

MINOR MODIFICATION TO PERMIT NO. HI596002
ISSUED TO PUNA GEOTHERMAL VENTURE (PGV)

In accordance with 40 CFR Part 144.41, this permit is hereby modified to allow the conversion of Well KS-15 from producer status to that of a Class V Geothermal injection well, under the authority of the Underground Injection Control (UIC) program. This permit modification includes an increase in the amount of financial responsibility and several minor text corrections.

Portions of those pages, as identified below, of the permit are being revised to incorporate these changes and will now read as follows (for clarity, changes are shown with removals struck out and new additions in bold, underlined text):

Pages 4 and 5

PART I. JURISDICTION AND AUTHORIZATION TO OPERATE

The U.S. Environmental Protection Agency (EPA) issues UIC Permits pursuant to its authority under the Safe Drinking Water Act (SDWA), as amended, and implementing regulations at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, 147, and 148.

Pursuant to its permitting authority, the EPA hereby authorizes

Puna Geothermal Venture, (PGV) (owner and operator)
14-3860 Kapoho Paho Road
Paho, Hawaii 96778

to operate ~~four~~ **five** existing Class V injection wells (the term "well" shall refer to an injection well unless otherwise stated), known as geothermal wells Kapoho State 1A (KS-1A), Kapoho State 3 (KS-3), Kapoho State 11 (KS-11), ~~and~~ Kapoho State (KS-13), **and Kapoho State 15 (KS-15)**:

Injection Well No.	Operational Status	Located on Well Pad	Approximate Well Head Elevation Above Sea Level
KS-1A	Primary Injector	A	618 feet
KS-3	Primary Injector	E	617 feet
KS-13	Primary Injector	A	618 feet
KS-11	Primary Injector	A	618 feet
<u>KS-15</u>	<u>Primary Injector</u>	<u>B</u>	<u>743 feet</u>

and having the specifications as listed in Figure 1, Figure 2, Figure 3, ~~and Figure 4,~~ **and Figure 5**, respectively, of Appendix A--Injection Well Schematics; to inject geothermal fluids consisting of geothermal brine, geothermal steam condensate, and geothermal noncondensable gases that are produced during the operation of the well field and power plant; chemical additions for process system and well casing biofouling, corrosion, and scale control; and the intermittent injection of supplement water back into the geothermal reservoir at an interval between the approximate depths of 3,900 feet and 7,300 feet (in reference to the Kelly Bushing, or KB, which is 25 feet above the top of cellar), located at the facility's address of 14-3860 Kapoho Paho Road, Paho, Hawaii, 96778; at Tax Key Number, 3rd Div. 1-4-01:2 and 19; at the approximate well pad coordinates:

Well Pad A: Latitude 19 28' 49" N and
Longitude 154 53' 35" W;

Well Pad E: Latitude 19 28' 41" N and
Longitude 154 53' 40" W;

**Well Pad B: Latitude 19: 28' 45" N and
Longitude 154: 6' 4.73" W;**

in accordance with monitoring requirements and other conditions set forth in Parts I, II, III and IV hereof.

The EPA authorizes the operation of the ~~four (4)~~ **five (5)** existing Class V geothermal injection wells, and the construction and operation of up to ~~six (6)~~ **five (5)** new Class V geothermal injection wells, contingent on the conditions of this permit being met. As specified in Part II.A.2 of this permit, the location of new injection wells will be included in Appendix B--Existing and Proposed Well Locations.

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1. Existing Injection Well Locations

The permittee currently operates ~~four (4)~~ **five (5)** Class V injection wells known as geothermal wells, Kapoho State 1A (KS-1A), Kapoho State 3 (KS-3), Kapoho State 13 (KS-13) ~~and~~ Kapoho State 11 (KS-11) **and Kapoho State 15 (KS-15)**.

Injection Well No.	Operational Status	Located on Well Pad	Approximate Well Head Elevation Above Sea Level
KS-1A	Primary Injector	A	618 feet
KS-3	Primary Injector	E	617 feet
KS-13	Primary Injector	E	617 feet
KS-11	Primary Injector	A	618 feet
KS-15	Primary Injector	B	743 feet

**Well Pad B: Latitude 19: 28' 45" N and
Longitude 154: 6' 4.73" W;**

2. Casing and Cementing

The specifications in Figures No. 1, No. 2, No. 3, and No. 4 **and No. 5** in Appendix A, apply to injection wells KS-1A, KS-3, KS-13, and KS-11, **and KS-15** respectively.

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2. Injection Pressure Limitation

Well	Maximum Injection Wellhead Pressure (psig)
KS-1A	500
KS-3	500
KS-13	1,252
KS-11	1,040
<u>KS-15</u>	<u>650</u>

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U.S. Environmental Protection Agency, **Region 9**
~~Ground Water Office (WTR-9)~~ **Drinking Water Protection Section (WTR-3-2)**
75 Hawthorne St.
San Francisco, CA 94105

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Oral reports to EPA ~~Ground Water Office~~ **Drinking Water Protection Section** shall be made to (415) 972-3532 or (415) 972-3971. Messages can be left at these numbers for oral reporting that occurs during evenings, weekends, and holidays.

(a) The permittee shall ~~replace or~~ supplemented the existing financial assurance (~~irrevocable standby letter of credit, No. 00652520001454, dated July 29, 2004, and standby trust agreement~~) to by establishing new amended versions 04 and 05 of the Letter of Credit, No. 777020010882-L, dated July 14, 2015 (amendment 04) and July 29, 2015 (amendment 05), and amended Standby Trust Agreement, dated July 29, 2015 for the estimated cost of plugging the ~~four~~ five existing injection wells in the amount of \$1,761,000 \$6,454,080 before any injection well construction can begin.

All other permit conditions remain unchanged.

This minor modification is effective on 8/7/15


Signed by Michael Montgomery


Michael Montgomery, Acting Division Director
Water Division, U.S. E.P.A. Region 9