GTHT - _____1_____

GENERAL CORRESPONDENCE

YEAR(S):

07.12 - 12.13

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

DECEMBER 10, 2013

Mr. Chuck Smiley, Site Manager
Lightning Dock Geothermal HI-01, LLC
P.O. Box 86
Animas, New Mexico 88020

RE: Lightning Dock Geothermal Project (GTHT-001): "OCD Facility Inspection of November 19, 2013" Lightning Dock Geothermal HI-01, LLC, Hidalgo County, New Mexico

Dear Mr. Smiley:

The Oil Conservation Division (OCD) is in receipt of your letter dated November 19, 2013 on the day of the inspection. OCD indicated at the conclusion of the Facility Inspection (inspection) that it would submit a letter to Lightning Dock Geothermal HI-01, LLC (operator) to document the results of the inspection. Please find below the inspection items identified by OCD with facility photos for your review and where required, implementation before system startup and/or afterward, if approved by OCD in advance of startup.

Introduction:

1) A Safety Meeting was conducted from 8:30 to 9:30 a.m. and a power plant engineering meeting was conducted from 9:30 to 10:30 a.m. The operator indicated no accidents have occurred since Labor Day (start of construction). The facility inspection was conducted from 10:45 to Noon. The construction completion date for the project is expected on or before December 31, 2013.

2) The OCD geothermal inspection focused on: 1) 19.14.22 NMAC (Sign on Wells); 2) 19.14.31 NMAC (Noise Abatement); 3) 19.14.32 NMAC (Safety Regulations); 4) 19.14.33 NMAC (Well Heads & Production Equipment); 5) 19.14.34 NMAC (Corrosion); and 6) 19.14.35 NMAC (Disposal of Produced Waters).

3) The OCD Water Quality Control Commission (WQCC) regulations aspect of the inspection focused on: 1) OCD WQCC Order issued on 5/29/2009 with Discharge Permit (GTHT-001) issued on July 1, 2009; and 2) OCC Geothermal Order issued on 5/9/2013.

Observations:

1) All air-based cooling tower (CT) units sit on top of 7 ft. tall piers in each of the 4 Blocks and all power plant piping sets above ground. There are 10 CT units per Block.

2) Stormwater surface drainage is generally from East to West across the facility. Some berm and liner damage from stormwater and other causes was observed at pits and the centralized pond, which need to be repaired and/or pits and ponds require decommissioning or closure.

3) Four new Kaishan Turbine Screw Expanders- KTSE- China (1.2 MW each) have replaced the 50 Binary Cycle Turbine Power Generation Units. The operator indicated that 1 MW could be generated from an ~ 700 gpm production well flow rate.

4) Each KTSE represents a one of four power plant "Blocks" with associated infrastructure, i.e., air-based cooling tower system, coolant and produced water piping, etc. into each Block. At the time of inspection, ~ 1.5 Blocks had been constructed with pipe leak testing underway at one of the nearly completed Blocks.

5) Power Block 1 of 4 was constructed and Block 2 of 4 was half way through construction. Power Blocks 3 and 4 are expected to be completed on or before 12/26.

6) Air-based cooling tower units have replaced the water-based cooling tower units; thus, eliminating about 350 gpm of fresh make-up water from water supply wells. The evaporation loss of the ground water resource would have ranged from ~ 4 – 10 % of this flow rate depending on the season.

7) New "As Built" Engineering Drawings are required that reflect the current construction at the plant. The original facility power plant engineering drawings have changed due to the changes identified in the "Introduction" section herein.

8) Stormwater concerns were apparent as flooding eroded berms of several pits and/or the centralized pond photographed on site. However, the operator had submitted a pit closure plan for OCD review and approval at the time of inspection. Therefore, the remaining pits/ponds will require repair to the berms and repair or replacement of the liners.

9) The geothermal power plant will have real-time monitors to monitor temperatures, pressures, etc. and may make typical annual well flow tests unnecessary, which will help to reduce flashing and evaporation during testing and fluid management at surface.

10) The geothermal system is designed to maintain pressure of thermal fluids in surface pipes to prevent pressure changes and precipitation of metals and cations.

Pits/Ponds:

1) New blowdown pits and a storm water run-off pond have been constructed at the facility and need to comply with Geothermal Regulations and be represented on a site map to scale.

2) A pit/pond closure plan was submitted to the OCD at the time of the inspection and is currently under review by the OCD. OCD is concerned about closing pits/ponds prematurely as containment areas have proven to be scarce at the facility. In addition, well tests and/or aquifer pump testing may be required at a later date. In addition, the centralized pond is currently the only discharge permit designated fluid waste disposition location at the facility.

Miscellaneous:

1) NMED- Liquid Waste (Septic Tank) Program: The plan to use portable bathrooms has changed, and the operator indicated that septic tanks were installed for facility bathrooms. The operator indicated that septic tank permits were obtained from the NMED. Ensure that septic system is properly permitted through NMED.

2) NMED- SWQB: The operator should evaluate stormwater areas at the facility and keep stormwater drainage areas separated from process units, areas, etc. The operator provided the Stormwater Pollution Prevention Plan drainage map with drainage from East to West. Stormwater areas were observed to be comingled with process areas, i.e, direct drainage into pits/ponds during precipitation events. OCD observed a one silt-fence or curtain on the run-off pond located at the southwest side of the plant. More may be needed.

3) NMED- SWB: The operator should initiate contact with the Deming Butterfield RCRA Landfill Disposal Facility and any nearby waste facilities to determine if they will accept geothermal exempt waste, i.e., "Special Wastes" designation (see msg. below). If not, the operator should make arrangements to ensure the disposition of certain waste streams are handled in accordance with all applicable state and/or federal regulations.

Sent: Friday, November 21, 2008 1:22 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Lightning Dock Geothermal Power Project (Hidalgo Co.) Waste Streams

Carl: I reviewed the Solid Waste Rules on geothermal waste and it does come under the regulatory authority of OCD. As a result the waste must be taken to a solid waste facility permitted to accept OCD waste. Currently the only landfills permitted to accept OCD waste are the San Juan Regional Landfill near Aztec, NM, the Rio Rancho Landfill in Rio Rancho, NM and the Valencia Regional Landfill -15 miles west of Los Lunas, NM all operated by Waste Management of New Mexico. It is possible that the Red Rocks Landfill near Thoreau, NM may have a permit for OCD by May of 2009. At this time those are the only facilities permitted to accept OCD waste.

Terry Nelson
Permit Section Manager
NMED-SWB
1190 St. Francis Dr.
PO Box 5469, Santa Fe, NM 87502-5469
Phone: 505-827-2328
Fax: 505-827-2902

terry.nelsonl@state.nm.us
www.nmenv.state.nm.us

4) RLD- CID: The operator indicated that construction permits are approved and inspections are in progress with no problems at the time of inspection. The operator was hooking up to the Columbus Electric Coop grid system trending north from the facility power plant toward Lordsburg where the connection with the PNM grid system is located with a 20-year life power agreement.

Requirements before system startup:

1) In order to prevent waste of energy from heat loss, insulation shall be installed around power plant pipelines, i.e., process units, pipeline transects from production wells to injection wells. The operator indicated that insulation would be installed.

2) All environmental Analytical Laboratories used by the operator from now on shall be NELAC Certified. In conformance with the facility Water Quality Monitoring Program Work Plan, all environmental sampling and laboratory testing shall comply with standard EPA Quality Assurance/Quality Control (QA/QC) and Data Quality Objectives (DQOs).

3) A process flow diagram(s) for produced and injected water running through all surface pipelines and surface management units including wells is required to understand flow directions and the process units handling flow at surface.

   OCD observed how a refrigerant comingling release could occur and be recognized by a calculation by the operator at the oil separator coolant side of each Power Block. OCD recommends that a direct reading device with O&M record of any refrigerant additions to the system for each Block (i.e., date and time refrigerant is added with volume specification) be maintained. A significant loss may be about +/- 1% of the total refrigerant volume per Block and/or frequent fill-ups per Block. A C-141 release report per the OCD Permit with corrective action should be implemented immediately including shut-down of the Power Block until the situation is corrected. This is to prevent the injection of comingled refrigerant into the fresh ground water or Underground Source of Drinking Water (USDW) or thermal reservoir system.

4) New facility power plant engineering drawing(s) to scale shall be provided that reflects the actual "as-built" design of the geothermal power facility. In addition, a new facility site map(s) to scale displaying all surface features, i.e., pits, ponds, monitor wells, production/ injection wells, process units, etc. is required. The original facility geothermal power plant engineering drawings are no longer valid based on engineering modifications by the operator.

5) Former Production Well LDG 47-7 shall be removed from the geothermal power project well map and added as a MW 47-7 to the Monitor Well network map(s) for the project. The operator converted the production well to a monitor well (LDG 47-7 to MW 47-7) by Sundry Notice in November of 2013. LDG 47-7 now serves as a deep monitor well adjacent to shallow MW-6.

6) Pit liners shall be repaired and/or replaced and berms reconstructed with anchor trenches to keep liners entrenched along the perimeter of pits. Grade surface to prevent run-on and run-off into process areas, i.e., pits/ponds, blowdown pits, etc. during precipitation events. Keep stormwater areas separated from process areas to minimize waste generation at the facility.

7) Seal all wells from atmosphere at the facility. Injection Wells: LDG 55-7 and LDG 63-7 were observed to be open to atmosphere and are not sealed at surface. The sign at "TFD 55-7" may require replacement because it is labeled "TFD" 55-7 instead of "LDG". No BOPE was observed on Production Well 45-7. The pump should sit on top of BOPE.

   MW protection covers are needed with bright color paint to prevent them from damage by allowing operators to visually see them. MW sign label and covers and/or poles shall be placed around MWs to protect them from trespass and damage. Ground surrounding wells shall be graded to allow drainage away from wells.

8) Provide a list of chemicals with MSDSs for stored chemicals at the facility and location(s) of storage. Include chemical storage areas on any surface maps of the facility. Ensure that storage areas protect containers from weather conditions and flooding, etc.

   OCD requires submittal of an MSDS for the refrigerant (R245-FA) and oil used in the closed-loop system. The operator shall implement a monitoring program for tracking refrigerant and oil levels with addition volumes to the system on the coolant side of each power generation Block in order to detect any breakthrough communication or commingling within each of the 4 power generation Blocks. OCD shall be notified of significant losses of coolant or any commingled scenarios that may harm the environment.

9) Provide an environmental waste byproduct list from operations, i.e., filters, petroleum contaminated soils, air emissions- hydrogen gas units (explosive vapors), lead batteries, spent coolant, etc. from operations. The operator shall comply with applicable federal, state and/or local environmental regulations and disposition thereof. Provide a list of OCD and non-OCD Waste Facilities that will accept the wastes. OCD is concerned that the nearby Deming Butterfield RCRA Disposal Facility cannot accept geothermal exempt wastes and there are no OCD permitted surface waste management facilities proximal to the facility. Non-OCD waste facility must have a "special waste" designation in order to accept OCD derived wastes and the Butterfield Solid Waste Facility in Deming may not have the designation.

