FACT SHEET
U.S. Environmental Protection Agency, Region 9
Draft Class I Non-Hazardous Underground Injection Control Permit
Permit Number R9UIC-CA1-FY17-4
Chalk Cliff Limited

Location:
Well Chalk Cliff WD-2 covered by this Draft Permit is located approximately 3.6 miles southeast of the City of Taft, California, in Section 31, Township 32 South, Range 24 East, in Kern County, California.

Permittee Contact:
Kristine Boyer
Environmental Specialist
NAES Corporation
34759 Lencioni Avenue
Bakersfield, CA 93308
Phone: (661) 387-7228
Email: Kristine.Boyer@Naes.com

Regulatory Contact:
Yenhung (Calvin) Ho
U.S. Environmental Protection Agency, Region 9
Groundwater Protection Section, Mail Code WTR 4-2
75 Hawthorne Street
San Francisco, CA 94105-3901
Telephone: (415) 972-3262
Email: Ho.Yenhung@epa.gov

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 Chalk Cliff Limited (Chalk Cliff or the 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

Chalk Cliff owns and operates a co-generation power plant that includes an existing injection well (the Well Chalk Cliff WD-2), at its facility located at 29041 Hwy 33 in the Midway-Sunset Oil Field, approximately 3.6 miles southeast of the City of Taft, California (the Chalk Cliff Power Plant or the Facility). The Permittee has been operating the Well Chalk Cliff WD-2 under

authority of a California Geologic Energy Management Division (CalGEM) Class II permit since 1990.

Previously, the Chalk Cliff Power Plant provided a byproduct of steam to assist nearby oil producers in the recovery of heavy oil. This activity resulted in CalGEM's permitting of Well Chalk Cliff WD-2 as a Class II injection well. However, steam sharing with oil recovery operations has decreased and is expected to cease in the future. Given this transition of operations, EPA and CalGEM agreed that Well Chalk Cliff WD-2 should no longer be regulated as a Class II UIC injection well. In order for Chalk Cliff to maintain the ability to dispose of wastewater at the Facility, EPA required Chalk Cliff to seek authorization to reclassify Well Chalk Cliff WD-2 as a Class I non-hazardous injection well. 40 CFR §146.5. CalGEM has indicated that once EPA makes a final determination to issue or deny the Class I UIC permit, they will revoke Chalk Cliff's existing Class II permit.

The maximum anticipated injection volume into Well Chalk Cliff WD-2 would be 3,500 barrels of water per day (BWPD), and past injection volumes have ranged as high as 2,165 BWPD. The fluids permitted to be injected into Well Chalk Cliff WD-2 would be non-hazardous waste waters consisting of: boiler blow down, cooling tower blow down, boiler feed water conditioning waste waters, and raw water filter backwash that are generated from the Chalk Cliff Power Plant and from any of seven (7) additional co-generation power plants, all owned by Western Generation Partners – Redwood Holdings, LLC (WGP) in the Central Valley of California (the Authorized WGP Facilities). The Authorized WGP Facilities are all natural gas-fired turbine power plants. The Permit allows injection of only permitted waste into Well Chalk Cliff WD-2, and no other types of wastes are permitted to be injected. Injection at the Facility is permitted into the Monarch Sand of the Monterey Formation within the Midway-Sunset Oil Field, at the perforated intervals of 3,462 feet to 3,670 feet, and 3,784 feet to 3,984 feet below ground surface. The Monarch Sand, which would receive injectate from the Well Chalk Cliff WD-2, is an aquifer that has greater than 10,000 mg/L total dissolved solids (TDS) and is encapsulated within the Monterey Formation with siltstones and shales which are approximately 130-foot thick above and approximately 1,900-foot thick below it.

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. Chalk Cliff provided evidence to EPA of financial assurance for the plugging and abandonment of Well Chalk Cliff WD-2, as required by 40 CFR §146.10, and the Draft Permit would require that Chalk Cliff 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 well and the injection formation, and timely reporting of those activities.

