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Open Mountain Energy

March 31, 2026

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Compliance, Monitoring and Enforcement Unit
California Energy Commission

RE: Response to Data Requests Set No. 5 – Bottle Rock Geothermal Power Plant (79-AFC-04C)

Anwar,

On behalf of Bottle Rock Power, LLC and Open Mountain Energy, please find the following response to Data Request Set. No. 5 (Soil and Water) for the Bottle Rock Geothermal Power Plant (79-AFC-04C). These responses provide clarification and additional details as requested in Data Request Set No. 5. Please let us know if you wish to discuss these responses.

Regards,

Brady Olson

Manager
Mayacma Geothermal

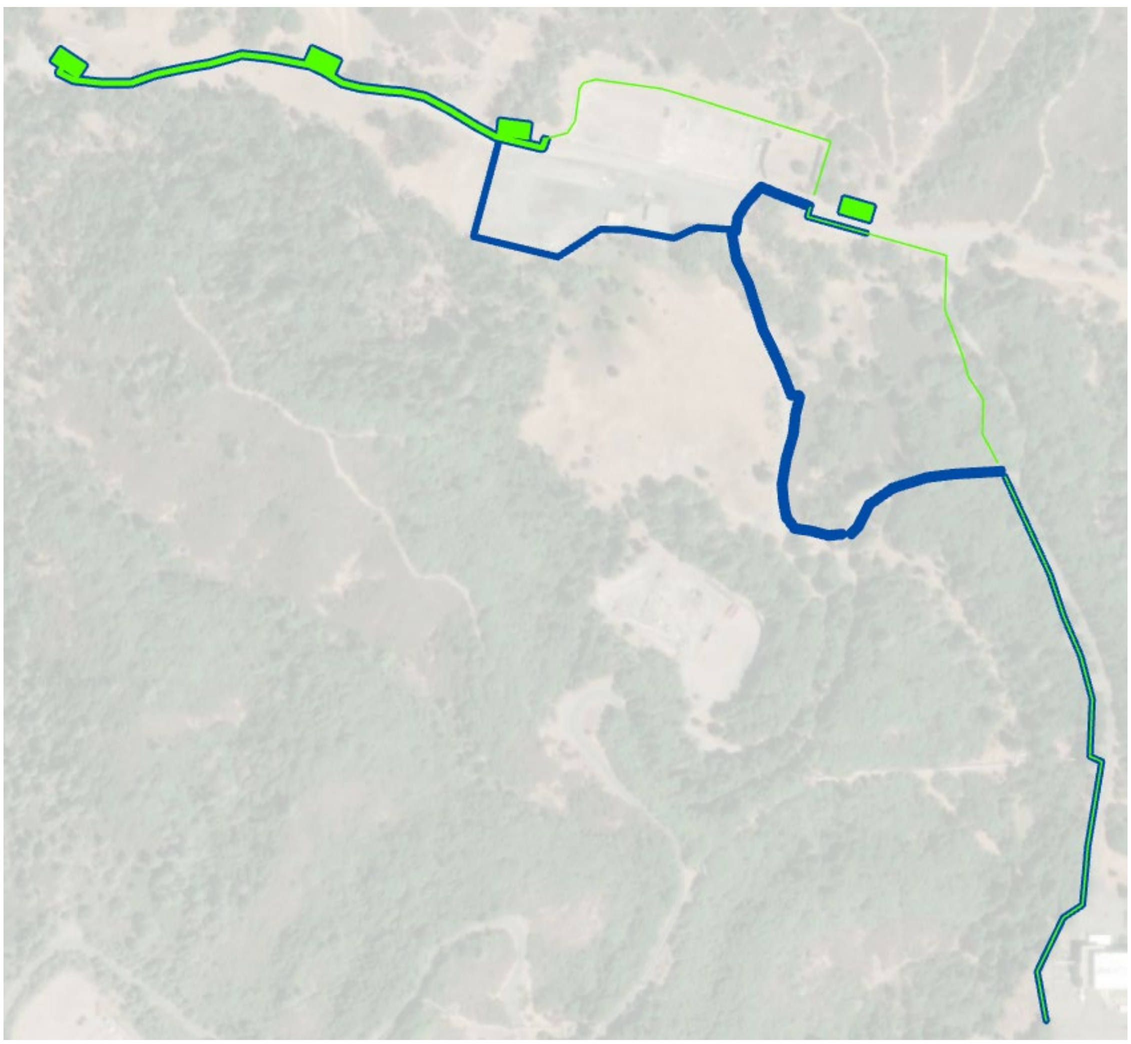
Cc:

Enclosure Following: Responses to Data Request Set No. 5 (79-AFC-04C)

Data Request 1. Please provide an estimate of anticipated soil disturbance during construction, broken down by amendment component.