10) 19.14.32.8 (Safety Regulations) requires that debris be kept clear of well site around any drilling or producing wells that may constitute a fire hazard. Debris was observed near production well LDG 45-7 and LDG 55-7 areas.

11) Ensure that the OCD G-Form applicable to sale of geothermal power is properly completed and submitted to OCD.

12) Ensure that containment, i.e., liner, cement, etc. exists beneath fuel storage tanks, chemical storage area(s) at the facility in the event of a release.

13) OCD observes the use of a Water or Oil-Lubricated Line Shaft Pump (400 HP) at Production Well LDG 45-7? The operator must assert that the use of this pump will not contaminate the USDW and/or fresh ground water if the pump uses lubricant in a high temperature environment. The lubricant used in these systems must be EPA approved. These oils can be either vegetable or mineral based. If the pump is in fact oil-based, please specify the type of lubricant used and the frequency and estimated volume(s) added to the pump? Also, how the operator will determine when leakage is occurring to be reported to the OCD for pump repair?

Conclusions:

1) The geothermal power plant appears to be a state-of the art plant with injection/ production wells nearby to each other facilitating a "water balance" scenario for extraction and injection that will minimize drawdown to nearby shallow water supply wells and help to offset seismicity concerns within the regionally extensive reservoir system.

2) The facility real-time monitoring system appears to minimize fluid management at surface and prevents future production well testing into ambient air from occurring, which appears to reduce the evaporative losses of the fresh thermal water resource that would otherwise be managed at surface.

3) There may be some regulatory issues identified under the "Miscellaneous" section herein that the operator may need to address.

4) The operator should consider implementation of pollution prevention and waste minimization initiatives and operational processes that reduce, reuse and/or recycle materials, etc., to minimize waste generation and reduce operating costs while protecting the environment when and where possible.

5) The project appears to be proceeding according to schedule and geothermal power should be online on/or before December 31, 2013. OCD expects to complete all program document reviews, i.e., Water Quality Monitoring Program Work Plan; G-Form Package Reviews for Project Wells; Pit/Pond Closure Requests; etc. associated with the geothermal power project completed on/or before COB on December 20, 2013.

6) Under the New Mexico Underground Injection Control (UIC) Program, the operator shall not contaminate the USDW at the project location.

If you have any questions, or need to request an extension on any required items above, please contact Carl Chavez of my staff at (505) 476-3490, mail at the address below, or email at CarlJ.Chavez@state.nm.us. Thank you for your cooperation.

Sincerely,

Scott Dawson
Deputy Director

SD/cjc

cc: Mr. Bill Brancard, OCD Santa Fe
Mr. Daniel Sanchez, OCD Santa Fe
Mr. Glenn von Gonten, OCD Santa Fe
OCD Artesia Office

OCD INSPECTION (November 19, 2013 at 8:30 a.m.)
Weather: Sunny ~ 65˚F with Wind Southerly at ~ 8 mph
OCD Inspectors: Carl Chávez, Scott Dawson & Glenn von Gonten

Facility sign W of Hwy. 338 about 2.5 miles due west of power plant was vandalized


Looking E from CR 96 Toward Pyramid Mtns and Geothermal Power Plant


Looking SW at sign located just W of Hwy 338 at CR 96 exit toward facility


Looking E from CR 96 Toward Pyramid Mtns and Geothermal Power Plant


Looking E-SE from CR 96 at Power Plant Construction Location

Looking E at construction site office

Looking E away from power plant at cooling towers for blocks under construction

Looking SW at power plant and air-based cooling towers in first of four constructed blocks (Ea. ~ 1.2 MW)

Looking W at Pipelines: Power Plant Input & Return Pipeline to Injection Wells

Looking W-SW toward power plant construction area

Looking SE at pipeline split between Production Well LDG 45-7 and Return Pipeline to Injection Well: LDG 55-7

Looking S across facility at pipe storage area

Looking W toward Power Plant

Looking W at Columbus Electric Coop power line grid in far background trending N away from Power Plant toward Lordsburg and the PNM Power Grid Connection.

Looking SE at elevated pipeline trending toward Production Well LDG 45-7

Looking W-SW at pipeline running from Power Plant toward Production Well LDG 45-7 and Injection Well LDG 55-7

16-inch diameter pipeline

Production Well LDG 45-7

Production Well LDG 45-7 Sign

Production Well LDG 45-7 Well Head with 400 HP Pump

LDG 45-7 Top Mounted Water or Oil-Lubricated? Line Shaft Pump (400 HP)

Production Well LDG 45-7 Control Room in background

Looking N-NE at pipeline split between Production Well LDG 45-7 and Injection Well LDG 55-7

Production Well LDG 45-7 Flexible Poly Pipe connection to Injection Well LDG 53-7

LDG 45-7 ASTM Barrel Bath with Internal Coil Sample Tubing

LDG 45-7 ASTM Sample Cooler Near Pipeline Sample Port

Above ground pipelines: Inlet & Return

LDG 45-7 ASTM Sample Cooler near sample port location on Pipeline

Oil separator for refrigerant side of power Block for oil separation from refrigerant.

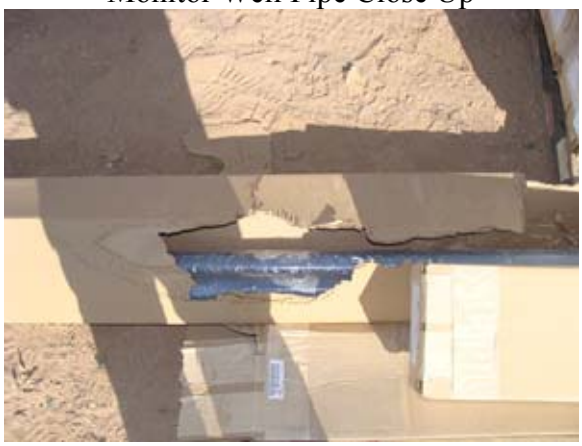
Air-based Cooling Tower Unit

Monitor Well Pipe

Looking W-SW toward two Power Plant Blocks under construction

Monitor Well Pipe Close Up

Monitor Well Pipe



Monitor Well Screen 40 Slot

Looking E toward pipeline transect N toward Injection Well LDG 55-7

Looking S at flexible pipeline run to Injection Wells: LDG 53-7 and LDG 63-7

Elevated pipeline (uninsulated)

Pipeline Construction

Welder at Pipe Joint

Preparing pipeline joints for welded connection

Looking SW with pipeline transect toward Injection Wells from Production Well LDG 45-7

Looking SE across facility

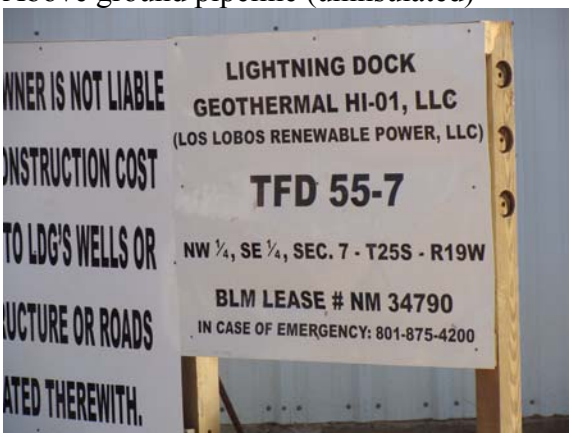
Columbus Coop power grid in background

Looking SE across facility at cooling tower storage area and construction in background

Looking West at oil separators (1 unit per Block) for refrigerant side of each Power Block

Looking W at pipeline transect (uninsulated)

Above ground pipeline (uninsulated)



Main Injection Well LDG 55-7 Sign displaying "TFD" instead of "LDG"

Injection Well LDG 55-7

Main Injection Well LDG 55-7 open to environment (uninsulated)

Looking into LDG 55-7

Azimuth Angle View Down LDG 55-7

Stockpiled Debris Near LDG 55-7

Looking W at Central Evaporation Pond Stormwater Damage Along Berms Evident with Torn Liner

Looking S-SW at Central Evaporation Pond

Looking S-SE at Central Evaporation Pond Liner Tears along E and SE berm areas

Looking SW across Central Evaporation Pond

45-mil Polypropylene Liner Tear

Looking S-SW across Central Evaporation Pond

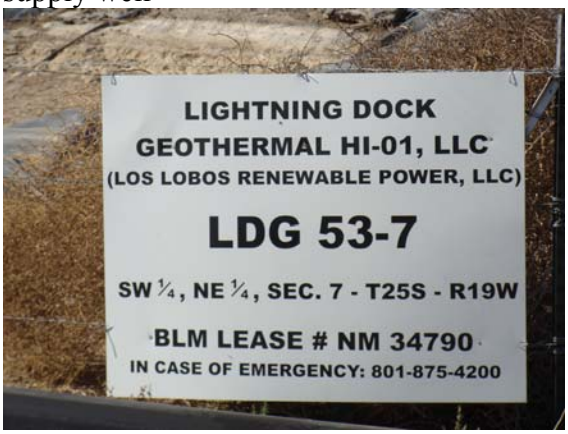
Same as above

INW-1 Intermediate Nested Monitor Well between LDG 45-7 and LDG 55-7

INW-1 (Intermediate Nested Well ~ 600 Ft. Deep) Located Between LDG 45-7 & LDG 55-7

Cement truck for MW cement completions

Looking W at water truck for construction activity obtaining fresh water from water supply well



Injection Well LDG 53-7 Sign

Flexible pipeline from Injection Wells: LDG 53-7 to LDG 63-7 with LDG 53-7 Drill Pit in Background

Injection Well LDG 53-7

LDG 53-7 Surface Pressure Gauge

LDG 53-7 Well Head with BOPE

MW-2 Near LDG 53-7 Construction w/ Surface Drainage Depression Surrounding Well

Monitor Well No. 2 (MW-2)

Burgett Property Owner Liability Sign in Vicinity of LDG 63-7

Injection Well LDG 63-7 Sign

LDG 63-7 Drill Pit with Stormwater Sediments running into pit from berm with vegetation growth inside pit

Looking S at Injection Well LDG 63-7

Looking N LDG 63-7

LDG 63-7 with BOPE

Looking SE from LDG 63-7

Looking SW at LDG 63-7 Drill Pit with Stormwater Run-on into Pit on E side of Pit

Looking NW at LDG 63-7 Drill Pit with Sediments & Vegetation Inside NE End of Pit

LDG 63-7 Drill Pit and Stormwater Sediments Deposited Inside Pit

Monitor Well No. 3 (MW-3) Near Injection Well LDG 63-7 with Surface Depression Surrounding Well

Looking N-NW at MW-3

Recently Constructed Run-Off Pond at SW Area of Property with Silt Fence Along W & S Perimeter of Pond Controlling Stormwater Drainage Across Facility from E to W

Looking S at Run-Off Pond

New Blowdown Pit Depression Located Near Each Production/Injection Well for Workovers, etc