Conditions for Existing Well and Future Well Construction (Part II, Section B of the Draft Permit)

The Draft Permit identifies the precise location of Well Chalk Cliff WD-2 and includes a schematic for the well. Attachment I of Chalk Cliff's permit application described the logs and other tests conducted during drilling and construction of Well Chalk Cliff WD-2, including deviation checks, casing logs, and injection formation tests. Chalk Cliff also conducted formation evaluation wireline logging operations and used those results to estimate and report values for hydrocarbon saturation, porosity, lithology, formation water resistivity, TDS concentrations, and rock mechanical properties for the injection zone identified within the permitted geological sequence and for selected intervals for identification of any USDWs above the injection zone.

The Draft Permit requires Chalk Cliff to conduct a Step-Rate Test (SRT) on Well Chalk Cliff WD-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 Chalk Cliff 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 at Well Chalk Cliff WD-2. Chalk Cliff must give advance notice to EPA of any planned physical alterations or additions to Well Chalk Cliff WD-2. 40 CFR §144.51(l)(1).

The Draft Permit only authorizes Well Chalk Cliff WD-2. If Chalk Cliff wants to drill any additional injection wells in the future, the Draft Permit requires Chalk Cliff to apply to EPA for a major permit modification. 40 CFR §124.5 and § 144.39.

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 well's Area of Review (AOR) which penetrate the injection zone. 40 CFR §144.55. EPA has initially determined a fixed radius of ¼-mile for the AOR. 40 CFR §146.6(b). Chalk Cliff's application at Attachment C indicated there are two known wells within

the ¼-mile AOR that penetrate the injection zone and that they were appropriately plugged, thus the Draft Permit would not require Chalk Cliff to conduct any corrective action prior to EPA granting initial authorization to inject. However, the Draft Permit requires Chalk Cliff 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, Chalk Cliff 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 reentering, plugging, and abandoning any production or exploratory wells which penetrate the injection zone and are located within the ZEI. 40 CFR §§144.55 and 146.7. Chalk Cliff may not commence corrective action activities prior to submitting a plan for approval by EPA.

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

Chalk Cliff must demonstrate that Well Chalk Cliff WD-2 has mechanical integrity and that the proposed injection fluid is not hazardous. 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 mechanical integrity tests (MITs) via a casing/tubing annular pressure test at least once every five (5) years, continuous pressure monitoring in Well Chalk Cliff WD-2, 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 Well Chalk Cliff WD-2 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. Loss of mechanical integrity of Well Chalk Cliff WD-2 requires Chalk Cliff 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 will be based on the results of the SRT conducted on Well Chalk Cliff WD-2, and both limitations must be approved by EPA. 40 CFR §146.13(a). The Draft Permit also requires that Chalk Cliff operate Chalk Cliff WD-2 in a manner that does not initiate or propagate fractures in the injection formation or the confining zone, cause migration of injection or formation fluids into or between USDWs, or allow migration of injected fluids to oilfield production wells. Authorized injection fluids are non-hazardous waste waters consisting of boiler blow down, cooling tower blow down, boiler feed water conditioning waste waters, and raw water filter backwash that are generated from the Chalk Cliff power plant operations, and the same category of fluids from the listed power plants in the Draft Permit. Chalk Cliff must document any particulate filters used upstream of Well Chalk Cliff WD-2.

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 Well Chalk Cliff WD-2. 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). Chalk Cliff is also required to manifest each disposal load of waste fluids received from the Authorized WGP Facilities to ensure only authorized fluids are being injected as provided in the Manifest System for Disposal Water in Appendix I of the Draft Permit. Pursuant to the Draft Permit, Chalk Cliff 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)

Chalk Cliff will be required to plug and abandon Well Chalk Cliff WD-2 as provided in the Plugging and Abandonment Plan in Attachment Q of their permit application and Appendix G of the Draft Permit, which Chalk Cliff submitted pursuant to 40 CFR §144.51(o). After a cessation of injection operations for two (2) years into Well Chalk Cliff WD-2, as required by 40 CFR §144.52(a)(6), Chalk Cliff must plug and abandon the inactive well in accordance with the Plugging and Abandonment Plan unless Chalk Cliff 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. The inactive well must pass an initial internal MIT before EPA authorizes temporary abandonment status. EPA may change the manner in which Well Chalk Cliff WD-2 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)