DR 1 Response:

The total impact area, including all well pads and buffers along the proposed water pipelines and access roads has been calculated, and is tabulated for two options, either (1) the "NE Path" at a total of 0.64 acres (27,724 sq ft), or (2) the "SW Path" at a total of 1.03 acres (44,673 sq ft). As only one path would be chosen at time of final design the maximum area of disturbance is estimated at 1.03 acres (as shown by "SW Path", which would necessitate the larger amount of trenching.



Data Request 2. Please explain how the 67,000 gallons of spent Stretford solution produced every two years will be handled.

DR 2 Response:

The spent Stretford solution can be handled through several different mechanisms. Three potential options for managing the spent Stretford solution are provided below. Because the relative volume is not large compared to the total amount of fluids handled and processed through the power plant on an ongoing basis, the preference is to utilize option #1 below, to introduce the spent solution to the cooling tower water basin for secondary H_2S abatement and subsequent injection to the geothermal reservoir. If at the time the solution must be disposed, and option #1 is not feasible for either technical, commercial or regulatory reasons, then options #2 or #3 would be used.

1. Use the spent Stretford solution as a secondary abatement chemical in the cooling tower. Frequently, iron chelate is used to abate H_2S; however, the iron chelate fosters the same reduction / oxidation reactions as the Stretford solution. Therefore, the spent Stretford solution, or a portion of the solution, could be used in the cooling tower for secondary abatement, if allowed by permits. Any spent Stretford solution used as secondary abatement in the cooling tower would be injected to the geothermal reservoir with the condensate.
2. Disposal of solution – In this option, the solution would be drained from the Stretford system into temporary storage, e.g., frac tanks. The solution would then be loaded into tank trucks which would take the spent solution to a landfill with the capability of handling liquid wastes, for disposal. Due to the vanadium content, the liquid would likely be classified as a hazardous waste and subject to the costs for hazardous waste disposal.
3. Desalting the solution – The reason the solution is 'spent' is due to the slow buildup of sulfur oxyanion salts over time – sodium thiosulfate and sodium sulfate, primarily. There is the possibility of desalting the Stretford solution and re-using it. In the most common desalting approach, the thiosulfate salts are converted to sulfate salts in a version of the British Gas Desalting process. The spent solution could be placed in temporary tanks (e.g., frac tanks), then pumped through the desalting process. The salts would be crystallized by moderately cooling the solution, then filtered out of solution as sodium sulfate decahydrate ($Na_2SO_4 \cdot 10H_2O$), also known as Glauber's salt (and, when naturally occurring, known as mirabilite). The Glauber's salt would then be disposed of, probably in a landfill. Total cost of desalting plus Glauber's salt disposal is usually about the same order of magnitude cost as the solution disposal in option 2 above. A complication with this option is that the commercial service providers of Stretford desalting have ceased doing business due to the shutdown of the remaining Stretford units in California refineries, which were their primary customers. However, the desalting equipment / systems are currently for sale.

Data Request 3. Please revise APM Water-1 to include a groundwater sampling plan or discuss why you don't think there is a need for collecting and analyzing groundwater samples to monitor possible changes in water chemistry due to groundwater extraction.

DR 3 Response:
Mayacma Geothermal agrees to update the groundwater monitoring program to include geochemistry parameters, and therefore proposes to revise the APM Water-1 as follows:

Proposed Revised APM Water-1. Groundwater Monitoring. **(Modified/Added language in Bold *Italics*):**

The ground water supply monitoring program shall include continuous monitoring of groundwater elevations within each of the groundwater supply wells and periodic geochemical sampling to evaluate changes to water chemistry. Sampling is proposed to include field parameters and applicable laboratory analytes (alkalinity, total dissolved solids, hardness, major ions, silica, nitrate, trace metals, and boron). Sampling would initially be conducted quarterly with option to reduce to semi-annual or annual over a period of time if no impacts are observed. If the groundwater elevations reach an elevation that could not sustain continued operation of the Project water cooling towers, the Project shall switch to cooling using condensate for up to 100 percent of cooling water demand until aquifer levels have rebounded. The groundwater monitoring program shall be prepared by a qualified hydrologist/ hydrogeologist and shall include specific action levels when water cooling shall switch to condensate to sustain project operations.