Looking E on CR 96 Toward Facility (Pyramid Mtns. in background)

Looking N at Facility from MW-47-7

Looking E on CR 96 at Facility with Pyramid Mtns. in Background

Looking N at Power Plant Blocks 1 & 2 of 4

Debris Stockpiled on S Side of Facility

Looking S at LDG 47-7 Sign and Pit with Stormwater Run-on and Vegetation Inside Pit

MW-47-7 (Formerly LDG 47-7)

LDG 47-7 Drill Pit with Stormwater Sediments & Rocks Inside Pit

LDG 47-7 Sign (Recently Converted to MW-47-7 by Sundry Notice in November 2013)

Drill Crew Steam Cleaning MW Drill Augers Inside LDG 47-7 Drill Pit

Looking N-NE at LDG 47-7 Drill Pit

Deep MW-47-7 (Formerly LDG 47-7)

Bone Yard

Power Block 1 of 4 Radial Process Lines Extending from Cooling Tower Units to Collector Unit Below

Collector Unit Below Radial Process Lines

Collector Unit Below Radial Process Lines

Power Block 1 of 4 Soap & Water Leak Testing Process Lines

Block 1 Cooling Tower Units

Cooling Tower Units Sit On 7 Ft. Tall Piers

Block 1 of 4 Oil Separator Refrigerant Side

Block 1 of 4 Oil Separator Refrigerant Level Indicator

Block 1 of 4 Oil Separator Refrigerant Side

Evaporator Unit

Block 1 Compressor Unit Line Pressure Control

Evaporator Side of Expander Unit

Block 1 of 4 Kaishan Turbine Screw Expander Unit (1.2 MW)

Close Up of Evaporation Side of Expander Unit

Turbine Screw Turns Electric Generator on Expander Unit

Process Lines Feed into Top of Expander Unit

Expander Unit Interior Electric Control Circuit Panel 1250 V

Expander Unit Electric Control Circuit Panel Exterior

Expander Unit Process Lines

Block 1 of 4 Air-Based Cooling Tower Units

Power Plant Block Cooling Tower Units

Cooling Tower Close Up

Evaporator Side of Expander Unit

Cooling Tower Piping To Be Leak Tested

Evaporator Side of Expander Unit

Cooling Tower Soldered Pipe

Expander Unit

Block 1 of 4 Oil Separator Refrigerant Side of Expander Unit

Expander Unit

Expander Unit Electric Control Panel

Looking W at Produced Fluid Pipelines: Intake Pipeline from Production Well LDG 45-7 Tie-In to Block 1 and all 4 Power Plant Blocks under Construction with Return Pipeline (Eastward) back to Injection Wells

Looking SW Pipelines (Intake & Return) from Production Well LDG 45-7 Feeding into all 4 Power Plant Blocks with Block 2 of 4 Under Construction

Power Plant Block 2 of 4 Expander Unit under Construction

High Press Pipeline Flanges

Looking NW at Electric Ground Panels Located E of the Electric Poles

Looking E at Pipelines Extending From Facility Wells toward Power Plant Blocks

Looking NW at Electric Utility Poles and Workers

Looking NW at New Power Plant Electric Pole Lines Extending N away from Power Plant Blocks toward the Columbus Electric Coop Power Grid Poles Leading into Lordsburg for Connection to the PNM Power Grid for Sale Under a 20-Yr. Electric Power Generation Agreement

Looking W-SW at Blocks 1 & 2 Cooling Towers Unit

Looking W between Power Plant and Control Room Station Where an Employee will be Stationed 24/7

Looking N-NW at Elevated Pipeline and Power Plant Control Room in Background

Cooling Tower Units at Block 2 of 4 Under Construction

Power Plant Control Room

Inside Power Plant Control Room

Inside Power Plant Control Room

Inside Power Plant Control Room

Above Ground Fuel Storage Saddle Tanks without Secondary Containment

Temporary Chemical Storage Containment Area

Looking SW at Block 1 of 4 power plant with air-based cooling tower system placed on top of 7 foot piers

XRT 145-68 Synthetic Compressor Lubricant (55 Gal/208 L) Barrels

Looking W at Power Blocks 1 and 2

Looking NW at Power Plant Blocks 1 & 2 of 4

Transection Between LDG 45-7 and LDG 55-7

Looking SE at Power Plant

Cooling Tower Staging Area

Looking W-SW at Power Plant

Pipeline W-E Transect from Power Plant Over N-S Trending Arroyo located just E of Power Plant into Project Well Locations

Looking W toward power plant at Pipeline Construction (Peloncillo Mtns. in background)

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, October 30, 2013 9:13 AM
To: Janney, David (david.janney@amec.com)
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: FW: LDG- 47-7 Conversion to Geothermal Observation Wells or Monitor Wells & Also McCant TGWs 12-7 & 52-7 for Monitor Wells

Mr. Janney:

The New Mexico Oil Conservation Division (OCD) hereby **approves** the LDG 47-07 to used specifically as a "Geothermal Observation Well" with the following conditions:

1) Rename and display LDG 47-7 as a monitor well consistent with the Water Quality Monitoring Program Work Plan (WQMPWP) monitor well nomenclature and include it in the revised WQMPWP map, and any future project maps; and

2) Please be advised that OCD approval of this plan/report does not relieve Lightning Dock Geothermal HI-01, LLC of responsibility should their operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve Lightning Dock Geothermal HI-01, LLC of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Please contact me if you have questions. Thank you.

From: Chavez, Carl J, EMNRD
Sent: Tuesday, October 29, 2013 11:45 AM
To: Brooks, David K., EMNRD
Cc: Sanchez, Daniel J., EMNRD; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD; Dawson, Scott, EMNRD
Subject: FW: LDG- 47-7 Conversion to Geothermal Observation Wells or Monitor Wells & Also McCant TGWs 12-7 & 52-7 for Monitor Wells

David:

FYI: Per David Janney's note below, LDG 47-7 has OCD approved G-101 and G-102 Forms. The well has a geothermal well bond, which satisfies the "Geothermal Observation Well" financial well requirement.

The McCant Wells will require bonding (Geothermal Observation Wells) at such time as the well owner issues permission for the McCant Thermal Gradient Wells: 12-7 and 52-7 to be used by Lightning Dock Geothermal HI-01, LLC (LDG) as project monitor wells.

I will keep the G-Form submittals for LDG 47-7 in the OCD Files attached to this record with the operator's wish to convert this well to a monitoring well and stop review of the final LDG 47-7 production/injection well permitting package. I will hand write on this document "Operator Rescinded LDG- 47-7 G-Form Package" on today's date. I will require the operator to rename and display LDG 47-7 as a monitor well consistent with the Water Quality Monitoring Program Work Plan (WQMPWP) well name convention and include it as such in the revised map, and any future project maps.

Please let me know if there are any other OCD concerns or changes by COB today with the above process for turning LDG 47-7 into a Monitor Well.

Thank you.

From: Janney, David [mailto:david.janney@amec.com]
Sent: Tuesday, October 29, 2013 11:04 AM
To: Chavez, Carl J, EMNRD
Cc: 'chuck.smiley@cyrqenergy.com'; 'michelle@mhenrie.com'
Subject: Re: LDG- 47-7 Conversion to Geothermal Observation Wells or Monitor Wells & Also McCant TGWs 12-7 & 52-7 for Monitor Wells

Mr Chavez

LDG wishes to convert this to a monitoring well and will pull the injection well permitting package.

Did you receive the 55-7 CIT and final G-form package on Friday.

Regards,

David

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, October 29, 2013 12:49 PM
To: Janney, David
Cc: Dawson, Scott, EMNRD <Scott.Dawson@state.nm.us>; Sanchez, Daniel J., EMNRD <daniel.sanchez@state.nm.us>; Brooks, David K., EMNRD <david.brooks@state.nm.us>; VonGonten, Glenn, EMNRD <Glenn.VonGonten@state.nm.us>; Dade, Randy, EMNRD <Randy.Dade@state.nm.us>; Shapard, Craig, EMNRD <craig.shapard@state.nm.us>
Subject: RE: LDG- 47-7 Conversion to Geothermal Observation Wells or Monitor Wells & Also McCant TGWs 12-7 & 52-7 for Monitor Wells

David:

Good morning. Could you please inform the OCD as to whether Lightning Dock Geothermal HI-01, LLC (LDG) requests to pull the G-Form package for LDG-47-7 received on 10/9/2013 on or before COB this Friday, November 1, 2013?

During our 10/22/2013 phone call, LDG was not sure whether it wanted the OCD to process the G-Form package for LDG 47-7.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/

"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Chavez, Carl J, EMNRD
Sent: Friday, October 25, 2013 4:32 PM
To: Janney, David (david.janney@amec.com)
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: FW: LDG- 47-7 Conversion to Geothermal Observation Wells or Monitor Wells & Also McCant TGWs 12-7 & 52-7 for Monitor Wells

David:

In response to your phone call yesterday 10/22 regarding the following:

1) Conversion of LDG-47-7 to Monitor Well
    a. Should operator pull G-Form paperwork for production/injection well?
    b. Possible consideration: 19.14.74.8 NMAC (see below) for required information to OCD
    c. Do MWs require bonding under the geothermal regulations? No, the MWs would fall under the WQCC Regulations.

2) Conversion of McCant Wells: TGWs 12-7 (~ 1,000 ft. TD) and 52-7 (~2349 TD) to Monitor Wells
    a. If the operator could obtain owner permission and can furnish well construction information to the OCD for approval.
    b. Similar to 1(b) above, not sure right now if this would be a means for converting project wells to Monitor Wells?

OCD Assistant Counsel David Brooks indicates the following based on the above inquiry.

Any Geothermal Observation Well (Geothermal Regulations Definition) must be bonded and at a minimum the OCD must receive a G-101 and G-102 Form for approval. LDG 47-7 is already bonded and meets this criteria; however, the operator was considering withdrawing the complete G-Form package including the G-104 and G-112 submittals, if it converts the well to a "Geothermal Observation Well."

OCD recommends that you receive all required permissions from the owner of the McCant wells in advance of submitting the paperwork required above for OCD review and consideration of approval to use the wells for monitoring purposes in the project.

If the wells are to be used for 19.14.74.8 NMAC (WELLS TO BE USED FOR FRESH WATER), the operator may want to study the regulation before proceeding.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/

"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Chavez, Carl J, EMNRD
Sent: Friday, October 25, 2013 10:46 AM
To: Brooks, David K., EMNRD
Cc: Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: RE: LDG- 47-7 Conversion to Geothermal Obervation Wells or Monitor Wells & Also McCant TGWs 12-7 & 52-7 for Monitor Wells

FYI: See maps of wells below in question for transition to Monitor Wells for WQCC Monitoring…..