Chalk Cliff established financial assurance through a financial test and corporate guarantee for the plugging and abandonment of Well Chalk Cliff WD-2 in the amount of $62,800 by demonstrating that it passed the financial test as specified in 40 CFR §144.63(f)(1)(i) (see Exhibit R of Chalk Cliff's permit application). See also 40 CFR § 144.52(a)(7). The financial assurance mechanism and amount will be reviewed annually and updated as needed. EPA may also require Chalk Cliff 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. Chalk Cliff is applying for UIC Permit Number R9UIC-CA1-FY17-4 to convert an existing Class II injection well to a Class I injection well to dispose of non-hazardous waste waters generated from the Chalk Cliff Power Plant and the Authorized WGP Facilities, as listed in Section II.D.5.e. of the Draft Permit.

On May 4, 2017, EPA received a permit application from Chalk Cliff for the reclassification and operation of Well Chalk Cliff WD-2. Over the following three years, Chalk Cliff provided substantial clarifications and supplemental information to modify and update the permit application to address technical questions from EPA. After completing a thorough technical review of all submitted information, EPA has determined that the information provided by Chalk Cliff is sufficient to prepare the Draft Permit. The Draft Permit, if finalized, would authorize injection of non-hazardous waste waters into Well Chalk Cliff WD-2 for ten (10) years.

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.

Consultation

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 October 2018, Chalk Cliff submitted to EPA a Biological Evaluation (BE), prepared by McCormick Biological Inc. (Exhibit B-6 of Chalk Cliff's permit application). Included in the BE is a U.S. Fish and Wildlife Service (USFWS) IPaC Trust Resources report, generated on October 11, 2018, which identified twelve (12) threatened, endangered, and candidate species as potentially occurring in the action area (i.e., the project area plus an additional 250-foot buffer zone beyond the project area). EPA informally consulted with USFWS via letter dated September 5, 2019, requesting concurrence with EPA's determination that the proposed action may affect, but is not likely to adversely affect, the giant kangaroo rat,

San Joaquin kit fox, and the blunt-nosed leopard lizard. EPA provided the USFWS a summary of the biological evaluation provided by Chalk Cliff with the permit application, which documented the screening for the potential occurrence of special-status species at the project area, the evaluation of the effects of the proposed action on the three identified species, and the avoidance and minimization measures proposed by the Permittee that represent best management practices for reducing the potential for impacts on the identified species. The Permittee has implemented certain avoidance and minimization measures as outlined in the BE. By letter dated October 9, 2019, USFWS concurred with EPA's determination regarding those three species.

EPA also determined that the proposed action will have no effect on the other species listed in the IPaC report as potentially occurring in the area (California red-legged frog, California condor, delta smelt, vernal pool fairy shrimp, Tipton kangaroo rat, Buena Vista Lake shrew, green sea turtle, giant garter snake, and Kern mallow). 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. Under these requirements, EPA must determine whether the proposed federal permit is an undertaking pursuant to the NHPA regulations and, if so, whether the federal action has the potential to cause effects on historic properties. Since the issuance of a federal permit is considered a federal undertaking, EPA is required to meet the statutory responsibilities under Section 106, which includes consultation and concurrence with the California State Historic Preservation Office (SHPO).

In a letter dated September 11, 2018, EPA consulted with the 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 September 21, 2018, concurred with 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, Chalk Cliff's permit application, and other supporting documents are available for public review online at www.regulations.gov under docket number EPA-R09-OW-2020-0359.

The public comment period begins on August 16, 2020 and ends on September 16, 2020. 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-2020-0359 or e-mailed to Calvin Ho at 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 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 Bakersfield Californian 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 under docket number EPA-R09-OW-2020-0359. 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 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.