Data Request 4. Unless you agree that APM Water -1 should be added as a new COC, please explain the reason for your objection.

DR 4 Response: We do not object to adding groundwater sampling from on-site wells (See response 3).

Data Request 5. Please describe any precautions or monitoring measures, in addition to APM Water-1, the project owner would employ to identify adverse effects to local domestic water supply wells and the groundwater resource.

DR 5 Response: Understanding and managing drawdown of the shallow aquifer system is important to minimize impact to nearby offsite water users and assure sufficient water for plant operations. It is recommended that an offsite groundwater elevation monitoring plan be prepared that would address shallow aquifer system water users within one half (0.5) mile of the Bottle Rock Geothermal Plant (BGRP) property boundary. Execution of the plan will require formal owner approval to access property for establishment of baseline water levels. Initial steps that can be taken to achieve this are:

- Update offsite water supply well inventory;
- Contact landowners for formal permission to access property;
- Create Offsite Groundwater Elevation Monitoring Plan that includes applicable locations and gauging frequency.

Data Request 6. Please correct any references or conclusions within Section 3.11 and Appendix F of the PTA that are based on the location of the BRGP within the CLVGWSA.

DR 6 Response: After review of the documents referenced in the background Data Request 6, we agree that the BRGP is not within the CLVGWSA but is situated on predominantly Mesozoic graywacke and, to a lesser extent, serpentinized ultramafic rocks associated with the Franciscan Complex. According to the Sustainable Groundwater Management Act (SGMA) basin prioritization, the BRGP and surrounding area are in a non-prioritized basin (non-basin) (PTA Section 3.11.1, groundwater Supplies), and groundwater characterization of such areas is not included in the Lake County Watershed Protection District, Final Lake County Groundwater Management Plan (DWR, 2006). Since the CLVGWSA is the nearest groundwater source area/basin to the BRGP, the CLVGWSA serves as an analog for groundwater characterization for the BRGP. Because the aquifers in the area of the BRGP and the CLVGWS are predominantly fractured rock, and (portions of) the same fault systems that control fracturing in the CLVGWSA are continuous into the BRGP site, the references to and conclusions drawn from interpretation surrounding CLVGWSA remain pertinent to the description of the site as the aquifers are not necessarily dependent on rock type.

Data Request 7. Please explain how the local fractured rock aquifer conditions would affect the impact of proposed operational water demand on other local groundwater users.

DR 7 Response: As stated in Section 3.11.1, Groundwater Supplies of the PTA, groundwater monitoring data is not available for the area. The current understanding is that shallow regional groundwater flow in the fractured aquifer is negligible – recharge primarily occurs from surface water infiltration. Geologically, this implies the aquifer is isolated laterally, or in other words, is laterally discontinuous. Therefore, the proposed operational water demand may not impact other nearby groundwater users. In response to Data Request 5, we have identified steps to assess and monitor potential impacts to groundwater supply for offsite wells within one half (0.5) mile of the BRGP property boundary, provided property access is granted. An in-depth groundwater assessment beyond the property boundaries of the BRGP is beyond the purview of the PTA. The County-wide Groundwater Management Plan (DWR, 2006) contains the most comprehensive groundwater assessment available for the area, and it was used as a reference to support our site-specific assessment.

References:

DWR, 2006 – California Department of Water Resources, Northern District (DWR). Lake County Watershed Protection District, Final Lake County Groundwater Management Plan. Prepared by Camp, Dresser & McGee (CDM), March 31, 2006. Available online at: https://www.lakecountyca.gov/DocumentCenter/View/4503/2006-Lake-County-GroundwaterManagement-Plan-PDF

Bottle Rock Power, LLC, 2024 – Bottle Rock Power, LLC. Petition to Amend, Bottle Rock Geothermal Power Project (79-AFC-4). Prepared by Panorama Environmental, Inc., December 2024.

Open Mountain Energy, 2024 – Water Supply Assessment, Mayacma Geothermal Project, Cobb, California. Prepared by Broadbent & Associates, Inc., December 2024.