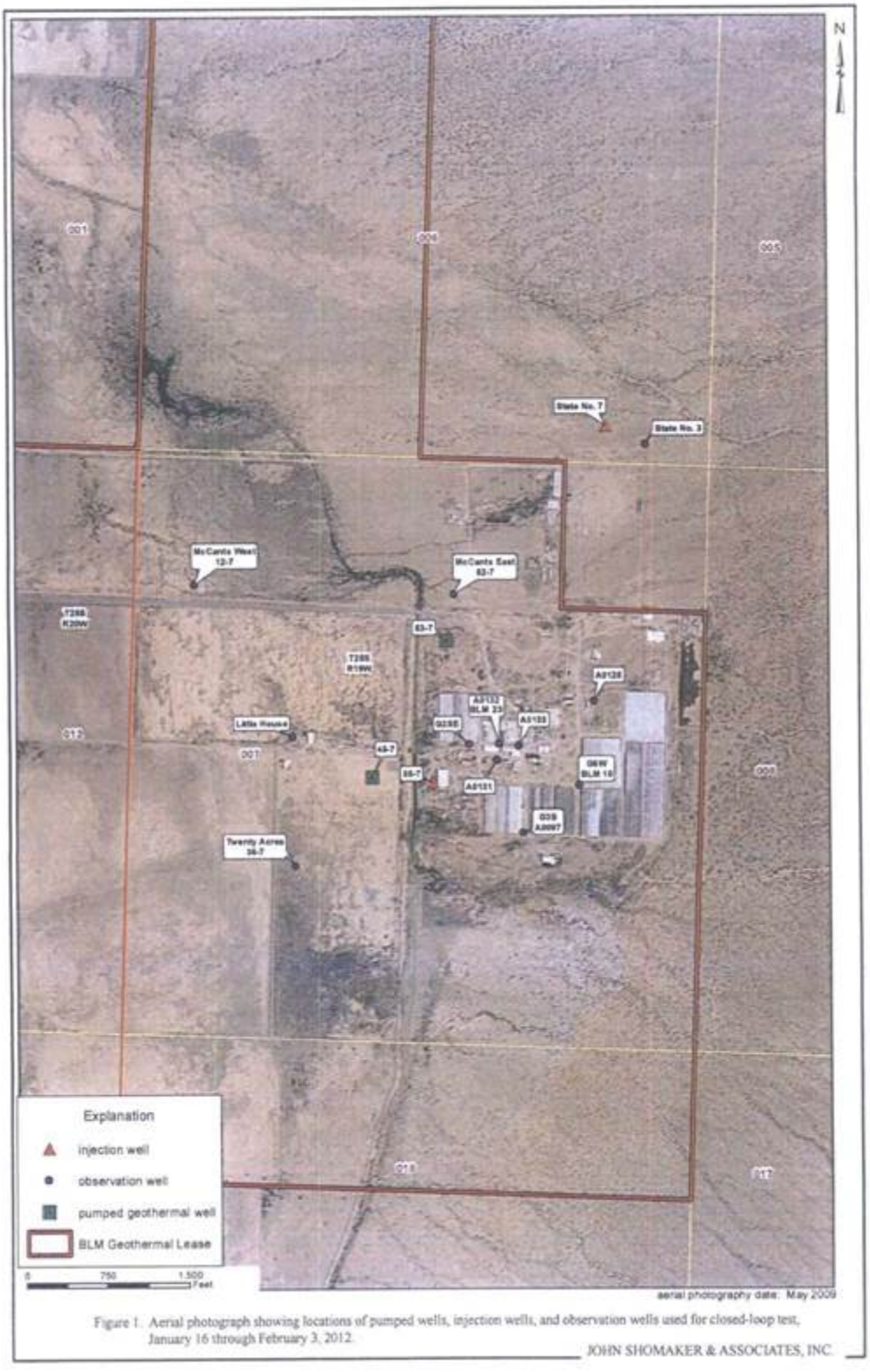

Figure 1. Aerial photograph showing locations of pumped wells, injection wells, and observation wells used for closed-loop test, January 16 through February 3, 2012.

JOHN SHOMAKER & ASSOCIATES, INC.

Well LDG-47-7 was proposed and drilled as a production well under the original WQCC Permit and is bonded with APD, G-102, etc. OCD received a package of G-Forms for it on 10/9, but LDG want to convert it to a monitor well, which is easily transitioned into a Geothermal Observation Wells and bonded in accordance with David B. response below.

The Thermal Gradient Wells owned by McCant (see map above labeled McCant Wells 12-7 (~ 1,000 ft. TD) and 52-7 (~2,349 ft. TD). LDG must obtain permission to use the wells as Geothermal OWs. OCD would require well construction information in order to approve, but OCD may require G-101 and G-102 Forms at a minimum.

In addition, for both sets of wells for conversion into Geothermal OWs, does LDG need to comply with Section 8 (see regulation provided below).

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 14 GEOTHERMAL POWER
PART 74 WELLS TO BE USED FOR FRESH WATER

19.14.74.8 WELLS TO BE USED FOR FRESH WATER: When the well to be plugged may safely be used as a fresh water well and such utilization is desired by the land owner, the well need not be filled above a sealing plug set below the fresh water formation, provided that written agreement for such use by the owner of the well and by the land owner is filed with the division. Upon acceptance of the well by the land owner, the well's bond may be released. [Recompiled 12/31/01]

Thank you.

From: Brooks, David K., EMNRD
Sent: Wednesday, October 23, 2013 2:18 PM
To: Chavez, Carl J, EMNRD
Subject: RE: LDG- 47-7 Conversion to Monitor Well & McCant TGWs 12-7 & 52-7 for Monitor Wells

"Any well which is to be utilized for the express purpose of evaluating or monitoring a geothermal reservoir . . . " seems broad enough to cover all such wells.

From: Chavez, Carl J, EMNRD
Sent: Wednesday, October 23, 2013 12:31 PM
To: Brooks, David K., EMNRD
Subject: RE: LDG- 47-7 Conversion to Monitor Well & McCant TGWs 12-7 & 52-7 for Monitor Wells

David:

Hi. Does it change your opinion if the wells are strictly used for water quality monitoring under WQCC vs. monitoring for geothermal?
This is very important. OCD would have to bond an entire suite of MWs under the WQCC Permit.

Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Brooks, David K., EMNRD
Sent: Wednesday, October 23, 2013 12:29 PM

To: Chavez, Carl J, EMNRD
Subject: RE: LDG- 47-7 Conversion to Monitor Well & McCant TGWs 12-7 & 52-7 for Monitor Wells

Good Afternoon Carl

I do not agree with the highlighted response. 19.14.20.8 requires bonding for any "geothermal resources well." 19.14.1.7.Q, definition of "Geothermal Resources Well" refers to the definition of "Well" in 19.14.1.7.HH. That definition expressly includes any "geothermal observation well." The definition of "geothermal observation well" in 19.14.1.7.M appears to include any related monitoring wells.

David

From: Chavez, Carl J, EMNRD
Sent: Wednesday, October 23, 2013 12:14 PM
To: Janney, David (david.janney@amec.com)
Cc: Dawson, Scott, EMNRD; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD
Subject: LDG- 47-7 Conversion to Monitor Well & McCant TGWs 12-7 & 52-7 for Monitor Wells

David:

I'm checking with OCD Legal Counsel and Management about your inquiries below and will respond officially soon.

In response to your phone call yesterday 10/22 regarding the following:

1) Conversion of LDG-47-7 to Monitor Well
    a. Should operator pull G-Form paperwork for production/injection well?
    b. Possible consideration: 19.14.74.8 NMAC (see below) for required information to OCD
    c. Do MWs require bonding under the geothermal regulations? No, the MWs would fall under the WQCC Regulations.

2) Conversion of McCant Wells: TGWs 12-7 (~ 1,000 ft. TD) and 52-7 (~2349 TD) to Monitor Wells
    a. If the operator could obtain owner permission and can furnish well construction information to the OCD for approval.
    b. Similar to 1(b) above, not sure right now if this would be a means for converting project wells to Monitor Wells?

Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
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TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 14 GEOTHERMAL POWER
PART 74 WELLS TO BE USED FOR FRESH WATER

19.14.74.8 WELLS TO BE USED FOR FRESH WATER: When the well to be plugged may safely be used as a fresh water well and such utilization is desired by the land owner, the well need not be filled above a sealing plug set below the fresh water formation, provided that written agreement for such use by the owner of the well and by the land owner is filed with the division. Upon acceptance of the well by the land owner, the well's bond may be released.
[Recompiled 12/31/01]

HISTORY OF 19.14.74 NMAC:
Pre-NMAC History: The material in this Part was derived from that previously filed with the State Records Center and Archives:
Rule G-304, Wells to be Used for Fresh Water, 11/1/83.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, September 27, 2013 3:03 PM
To: 'Janney, David'
Cc: Chuck Smiley; Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: RE: Stormwater in Reserve Pits and Pond

David:

Please find below my review comments to Glenn last Friday, September 20th. I would mention that it appears that the operator is planning to close temporary pits and this may offer a solution to the solids issue with sediment in pits and ponds. It would seem that once the TPs are properly closed, the reoccurrence of stormwater discharge issues would stop, but not completely. In addition, we are working toward establishing background water quality that may help in the future with stormwater issues. The only available means for legal discharge of mixed geothermal field wastes is the Centralized Evaporation Pond. There is no additional containment for fluids of questionable quality for storage and final disposition at the facility.

The above stated, it still appears that the separation of stormwater and fresh water in general may bccome an issue as operations begin. Until ground water background is established, stormwater at the facility must be isolated and directed away from process areas at the facility to avoid surplus of stormwater and the potential for mixing with geothermal field waste(s). It would seem prudent to evaluate your evaporation pond holding capacity and consider adding storage for non-geothermal waste fluids and/or run-on and run-off controls to keep stormwater separated from facility process areas.

Perhaps some additional communication on this matter is needed. Please feel free to contact me if you have questions.

Thank you.

****

September 20, 2013

Glenn:

Please find below my draft review of the above subject request to discharge onto land surface at the Lightning Dock Geothermal HI-01, LLC Facility in Hidalgo County.

The operator has a significant problem on their hands with the separation of stormwater from process fluid areas at the facility. The mixture of freshwater with geothermal wastes constitutes geothermal field wastes with a similar exemption as oilfield wastes and are to be handled accordingly.

****
Draft Review below.

The New Mexico Oil Conservation Division (OCD) is in receipt of Lightning Dock Geothermal HI-01, LLC's letter (letter) dated September 17, 2013 with attached information regarding discharge of stormwater from temporary pits (TPs) and the central holding evaporation pond (CHEP). The OCD considers this request to be a rare occurrence at the facility and will be reluctant to consider similar requests in the future, since fresh fluids (stormwater) when mixed with geothermal field waste becomes an exempt geothermal field waste to be handled according to the geothermal regulations.

All of the TPs that were sampled exhibited elevated levels of pH (Basic) that were barely below the maximum allowable WQCC water quality standard (standards) pH of 9. Currently, TPs 53-7 and 55-7 are the only sample locations that could qualify as stormwater for discharge onto the land surface only and not ground water.

