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

Cliff Townsend
Plant Manager
Puna Geothermal Venture (PGV)
P.O. Box 30
Pahoa, Hawai'i 96778

RE: Puna Geothermal Venture
Class V Geothermal Underground Injection Control (UIC) Permit # HI596002
Minor Permit Modification No. 2 - Chemical Additives

Dear Mr. Townsend:

Enclosed is a Minor Modification (No. 2) to the subject UIC permit. This minor permit modification is issued in accordance with the UIC regulations at 40 CFR § 144.41. The permit modification is effective immediately.

This minor modification addresses revisions for clarification purposes to the requirements within the permit regarding monitoring and reporting of chemical additives used and Appendix H "Chemical Additives."

This minor modification, reflected in the revised permit text, Appendix H "Chemical Additives," and a copy of this letter can also be viewed on the EPA Region 9 website at: http://www.epa.gov/region9/water/groundwater/uic-permits.html#puna

Please call George Robin at (415) 972-3532 if you have any questions regarding this letter or any other Underground Injection Control Program issue.

Sincerely,

Signed by Jane Diamond

Jane Diamond
Director, Water Division

02/06/2014

Enclosure

cc: w/ Enclosure: Norris Uehara, HI Department of Health
Eric Tanaka, HI Department of Land and Natural Resources

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MINOR MODIFICATION NO. 2 TO PERMIT NO. HI596002
ISSUED TO PUNA GEOTHERMAL VENTURE

In accordance with 40 CFR § 144.41, this permit is hereby modified to provide several clarifications based on submittals from, and communications with, Puna Geothermal Venture.

Portions of page 13 and Appendix H of the permit are revised and now read as follows (for clarity, the changes are shown below with removals stricken out and with new additions **in bold font and underlined**):

(Part II. D. 4.) Page 13

(d) Chemical additives for process system and well casing biofouling, corrosion, scale control and tracers must be in accordance with the Chemical Additives list in Appendix H. The permittee shall notify the EPA of any new chemical additive prior to its use and shall provide the EPA with a copy of its Material Safety Data Sheet (MSDS)**, the product name, and manufacturer information.**

(e) To inject fluids other than those described in ~~paragraphs a-c above~~, **paragraphs (a) through (d) above,** the permittee must receive written approval from the EPA.

APPENDIX H - Chemical Additives

~~Product Name and Function~~	~~Chemical Ingredient~~
~~Amersite (R)2~~ ~~— Corrosion Inhibitor~~	~~Sodium Bisulfite~~
~~Wrico Oxy 11~~ ~~— Corrosion Inhibitor~~	~~Sodium Sulfite~~ ~~Ethylanediamine Tetraacetic Acid Sodium Salt~~
~~WPD 11-306 (Tm)~~ ~~— Corrosion Inhibitor~~	~~Dimethyldioctylammnonium Chloride~~ ~~Soya Amine Polyethoxylate~~ ~~Cyclohexylamine~~
~~West R-322~~ ~~— Corrosion Inhibitor~~	~~Polyamideamine Acetate~~ ~~POE (15) Tallow Amine~~
~~Midland 203~~ ~~— Oxygen Scavenger~~	~~Sodium Metabisulfite~~ ~~Cobalt Compounds~~
~~Millsperse (R)~~ ~~— Anti-scalant~~	~~802 Poly (Maleic Acid)~~
~~Sodium Hydroxide~~ ~~— pH Adjustor and~~ ~~— H2S Abator~~	~~Sodium Hydroxide~~
~~Drew 11-480~~ ~~— Corrosion Inhibitor~~	~~Soya Amine Poly~~

~~ChemTreat Geoguard 452~~ ~~—Corrosion Inhibitor~~	~~Quaternary Ammonium Chloride Salt~~
~~Syncon~~ ~~—Barrier Oil~~	~~Synthetic Lubricant~~
~~Catalyzed Sulfite~~ ~~—Oxygen Scavenger~~	~~Sodium Sulfite, Benzoic Acid~~
~~Drew 11-575~~ ~~—Anti-Scalant~~	~~Sodium Chloride~~ ~~Phosphoric Acid Derivative~~
~~Biosperse 250~~ ~~—Microbiocide~~	~~Magnesium Nitrate, Cupric Nitrate~~ ~~Magnesium Chloride~~ ~~2-Methyl-4-Isothiazolin-3-One~~ ~~5-Chloro-2-Methly-Isothiazolin-3-One~~
~~Sulfuric Acid~~ ~~—Anti-Scalant~~	~~Sulfuric Acid~~

Product Function	Active Chemical Ingredient	Maximum Injection Concentration (ppm)
Corrosion Inhibitor/Oxygen Scavenger	Sodium Sulfite Salt (10% solution)	15
Corrosion Inhibitor	Filming Amine (<30% solution)	15
Corrosion Inhibitor	Filming Amine Chloride Salt (<30% solution)	15
Corrosion Inhibitor	Filming Amine Acid (<30% solution)	15
Corrosion Inhibitor	Soya Amine Poly (<30% solution)	15
Anti-Scalant/pH adjustor	Sulfuric Acid	3
Anti-Scalant	Phosphonate (<30% solution)	15
pH adjustor and H2S Abator	Sodium Hydroxide	3
Microbiocide	Isothiazoline	1
Barrier Oil	Synthetic Lubricant Oil	1