.

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 could 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 public hearing, EPA will provide thirty (30) days advance notice of the hearing to the public. EPA is providing additional notice of the public comment period by publication in the Lodi News Sentinel newspaper.

### 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](http://www.regulations.gov) under docket number EPA-R09-OW-2021-0137. 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 final decision. The final decision shall be to either issue or deny the 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 comments request a change in the Draft Permit, the Permit shall become effective immediately upon issuance. 40 CFR § 124.15.