The CHEP must serve as the produced fluids discharge disposal location for the facility as specified in the OCD Discharge Permit GTHT-001. Therefore, any fluids in the CHEP are there for disposal through evaporation and shall not be discharged to land surface and/or ground water. It appears that the operator has a lack of containment to separate produced geothermal fluids exceeding standards or waste from fresh water or stormwater at the facility. It appears that this will be a reoccurring problem at the facility unless the operator can address the separation of stormwater from geothermal waste.

The operator must consider additional engineering and construction of additional containment, i.e., EPs, fresh water storage pits/ponds or other approved treatment, storage and/or disposal methods to treat, store, and/or dispose of fresh water and/or geothermal waste fluids and solids at the facility. The OCD cannot approve geothermal waste solids/fluids exceeding standards for discharge onto land surface and/or ground water at the facility. In addition, background has yet to be determined for ground water and soils at the facility.

Therefore, the OCD **disapproves** the discharge of TP 47-7 solids/fluids onto the land surface and/or ground water, since it appears that stormwater has been mixed with geothermal drill mud waste and is now waste. The OCD **approves** the discharge of fluids from TPs 53-7 and 55-7 onto the LAA north of Well 45-7 only, but this does not include solids. TP 63-7 needs to be sampled. Based on the recent rain events, it appears the waste volumes are increasing.

OCD comments and/or recommendations on the letter with attached information are:

Temporary Pits-TP (47-7, 53-7, 55-7 & 63-7):

1. It appears that drill mud/fluid were not disposed after Wells 47-7, 53-7, 55-7, and 63-7 were drilled and drill mud (geothermal waste) in the TPs has now mixed with storm water, when combined constitutes a geothermal waste. The operator may be planning to close the TPs with an onsite closure method.
2. Environmental laboratory analytical data results were missing for TP 63-7. TP 63-7 must be sampled if the operator is planning to discharge fluids onto proposed land surface north of Well 45-7 location.
3. TP 47-7: Exceeded WQCC Standards for Arsenic (0.6 mg/L), Fluoride (52 mg/L), Chloride (2,800 mg/L), Sulfate (8,900 mg/L), and TDS (20,500 mg/L).
4. TP 53-7: Marginally exceeded WQCC Standards for TDS (1,140 mg/L).
5. The operator will need to discharge fluid wastes (not solids) that exceed WQCC water quality standards into the Centralized Holding Pond (CHEP) for evaporation as the OCD approved disposition method and/or disposal by another means approved by the OCD. Therefore, the CHEP is the legal discharge location referenced in the OCD Discharge Permit (GTHT-001) for the facility.
6. There are two stormwater discharge locations proposed or "Land Application Areas- LAAs". The LAA south of 45-7 appears to be located hydrogeologically upgradient from production well 45-7. The OCD recommends one LLA south of Well 45-7.

Central Holding Pond (Central Holding Evaporation Pond- CHEP):

1. Geothermal drill mud/fluids may have also been discharged into the CHEP for evaporation; therefore, stormwater is now mixed with geothermal drill mud waste and constitutes geothermal field waste.
2. The CHEP must be used for the disposition of fluids (not solids) from Temporary Pit 47-7, which exceeded the WQCC water quality standards.
3. OCD recommends that the operator consider construction of additional EPs for fresh water storage versus produced fluid wastes that exceed WQCC water quality standards. The CHEP is to be used solely for disposal through the evaporation process and should not be considered a holding pond for fluids at the facility.

Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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From: Janney, David [mailto:david.janney@amec.com]
Sent: Tuesday, September 24, 2013 11:06 AM
To: Chavez, Carl J, EMNRD
Cc: Chuck Smiley
Subject: FW: Stormwater in Reserve Pits and Pond

Greetings Carl:

Any feedback on the pit stormwater disposal action or the monitoring program work plan we submitted?

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

From: Janney, David
Sent: Wednesday, August 28, 2013 11:29 AM
To: 'Chavez, Carl J, EMNRD'
Cc: 'Dade, Randy, EMNRD'; 'VonGonten, Glenn, EMNRD'
Subject: Stormwater in Reserve Pits and Pond

Greetings Mr. Chavez:

Thank you for your comments on how to analyze the stormwater accumulated in the reserve pits and central pond during the recent heavy precipitation events in the Animas Valley.

Please find attached a letter describing our plan to sample the pit and pond waters and discharge them onto the surface of LDG property. Please do not hesitate to contact me with any questions you may have.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113

505.821.1801 off
505.821.7371 fax
505.449.8457 cell

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division

AUGUST 27, 2013

Mr. Nick Goodman
Cyrq Energy
136 South Main Street, Suite 600
Salt Lake City, Utah 84101

RE: AMEC'S LETTER OF AUGUST 21, 2013

Dear Mr. Goodman:

The Oil Conservation Division (OCD) is in receipt of Los Lobos' letter of August 21, 2013, submitted on its behalf by Mr. David Janney of AMEC on August 21, 2013. Mr. Janney indicated that Los Lobos was somewhat confused by OCD's letter of August 14, 2013. Mr. Janney presented Los Lobos' comments on several issues.

Mr. Janney indicated that Cyrq "disagrees" with OCD's reminder to Los Lobos that OCD considers information submitted with required geothermal forms to be not eligible for treatment as confidential. Los Lobos mentioned a meeting at which Ms. Albert briefed OCD staff on trade secret issues. Los Lobos also brought up the pending issue of what previously submitted documents are or are not confidential. This letter responds to the current concerns about confidentiality with regard to the information required in the attachments to the G-104 forms.

After consultations with legal counsel, we believe confidentiality issues are governed by NMSA Section 71-2-8, which provides (in pertinent part):

> **Confidentiality; penalty.**
>
> The provisions of any confidential contract or any other confidential information required or possessed by the energy, minerals and natural resources department shall be held confidential by the department upon written request of the party supplying it.

However, NMSA Section 14-2-1 (Inspection of Public Records Act) provides, in pertinent part:.

A. **Every person has a right to inspect public records of this state except**:

***

(8) as otherwise provided by law.

Based upon our review, if an entity wishes to inspect public records regarding trade secrets, they must go through the following procedure:

A person seeking an opportunity to inspect public records pursuant to that Act must follow the procedures provided in NMSA Sections 14-2-8 and14-2-9, which include presenting a written request to the agency which has custody of the records, describing the records sought.

Los Lobos offered its opinion that all down-hole data is a trade secret. Although OCD questions this argument, in view of these apparently conflicting statutory mandates, OCD is not in a position to make a determination regarding assertions of trade secret privilege. OCD reminds Los Lobos that certain down-hole information required by the G-104 and required attachments, such as top of and bottom of (geologic) formation, description of formation, well history, electric logs, water analyses, temperature surveys, *etc.* must be provided to OCD. OCD will not approve a final G-104 or authorize production of a geothermal well, until the required information is submitted. In submitting these forms, Los Lobos must specifically assert in a written request which particular items of information it claims as trade secrets. In accordance with the principle that only information secrecy of which has been maintained can constitute a "trade secret", information offered in evidence, through testimony or exhibits, at the previous Commission hearing is not trade secret, and should not be so designated. OCD will maintain the confidentiality of information as to which Los Lobos specifically asserts a trade secret privilege, and will notify Los Lobos or its successor in the event OCD receives a request pursuant to the Inspection of Public Records Act which OCD construes as requiring disclosure of such information.

Separately, Los Lobos seems to be concerned that it is being required resubmit data that has already been submitted. Given the number of changes that Los Lobos has made in its plans to produce geothermal energy at the Lightning Dock facility over the past few years, OCD does not think that it is overly burdensome to require Los Lobos to submit a final package of completed forms, with certification as to all currently valid information.

OCD reminds Los Lobos that it must fully complete all of the required geothermal forms before OCD will approve it to begin production.

If you have any questions, please contact Deputy Director, Scott Dawson, by phone at (505) 476-3480, mail at the address below, or email at Scott.Dawson@state.nm.us. Thank you.

Sincerely,

Jami Bailey
Director

JB//cjc
cc: Scott Dawson, OCD Santa Fe
Daniel Sanchez, OCD Santa Fe
Glenn von Gonten, OCD Santa Fe
Carl J. Chávez, OCD Santa Fe
OCD Artesia Office

Mr. Scott Dawson
Deputy Director
New Mexico Oil Conservation Division
1220 South Saint Francis Drive
505-476-3480
Scott.Dawson@state.nm.us

August 21, 2013

RE: Reply to OCD Letter ("Response to Operator Email Inquiry of August 8, 2013, on 'Final G-104' Form Well Submittal Requirements for Lightning Dock Geothermal Power Project in Hidalgo County, New Mexico"), dated August 14, 2013

Dear Mr. Dawson

Los Lobos is in receipt of the above referenced letter and we thank you for it. We are, however, somewhat confused by some of its content and thought it best to reply in writing. Please find below our comments on a point-by point basis.

Page 1, second paragraph, final sentence ("OCD has indicated to the operator in past correspondence that it considers information with attachments submitted with the geothermal forms to be not eligible for treatment as confidential."). Los Lobos disagrees with this premise. You recall our meeting in the OCD conference room on February 1, 2013: Los Lobos brought along Diane Albert, a licensed patent attorney and court-appointed Special Master in trade secret litigation. Ms. Albert briefed you, Mr. Brooks, and OCD Staff regarding the law of trade secrets. Los Lobos agrees some of the documents it submitted in the past under "confidential" stamp do not contain trade secrets and thus do not warrant on-going confidential protection by OCD. However, Los Lobos also vigorously maintains that some "confidential"-stamped documents contain trade secrets, warrant confidentiality protection, and are, therefore, not subject to an Inspection of Public Records Act request. We further agreed at the meeting that Mr. Chavez would compile all "confidential"-stamped documents submitted to OCD and Los Lobos would collectively review them with him to ascertain which documents contained trade secrets. It is Los Lobos' opinion that all down-hole data collected at its expense is considered a trade secret and needs to remain confidential, and we disagree that this information needs to be resubmitted without a "confidential" stamp. Los Lobos has been waiting for seven months for Mr. Chavez to contact us for this review. In any case, we think it grossly unfair for OCD, at this point; with no collective review attempted by OCD, to unilaterally determine that all our submitted documents are ineligible for treatment as confidential items. It is a considerable expense for Los Lobos to resubmit this information and it will also be a burden and expense for OCD to reprocess this information.

Page 1, Form G-104 section: No comments, we will comply with your directives.

Page 2, Form G-105 section: No comments, we will comply with your directives.

Page 2, Form G-106 section, subparagraph (5) ("Casing Record: Los Lobos must provide the required actual casing information."): All actual casing information is contained in the Driller's Daily Reports or the G-106 Forms or well diagrams that have already been filed for these wells. Please be specific about what is missing. There is no production test data for the injection wells because they will be used for injection, not production, and this information cannot be provided.

Page 2, Form G-107 section: No comments, we will comply with your directives.

