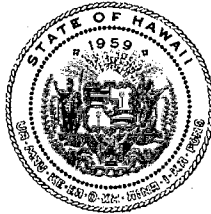
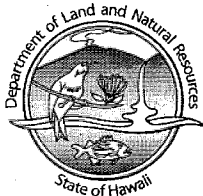


DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DEC 16 2014

Geothermal Well Permit
Kapoho State 16
Kapoho, Puna, Hawaii

To: Puna Geothermal Venture
P.O. Box 30
Pahoa, Hawaii 96778-0030

Your application dated November 12, 2014, for a permit to drill a geothermal well covered under the State of Hawaii, Geothermal Resource Mining Lease No. R-2 is approved.

Well Designation:	Kapoho State 16 (KS-16)
Location	TMK 1-04-01:19 (Wellpad A)
Well Coordinates	154° 53' 23.9" W 19° 28' 39" N
Geothermal Mining Lease	R-2
Leased to:	Kapoho Land Partnership
Subleased to:	Puna Geothermal Venture
Operator:	Puna Geothermal Venture
Ground Elevation:	610 feet AMSL
Projected Depth:	6,120 feet

Approval is granted in accordance with the Department of Land and Natural Resources' (Department's) Administrative Rules, Chapter 13-183, Hawaii Administrative Rules (HAR), and subject to the following conditions:

- (1) All work shall be performed in accordance with the permission and terms of the occupiers of the land, the drilling and completion program submitted with your application, the Department's Administrative Rules Chapter 13-183, HAR, and all other applicable Federal, State, and County laws, ordinances or rules;
- (2) The permittee, its successors and assigns, shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim or demand for property damage, personal injury and death arising from any act or omission of the applicant, assigns, officers, employees, contractors and agents under this permit or relating to or connected with the granting of this permit;

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE K. SOUKI
FIRST DEPUTY


WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

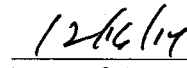
- (3) The permittee shall observe and comply with all valid requirements of County, State and Federal authorities and regulations to the land and permittee's operations including but not limited to, all water and air pollution control laws and those relating to the environment;
- (4) The well and bottom-hole location shall be located more than 100 feet from the outer boundary of the parcel of land on which the well is situated, or more than 100 feet from a public road, street or highway dedicated prior to the commencement of drilling, unless modified by the Chairperson upon request;
- (5) The permittee shall notify the Department, in writing, of the start date of drilling operations;
- (6) In the interest for the Protection of the Environment, Workers' Safety, Public Safety, and the Protection of the Resource, during operations involving the drilling, completion, and work-over of any geothermal well, there shall be highly experienced and properly trained (i.e. BOP Certified) representatives on the project and during operations for the prevention of any blow-out and or any flow event. Proper training would involve the accepted practices for the prevention of any blow-outs and also remedies for any flow event caused by a blow-out of any well. The training would also be the knowledge of the functions of the Blow-Out Prevention Equipment and the necessary utilization of the equipment in case of a blow-out or flow event.
- (7) All Blow-Out Prevention Equipment (BOPE) shall be pressure tested before commencing any other operations on the well. The minimum test pressures shall be approximately one-third the casing internal yield pressure rating, providing the test pressure shall not be less than 600 psig or greater than 2,500 psig, and shall be applied for a period of thirty minutes. The applicant shall notify the Department at least 24 hours in advance. The results of the pressure tests shall be reported on forms provided by the Department;
- (8) A real time monitoring device shall be installed for the drillers and a pit alarm system shall be included with this monitoring device. All toolpushers, drillers, and derrickmen shall be properly trained in the use of the monitoring equipment;
- (9) If changes to the proposed drilling program are contemplated, the permittee shall obtain the Chairperson's approval prior to implementing such changes;
- (10) During the use of the well for testing, monitoring, production, and/or injection purposes, the well and site shall be properly maintained until the well is plugged and abandoned in accordance with the Department's Administrative Rules, Chapter 13-183, HAR;
- (11) The permittee shall submit to the Chairperson, the results of any exploration, all drilling and testing records, down-hole surveys of the well, bottom-hole location, date of completion,

and a survey of the well location and elevation above mean sea level taken by a Hawaii Licensed surveyor within six months after completion of the well;

- (12) The completion report, an as-built drawing of the well, and the location of the well plotted on a USGS quad map shall be filed with the Department within six months after completion of the well;
- (13) The bond covering the well shall remain in full force and effect until the well is properly abandoned and the surface is restored as near as possible to its original condition; and
- (14) This permit shall expire 365 days from the date of issuance.



William J. Aila, Jr., Chairperson
Department of Land and Natural Resources



Date of Issuance

- c: Land Board Member
Hawaii County Planning Department
Department of Business, Economic Development and Tourism/Strategic Industries Division
Department of Health/Environmental Health Division
Eric Tanaka, Engineering Division, Hilo