UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Sent via email only

June 2, 2022

Michael DeBortoli
Plant Manager
Northern California Power Agency
12751 North Thornton Road
Lodi, CA 95242-1478

Re: Major Permit Modification Related to MASIP
Underground Injection Control (UIC) Permit No. R9UIC-CA1-FY19-1R
STIG-1, LEC-1, and LEC-2, Class I Non-hazardous Waste Injection Wells

Dear Mr. DeBortoli:

Enclosed is a Major Modification to Permit No. R9UIC-CA1-FY19-1R, issued to Northern California Power Agency (NCPA) for the operation of Wells STIG-1, LEC-1, and LEC-2. This major modification reflects the revised method for the maximum allowable surface injection pressure (MASIP) calculation for Wells STIG-1, LEC-1, and LEC-2. This major permit modification is issued in accordance with UIC regulations at 40 C.F.R §144.39 and is effective immediately[1].

If you have any questions regarding the permit modification, please contact me at (415) 972-3971, or call Calvin Ho at (415) 972-3262.

Sincerely,

DAVID ALBRIGHT

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Date: 2022.06.02 17:02:03 -07'00'

David Albright
Manager, Groundwater Protection Section

Enclosure

cc (via email): Miguel Cabrera, CalGEM Northern District Deputy
Clay Rodgers, Central Valley Regional Water Quality Control Board

[1] EPA made a draft of the permit modification available for public review and did not receive any comments.

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MAJOR MODIFICATION TO PERMIT NO. R9UIC-CA1-FY19-1R
ISSUED TO NORTHERN CALIFORNIA POWER AGENCY

In accordance with 40 CFR §144.39, this Permit is hereby modified to reflect a revised method for calculating the maximum allowable surface injection pressure (MASIP) for Wells STIG-1, LEC-1, and LEC-2.

Portions of page 16 of the Permit are revised to incorporate the above change and now read as follows (for clarity, changes are shown with removals struck out and with new additions **emboldened and underlined**):

Page 16

3. Injection Pressure Limitation

For any injection wells authorized pursuant to this Permit:

a. ~~Maximum allowable injection pressure (MAIP) will be set at 80% of the calculated fracture pressure at the surface without consideration of friction losses, or the maximum safe operating pressure of the injection equipment, whichever is less. The applicable fracture gradient will be based on results of the SRT conducted in each well in the Domengine Formation injection zone under Part II.B.5.a. EPA will provide the Permittee written notification of the MAIP once it has been calculated pursuant to the above restrictions, which will become the enforceable MAIP pursuant to this Permit. Once established, the approved MAIP will be added to this Permit as an attachment.~~ **Maximum allowable injection pressure, as measured at the surface (MASIP or Maximum Allowable Surface Injection Pressure), shall typically be set to a value calculated using the following equation, or the maximum safe operating pressure of the injection equipment, whichever is less.**

$$\textbf{MASIP} = [(FG - 0.433 \times SG) \times D + FL] \times 0.80$$

The terms used in the equation are defined as:

- **"FG" is the fracture gradient of the injection zone in pounds per square inch/foot (psi/ft). The FG value shall be determined by conducting a valid Step Rate Test (SRT) and is subject to EPA's review and approval.**
- **"0.433" is the pressure gradient of freshwater in psi/ft.**

- **"SG" is the specific gravity of the injection fluid obtained from a representative fluid sample.**
- **"D" is the true vertical depth in feet measured from an established surface reference point to the top open perforation.**
- **"FL" is the pressure loss due to friction in psi, the difference between the surface pressure plus the hydrostatic pressure and the bottomhole pressure. The FL value shall be determined by using direct gauge measurements of the surface and bottomhole pressures during the SRT and is subject to EPA's review and approval.**
- **"0.80" is the safety factor.**

If the injection zone fracture pressure is not reached during the SRT, EPA will establish the MASIP using the same methodology above with the assumption that the FG value is a ratio of the maximum bottomhole pressure measured by gauge during the SRT to the depth of the bottomhole pressure gauge.

All other permit conditions remain unchanged. This major modification is effective on June 1, 2022.

TOMAS TORRES

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Tomás Torres, Director
Water Division, EPA Region 9