Page 3, Form G-112 section, subparagraph (2) As indicated above, Los Lobos has submitted all of this information on forms or well diagrams in the past. (4) ("Depth of Bottom of Deepest Fresh Water Zone in This Area: Los Lobos will comply with your directives and provide a statement about the overall knowledge of water quality in the geothermal field.

Thank you very much for your assistance in the development of this important energy project. Los Lobos looks forward to your rapid processing of any additional forms or information we submit. Should you have questions regarding this reply, please do not hesitate to contact me by email at David.Janney@amec.com or by phone at (505) 821-1801.

Respectfully submitted,

David W. Janney, PG
Agent for Los Lobos Renewable Power, LLC

Cc: Nick Goodman – Los Lobos Renewable Power, LLC/Cyrq Energy
Chuck Smiley - Los Lobos Renewable Power, LLC/Cyrq Energy
Michelle Henrie – Attorney for Los Lobos Renewable Power, LLC

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

AUGUST 14, 2013

Mr. David Janney
AMEC Environment & Infrastructure, Inc.
8519 Jefferson, NE
Albuquerque, New Mexico 87113

RE: Response to Operator E-mail Inquiry of August 8, 2013 on "Final G-104" Form Well Submittal Requirements for Lightning Dock Geothermal Power Project in Hidalgo County, New Mexico"

Dear Mr. Janney:

The Oil Conservation Division (OCD) is in receipt of Los Lobos Renewable Power, L.L.C.'s (Operator) e-mail. OCD is providing Los Lobos with this written response to ensure that Los Lobos submits all applicable forms (See forms listed below) with all required information. The "Final G-104 Form" for each project related well that will be used for production or injection must be submitted by Los Lobos and approved by OCD before Los Lobos may commence commercial geothermal power production and/or operations.

Based on Los Lobos' inquiry about Well 45-7 and OCD's review of the "Preliminary Form G-104" and associated Form G-112 approved by the OCD with Conditions of Approval on September 6, 2012, OCD is providing Los Lobos with specific comments on the forms that pertain to all geothermal project wells, not just Well 45-7. OCD has indicated to the operator in past correspondence that it considers information with attachments submitted with the geothermal forms to not be eligible for treatment as confidential.

Form G-104: The "Final Form G-104" shall include all other forms and attachments that must be submitted with the final Form G-104 for all project related wells (Wells 45-7, 53-7, 55-7, 63-7, etc.) in order to update the Administrative Record for the project to date. All required additional Forms with complete information must be attached to the "Final Form G-104".

1) **Name of Reservoir:** The Preliminary Form G-104 is non-specific, i.e., "Lightning Dock Geothermal". Los Lobos must be more specific when it submits its Final Form G-104. OCD suggests that Los Lobos consider "Volcaniclastic Conglomerate-Alluvium" associated with the production/injection zone(s).
2) **Designation of Purchaser of Product:** The Preliminary Form G-104 is blank. Los Lobos must specify a purchaser of the power generated by its geothermal plan.
3) **Certificate of Compliance:** Los Lobos must provide a new signature and date of submittal.

Form G-105: Los Lobos must attach data from all tests that it has actually conducted (See No. 3 below).

1) **Reservoir:** See comments on the Form G-104 above.
2) **Formations Penetrated by Well:** Los Lobos must describe all formations encountered from surface to total depth of well including any open borehole. Note that other well information from nearby project wells may be incorporated into this response.
3) **Attachments:** Los Lobos must submit copies of all electric logs, directional surveys, physical or chemical logs, water analyses, tests, and temperature surveys that it has performed on the well or has in its possession, or that are otherwise available to it.
4) **Certification:** As above, Los Lobos must sign and date its Final Form G-105.

Form G-106: Los Lobos must fully document all production test data (See No. 4 below) before OCD will approve the Final Form G-104 submittal. There must be adequate tests conducted by Los Lobos to complete the "Production Test Data" section of the form.

1) **Reservoir:** The Preliminary Form G-106 is non-specific. Please see comments above on Form G-104.
2) **Geological Markers:** See comments on Form G-104 above.
3) **Commenced Producing:** Los Lobos must provide the date when it first began producing geothermal fluid from the well for well testing.
4) **Production Test Data:** Provide dates; all static tests; Total Mass Flow Data; Separator Data information required in the form. Note that the "NM" in the Preliminary Form G-106 is considered to be incomplete information by the OCD.
5) **Casing Record:** Los Lobos must provide the required actual casing information..
6) **Certification:** As above, Los Lobos must sign and date the Form G-106..

Form G-107:

1) **Reservoir:** The Preliminary Form G-107 is non-specific. Please see comments above on Form G-104
2) **Well History:** Los Lobos has previously attached logs to the Forms G-106 and G-112; however, logs are only required to be attached to the Form G-105. The Form G-105 shall be accompanied by copies of such logs, surveys and tests which may have been conducted on the well, including electric logs, deviation and directional surveys, physical and that logs, etc. are also attached to the G-105 Form. Note: Los Lobos must submit legible logs . Los Lobos should also attach any updated maps and well diagrams as part of its well history.
3) **Certification:** As above, Los Lobos must sign and date the Final Form G-107.

Form G-112: This form is linked to the associated G-104 Form. OCD has determined that any updated information on this form (other than a change in well location or projected injection depth) will not trigger a requirement to provide another public notice, because the initial public notice was issued by the Operator where applicable.

1) **Field:** Currently incomplete information. There is extensive documentation about the "Known Geothermal Resource Area- KGRA" and the area that it encompasses in the project area.

2) **Casing and Tubing Data:** Los Lobos must provide the required information.
3) **Name of Proposed Injection Formation:** Currently non-specific, i.e., "Horquilla Fm". Perhaps geologic formation, i.e., "Volcaniclastic Conglomerate-Alluvium" associated with the production/injection zone(s).
4) **Depth of Bottom of Deepest Fresh Water Zone in This Area:** Los Lobos must provide all information up to the date of submittal. If unknown, then Los Lobos must provide the deepest depth of water quality with an estimated depth of ground water with less than 10,000 mg/L Total Dissolved Solids based on Los Lobos' overall knowledge of the field, reservoir and project area.
5) **Los Lobos must specify whether this injection is for Pressure Maintenance or Water Disposal:** This section may be left blank if the well is not used for injection.
6) **Certification:** As above, Los Lobos must sign and date this final form.

If you have any questions, please do not hesitate to contact Carl Chavez of my staff by phone at (505) 476-3490, mail at the address below, or email at CarlJ.Chavez@state.nm.us. Thank you.

Sincerely,

Scott Dawson
OCD Deputy Director

SD/cjc

cc: Mr. Daniel Sanchez, OCD Santa Fe
Mr. Glenn von Gonten, OCD Santa Fe
Mr. Carl J. Chávez, OCD Santa Fe
OCD Artesia Office

Chavez, Carl J, EMNRD

From: Brooks, David K., EMNRD
Sent: Thursday, August 08, 2013 5:16 PM
To: Michelle Henrie (michelle@mhenrie.com)
Cc: Dawson, Scott, EMNRD; VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Subject: Response to August 1 letter
Attachments: Henrie 080813 ltr.docx

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division

August 8, 2013

Ms. Michele Henrie
Attorney for Los Lobos Renewable Power, LLC
P.O. Box 7035
Albuquerque, NM 87194-7035

Dear Ms. Henrie

This is a response to the legal arguments in your letter of August 1st, responding to our letter of July 25, 2013.

Your first point is that the OCD's July 25th letter did not separately address the requirements in Commission Order R-13675-B for commencement of injection for purposes of your proposed Field Operation Test (FOT). This is correct. The letter addressed those requirements and also (i) requirements pertinent to the "ground water quality monitoring work plan" required by Paragraph 20 of the Discharge Permit dated July 1, 2009 and (ii) requirements pertinent to final G-104 approval. The question of the specific requirements that must be satisfied prior to commencement of injection is now moot if, as you informed us, you do not now plan to conduct an FOT. Prior to commencement of injection for commercial operation, OCD will have received and approved the ground water quality monitoring work plan and the final G-104s.

OCD also does not believe it is necessary at this time to re-visit the issue you discuss concerning preliminary and final G-104 approvals, as that issue would also appear to be moot. Clearly, complete G-104s, with all of the required attachments and information required therein, must be filed for all production and injection wells you will be using prior to commencement of commercial operations.

OCD does not disagree with anything in the section of your letter entitled "Overview of G-104 through G-107 Process", as it relates to the final G-104 approval process, in the context where you have elected to proceed to commercial operation without conducting tests not specifically required by the rules or existing orders. You understand, of course, that in choosing to conduct only the minimum required tests, you are proceeding at your own risk. If information developed after commencement of commercial operations indicates conditions inconsistent with the demonstrations OCD requested in the July 25 letter. , OCD reserves the right require such actions as may be necessary to prevent waste of geothermal resources, protect the correlative rights of other owners within the reservoir, and protect water quality and the environment. As long as this is clearly understood, we would agree that the G-104 approval process requires only that you completely fill out the forms and required attachments with all information required

therein. The forms will, in that case, be approved unless the information supplied raises concerns that must be separately addressed.

Although your August 1st letter does not discuss modifications to the Discharge Permit, that issue was extensively discussed in our August 7th meeting. Consistent with what OCD then told you, it is prepared to approve ***minor*** modifications of the Discharge Permit without compliance with the public notice requirements of Paragraph 5 of that document or the rules of the Water Quality Control Commission. It is OCD's view that it has discretion to approve such modifications under the authority conferred by the Geothermal Resources Conservation Act. Certain specific modifications discussed at the August 7 meeting fall into this category. Any other modification request will be addressed on a case-by-case basis.

We hope this discussion will help to resolve any misunderstandings generated by OCD's letter, and we wish you every success in development of your commercial geothermal power project.

Of course, nothing in this letter is intended in any way to relieve the Operator of responsibility should its operations cause any damage or threat of damage to protectable fresh water, human health or the environment, or correlative rights of other geothermal owners, nor does it relieve the operator of responsibility for complying with applicable Division rules, Division or Commission Orders, or other federal, state or local laws or regulations, including, but not limited to, requirements of the Office of the State Engineer (OSE).
Please contact me if you have questions.
Very truly yours,

David K. Brooks

Cyrq energy

August 8, 2013

Mr. Glenn Von Gonten
Energy, Minerals, and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Key Points from August 7, 2013, OCD – Los Lobos Renewable Power Meeting

Dear Mr. Von Gonten

Thanks again to your staff and you for taking the time to meet with our team in your office yesterday to try to resolve our recent discussions on the "Water Quality Sampling Plan".

These are the primary points we took away from the meeting:

- OCD will not respond to the August 1, 2013, letter from our attorney, Michelle Henrie (subject: " 'Final G-104' Issues raised in OCD's July 25, 2013 letter, titled 'Lightning Dock Geothermal Power Project (Order No. R-13675-B) Water Quality Sampling Plan for Well Flow and Injection Well Test in Hidalgo County, New Mexico"). We agreed that, since Los Lobos will not conduct the Field Operation Test, OCD's response to our proposed "FOT Fluid Quality Monitoring Plan" is now rendered moot.
- In accordance with the Discharge Plan, Los Lobos will submit for OCD's approval a "Ground Water Monitoring and Sampling" work plan, incorporating many of the ideas we discussed during yesterday's meeting.
- Los Lobos will submit our proposed minor modifications to the Discharge Plan for OCD's approval. We understand these administrative modifications (i.e., an operator change and well redesignations) should not prompt a formal notification.

We look forward to working with the OCD staff to quickly finalize these items and continue our progress toward constructing the Lightning Dock power plant and producing electricity for our customer before the end of 2013.

Sincerely

LOS LOBOS RENEWABLE POWER, LLC, a subsidiary of Cyrq Energy, Inc.
LIGHTNING DOCK GEOTHERMAL HI-01, LLC, a subsidiary of Cyrq Energy, Inc.

By Chuck Smiley
Chuck Smiley
Lightning Dock Site Manager

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August 1, 2013

Mr. Scott Dawson, Deputy Division Director
Energy, Minerals, and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: "Final G-104" Issues raised in OCD's July 25, 2013 letter, titled, "Lighting Dock Geothermal Power Project (Order No. R-13675-B) Water Quality Sampling Plan for Well Flow and Injection Well Test in Hidalgo County, New Mexico"

Dear Mr. Dawson:

This letter provides comments relating to one specific set of issues raised in the above-referenced letter. We greatly appreciate the time you have already spent talking with the Los Lobos Renewable Power, LLC ("Los Lobos") team and hearing our concerns. We also very much appreciate your time reviewing and addressing this letter.

Background Information

Los Lobos submitted a "Revised Geothermal Fluid Quality Monitoring Plan for the Proposed Field Operations Testing of Geothermal Well LDG 45-7"on July 9, 2013, in anticipation of performing a Field Operation Test (FOT). This plan was limited in scope. It addressed *only* how Los Lobos planned to sample and monitor the produced geothermal water that was to be reinjected during the FOT. This plan did not describe how Los Lobos would sample and monitor other wells for water quality, temperature, and water level pursuant to Discharge Permit requirements. Los Lobos intended (and still intends) to submit the well sampling plan, which is the Ground Water Monitoring Program described at paragraph 20B(i) of the Discharge Permit, separately because it is not limited to the FOT and it will apply going forward during operations.

Los Lobos anticipated OCD would review the geothermal injectate sampling plan (within its scope) and provide comments consistent with (i) Order No. R-13675-B from the recent OCC hearing ("Order"), (ii) the project's Discharge Permit (GTHT-1), and (iii) the various Conditions of Approval that accompany the project's approved "G" forms. Instead, OCD responded outside the scope of the geothermal injectate sampling plan with issues relating to (a) "final" G-104s, and (b) the not-yet- submitted well sampling plan. This letter addresses Los Lobos' concerns regarding "final" G-104s. Our team would like to meet with you next week to discuss the other technical issues raised in OCD's response.

Overview of Forms G-104 thru G-107

OCD created the distinction between "preliminary" and "final" G-104s in 2012. This is not a distinction founded upon statute or regulations. On May 25, 2012, Los Lobos' attorney wrote a

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letter explaining why OCD should administratively process a request to test an exploratory well differently (i.e., more leniently) than a request to place a well permanently "on production" or "on injection." Los Lobos felt strongly that New Mexico's regulatory scheme (consistent with other states) was such that exploration (i.e., drilling and testing) should be permitted through forms G-101 through G-103,[1] whereas placing a well "on production" or "on injection" required forms G-104 through G-107 and, in the case of injection wells, a form G-112 as well. Form G-104 is essentially the license allowing the operator to produce or inject geothermal resources.

OCD disagreed. In a letter dated May 31, 2012, OCD wrote that—from a permitting perspective—there is no difference between exploratory well testing and placing a well "on production" or "on injection." Under any scenario where geothermal water was involved, Forms G-104 through G-107 would be required. This is uncanny, because this particular set of G-forms cannot be completed without data that is developed during or after well drilling.[2]

OCD addressed this problem by requiring that, pre-drilling, Forms G-104 through G-107 would be filed without the data developed during or after well drilling. Forms G-104 through G-107 would then be approved "preliminarily." Post-drilling, after the G-105 (Well Log), G-106 (Well Summary Report) and G-107 (Well History) were filed, the G-104 approval would become "final."

It is important to recognize how Forms G-104 through G-107 operate. They require submission of data. If data is not submitted, the Form G-104 will not be approved.

> **Form G-104** (Certificate of Compliance) expressly requires three (and only three) things: (a) that the Operator "outlin[e] thereon the information required"; that the Operator "certify[]that all Division rules and regulations pertaining to the well have been complied"; and that the Form G-104 "be accompanied by 3 copies of Form G-105…, 3 copies of Form G-106…, and 3 copies of Form G-107…." (NMAC 19.14.55.8(A)).
>
> **Form G-105** (Well Log) "shall be accompanied by copies of such logs, surveys, and tests which may have been conducted on the well, including electric logs, deviation and directional surveys, physical or chemical logs, water analyses, tests, including potential tests and temperature surveys." (NMAC 19.14.56.8) The regulations expressly say: "Failure to include these data and materials with the Form G-105 will result in withholding approval of the Form G-104…." (Id.)

[1] These are similar to Oil and Gas Forms C-101 (Application for Permit to Drill, Deepen or Plug Back), C-102 (Well Location and Acreage Dedication) and C-103 (Sundry Notice).
[2] Attached to a G-104 (Certificate of Compliance and Authorization to Produce) is a G-105 (Well Log), G-106 (Well Summary Report) and G-107 (Well History).

> **Form G-106** (Well Summary Report) must be "completely filled in." (NMAC 19.14.57.8) The regulations again expressly say: "Failure to file a completed Form G-106 will result in withholding approval of the form G-104…." (Id.)
>
> **Form G-107** (Well History) "is a chronological history of the entire operation of drilling and completing the well." (NMAC 19.14.58.8) Once again, the regulations expressly say: "Failure to file a completed Form G-107 will result in withholding approval of Form G-104…." (Id.)

It is also important to recognize what data is required to be submitted in connection with Forms G-104 through G-107. The required data submission is "such logs, surveys, and tests which may have been conducted on the well." (NMAC 19.14.56.8) These forms do not mandate any specific tests. Separately, the regulations require testing such as MIT tests (NMAC 19.14.27.8(B)(5)) and annual pressure testing (NMAC 19.14.62.8). Clearly these test results would be included with a Form G-105. Clearly OCD would withhold approval of a Form G-104 if these test results indicated a failure. Los Lobos has submitted all such test results to OCD except for an upcoming CIT on Well 55-7 and a CBL on Well 53-7.

Concerns Regarding the "Final" G-104 Scheme
Articulated in OCD's Letter dated July 25, 2013

Los Lobos is concerned that OCD's July 25, 2013, letter treats the "final" G-104 as if it involves something more than data submission. OCD's letter states: "Therefore, the Operator must make some key demonstrations during the upcoming test that OCD will need to consider when reviewing the 'Final G-104 forms.'" (Page 1). The letter further states that these "demonstrations" must be "supported by Final G-104 submittals with associated forms and well test information for OCD approval / disapproval of the test based on the Order." (Page 2). Neither of these positions is supported by citation to the regulations, the Order, or the Discharge Permit.

Los Lobos is also concerned about the nature of the various required "demonstrations." None of these "demonstrations" are required by the regulations, the Order, or the Discharge Permit before Los Lobos is allowed to produce or inject geothermal resources. These purported "demonstrations" are:

Field Operation Test. The letter implies that the FOT is a required test. It is not. Condition of Approval No. 1 in the Order is titled "G-104 Form." This Condition states "The operator shall submit a final G-104 Form with all other associated G-Form information (i.e., G-105, G-106, and G-107) with required logs and *well test information* (19.14.55.8 NMAC) for this G-112 submittal … to the Oil Conservation Division … for approval …." The "well test information" required by the Order to be submitted "for approval" is the exact same "well test information" required by NMAC 19.14.55.8: "such logs, surveys, and tests which may have been conducted on the well." (NMAC 19.14.56.8). *If* a test is performed, *then* "well test information" must be submitted. "Failure to include these data and materials with the Form G-105 will result in withholding

approval of the Form G-104." (Id.) This is the extent of OCD's approval in connection with the "Final" G-104.

Equilibrium. The letter also implies that Los Lobos must make additional demonstrations relating to "equilibrium" prior to production or injection. (Page 1). The word "equilibrium" does not appear in the Order. Contrary to what the letter implies, the OCC finds in the Order that "Los Lobos also presented a report from John Shomaker & Associates, Inc., that during pump and injection testing in 2012, water levels had reached, or nearly reached, equilibrium by the end of the test." (Finding No. 10). This demonstration has already been made, accepted by the OCC, and no additional demonstration regarding "equilibrium" is required by the regulations, the Order, or the Discharge Permit.

Sufficient Production Capacity. The letter also implies that Los Lobos must demonstrate geothermal reservoir's "capacity to produce fluids without depletion of the aquifer system." (Page 1). The Order does not require the Operator to demonstrate sufficient production capacity prior to production or injection. Condition of Approval No. 2 of the Order (last sentence) indicates that testing will "help assess the capacity of the reservoir." Condition of Approval No. 2 of the Order does not require "demonstration" of "sufficient capacity." Similarly, Condition of Approval No. 6 requires monitoring of the geothermal reservoir for "sustainable production well capacity for the long-term extraction of heat…" It does not require that the Operator prove "capacity" in advance. The Discharge Permit at Condition I on Page 15 requires annual reporting of subsidence monitoring, and references "capacity" in connection with subsidence—which is (a) different than production capacity and (b) a matter of annual reporting, not a "demonstration" that must be made in advance. Similarly, the regulations do not require any demonstration of production capacity.

Constant Temperature. The letter also implies that Los Lobos must demonstrate that the "thermal reservoir heat source temperature remains constant." (Page 1). The Order nowhere requires that the heat source remain constant. In fact, the Order contemplated temperature variation during the FOT and said that Los Lobos had a reporting obligation only if the temperature varied by +/-25%. (Condition of Approval No. 2). No demonstration of constant temperature is required by the regulations, the Order, or the Discharge Permit prior to production or injection.

Sufficient Heat for Production. The letter also implies Los Lobos must demonstrate that the "thermal reservoir heat source remains…at a temperature that will produce geothermal power during operations." (Page 1). These requirements are nowhere found in the regulations. There was similar language in a Draft Order: "The operator shall conduct annual production well testing to verify that the geothermal reservoir has the capacity to produce geothermal fluids at the 250 degree Fahrenheit bottom-hole temperature and that geothermal fluids production is sustainable during production to prevent termination of the OCD project permit(s)." The OCC removed this language from the Order, yet the recent letter reinserts this concept. No demonstration of sufficient heat for production is required by the regulations, the Order, or the Discharge Permit.

Correlative Rights. The letter also implies that Los Lobos must make additional demonstrations relating to correlative rights. (Page 1). However, the OCC made an express Finding, No. 11, in the Order: "Los Lobos presented evidence that its proposal protects correlative rights." Further, the Order's Condition of Approval No. 6 addresses correlative rights but does not require any additional demonstration and there is none required by the regulations or Discharge Permit.

Constant Water Quality. The letter also implies that Los Lobos must demonstrate that "water quality (project wells and nearby water supply wells) remains constant before, during and after the test [i.e., the FOT]." (Page 2). The Order nowhere requires that the water quality remain constant. To the contrary, the Order contemplated water quality variation during the FOT and said that Los Lobos had a reporting obligation only if the water quality varied by +/-25%. (Condition of Approval No. 2). No demonstration of constant water quality is required by the regulations, the Order, or the Discharge Permit.

Summary and Conclusion

In summary, OCD's letter, by requiring the above-discussed "demonstrations," creates new hurdles for the project that are nowhere based in the regulations, the Order, or the Discharge Permit. None of these "demonstrations" are required by the regulations, the Order, or the Discharge Permit before Los Lobos is allowed to produce or inject geothermal resources. Neither these "demonstrations" nor any other similar "demonstrations" are required before OCD can "approve" Los Lobos' "Final G-104s." The G-104 package is a matter of data submittal. It is not a matter of discretionary review and further approval or denial. Los Lobos acknowledges that additional MIT information needs to be supplied before OCD can deem the G-104s "final." Los Lobos objects to any new hurdles creating discretionary "demonstrations" that appear (to us) very likely to again stall the project.

Thank you for your attention to this matter. Los Lobos looks forward to working with OCD to ensure compliance with its regulations, the OCC's Order and the Discharge Permit as we hope to move forward with constructing New Mexico's first geothermal power plant.

Sincerely

MIVHELLE HENRIE, LLC

Michelle Henrie
Attorney for Los Lobos Renewable Power, LLC and Lightning Dock Geothermal HI-01, LLC

July 30, 2013

Mr. Scott Dawson
Deputy Division Director
Energy, Minerals, and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Response to July 25, 2013 letter, titled, "Lighting Dock Geothermal Power Project (Order No. R-13675-B) Water Quality Sampling Plan for Well Flow and Injection Well Test in Hidalgo County, New Mexico"

Dear Mr. Dawson:

Thank you for taking the time to meet with Michelle Henrie and Tom Carroll regarding our geothermal energy project last Friday afternoon. We appreciate your quick response and willingness to discuss our concerns. As they shared with you on Friday, Los Lobos Renewable Power, LLC is in receipt of the July 25, 2013 letter from the Division pertaining to a Water Quality Sampling Plan for Well Flow and Injection Well Test, including its 23 demonstrations, comments and recommendations/requirements.

If we may, we want to begin with our general reaction to the letter first and then address the many specific technical and regulatory responses in a more detailed response in a separate letter. We sincerely hope to resolve any legitimate differences, and move this project forward to completion. Los Lobos has already invested over $15 million in the project, much of it to the benefit of the New Mexico economy and once complete, the Lightning Dock Geothermal Project will have brought many construction and development jobs to New Mexico and will help kick-start a vibrant industry.

As Tom and Michelle shared with you, we were surprised to receive the letter, as we believed that the permit approval process had been largely completed after the recent, second OCC hearing, and that what remained in front of us was standard compliance with conditions of approval and ongoing monitoring and provision of data as it becomes available. Instead the letter raises concerns that Los Lobos will continue to face additional, new, unprecedented "requirements" or "suggestions" or "processes", all requiring additional approval from staff until the project fails.

While we have no technical problem addressing the substance of the conditions in the permit, we are not prepared to submit to another permit approval process for wells that have already been permitted. This letter indicates that there is yet another approval process based on extensive new

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requests that has no process articulated in regulations, and no appropriate legal basis. Like any other regulated industry, we need to have permit certainty at some reasonable point in the development cycle. After five years of development and permitting, we readily and openly submit to permit compliance but cannot commit or acquiesce to continual reviews and approvals through the life of the project.

Moreover, the letter asked for data from a test to be performed. This is a test that was not required, rather proposed by Los Lobos in an effort to supplement existing flow data before final plant design. Los Lobos requested a permit for the test in December of 2012, but the approval process took six months due to an appeal Cyrq believes was not in good faith, but for other, improper purposes.

Sadly, Los Lobos is now awaiting another minor permit approval from OSE for the test, and no longer has time to conduct the test prior to the commencement of site construction. However, we would be glad to provide the data and run the test as soon as the schedule will allow and likely can do this during initial commissioning and operations phase towards the end of the year.

As we have discussed previously, the plant construction faces a rigid schedule requirement in order to qualify for federal tax incentives, without which the project is not economic. After five years of development and permitting processes, Los Lobos must move ahead based on the well permits we have been granted, with the understanding that ongoing compliance with conditions of approval and provision of additional data as it becomes available will continue.

In closing, we are requesting a standard regulatory system for this project, based on existing law, regulations and proper practices, ideally a process that conforms to the common practices in this industry. Los Lobos has gathered copious data as wells have been drilled, and secured the appropriate permits for these wells. At this stage of the project, we look forward to submitting data to the division for compliance, and are happy to provide additional data as it becomes available, but we must have permit and process certainty.

Yours sincerely,

LOS LOBOS RENEWABLE POWER, LLC, a subsidiary of Cyrq Energy, Inc.
LIGHTNING DOCK GEOTHERMAL HI-01, LLC, a subsidiary of Cyrq Energy, Inc.

By Nicholas Goodman
Nicholas Goodman
Chief Executive Officer

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State of New Mexico
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Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

JULY 25, 2013

Mr. Nick Goodman
Los Lobos Renewable Power, L.L.C.
136 South Main Street, Suite 600
Salt Lake City, Utah 84101

Re: Lightning Dock Geothermal Power Project (Order No. R-13675-B) Water Quality Sampling Plan for Well Flow and Injection Well Test in Hidalgo County, New Mexico

Dear Mr. Goodman:

The New Mexico Oil Conservation Division (OCD) is in receipt of Los Lobos Renewable Power, L.L.C.'s (Operator) proposed Water Quality Sampling Plan (WQSP) submitted pursuant to Order No. R-13675-B (Order) issued by the Oil Conservation Commission (OCC) on May 9, 2013. After review of the WQSP, OCD has the following comments, recommendations and/or requirements that Los Lobos must address to satisfy the requirements of the Order.

The following regulations apply to this geothermal project: Geothermal Resources Conservation Act (Chapter 71, Article 5 NMSA 1978); Geothermal Power (Title 19, Chapter 14 NMAC); and Water Quality Control Commission (20.6.2NMAC and 20.6.4 NMAC).

It appears that this is the exploratory well test (test) that the Operator may utilize to determine whether geothermal power production is feasible in the project location. Therefore, the Operator must make some key demonstrations during the upcoming test that OCD will need to consider when reviewing the "Final G-104 Forms" These demonstrations include:

1) Demonstration that an equilibrium condition (water table stabilization throughout steady-state pumping rate) has been achieved under flow rates simulating operational conditions and which stresses the aquifer system to demonstrate that the geothermal reservoir has the capacity to produce fluids without depletion of the aquifer system in order to extract heat during operations;

2) Demonstration that the thermal reservoir heat source temperature remains constant or sustainable and at a temperature that will produce geothermal power during operations;

3) Demonstration that correlative rights of geothermal leaseholders near the project are not adversely affected by the project;

4) Demonstration that water quality (project wells and nearby water supply wells) remains constant before, during and after the test; and

5) Demonstration that all of the above are supported by Final G-104 Submittals with associated forms and well test information for OCD approval/disapproval of the test based on the Order.

OCD reminds the operator that Los Lobos has not submitted the required MIT information (both CBL and CIT) from the injection wells for OCD's review and approval prior to injection.

Los Lobos must address the following OCD WQSP comments, recommendations and/or requirements in order to satisfy the Order:

Comments:

1) The operator refers to the WQSP specified in the Order as the "Geothermal Fluid Quality Monitoring Plan". Please revise to use the terminology of the Order.

2) It is important to note that the WQSP required in the Order is not just for the two referenced injection wells, but is also applies to the OCD Discharge Permit (GTHT-001) .

3) In general, the proposed WQSP sampling and/or monitoring locations, frequencies, parameters (especially field parameters, i.e., pH, static water level, temperature, oxidation-reduction, etc.) are not frequent enough, and/or are lacking. The objective of the Los Lobos WQSP is to obtain water quality data, temperature, and static water level fluctuations before, during, near cessation, and after the test. Los Lobos proposed WQSP is inadequate and must be revised.

Recommendations/Requirements:

1) Change the title of the submittal to "Water Quality Sample Plan" to be consistent with the Order.

2) The Operator shall fully comply with the Order and Discharge Permit GTHT-001 provisions; including: waste handling, analytes, run-off, discharges into surface drains, etc. during testing.

3) The Operator shall include a map(s) to scale illustrating the sample and/or monitoring locations (i.e., production, injection, and water supply wells).

4) The operator shall furnish isoconcentration maps of water quality, static water level (piezometric/potentiometric), and temperature isoconcentration maps before, during, near completion of test, and after test to assess the capacity of the thermal reservoir to produce thermal heat for the project.

5) The Operator shall revise its WQSP to specify that maps shall be submitted with the required G-Forms in the WQSP to adequately depict sampling and/or monitoring information during the test.

6) The Operator shall revise its WQSP to specify that it will provide supporting documentation for any isoconcentration maps generated from the test (i.e., production well flow rates, water quality maps, static water level piezometric/ potentitiometric surface maps, temperature maps, etc.).

7) The Operator shall revise its WQSP to propose more frequent sampling/monitoring with rationale that will satisfy the Order.

8) The Sampling and monitoring frequency for the test (test is scheduled for maximum of 30-days) is not adequate. The Operator shall revise its WQSP to specify that it will test at least daily for field parameters such as static water level and temperature measurements. The Operator shall revise its WQSP to propose more frequent monitoring and shall provide its rationale for the proposed sampling frequency. All water quality samples collected at the end of the test need to be collected just prior to cessation of the test.

9) OCD requires ASTM E-947-83 whenever possible, unless temperatures, field conditions, etc. requires implementation of the other ASTM. The OCD approves low-flow to conserve loss of fluids in the reservoir or aquifer system.

10) Low-flow sampling well stabilization in field parameters of not greater than +/- 10% is required before water quality sampling except when anomalous readings of +/- 25% occur, in which case, a sample is to be collected with re-sampling conducted within 24-hours using same sample methodology at the same location.

11) Static Water Level with Temperature monitoring: The operator shall include as many monitor well locations as needed to adequately collect this essential data. The Operator shall Provide detailed procedure and its rationale for SWL (i.e., monitoring at least 24-hrs in advance of start of test through 24-hrs after cessation of test) and Temperature monitoring with reference to attachment(s) with locations, etc.

12) The Operator shall set the pumps as near to the base of open and/or lined borehole as feasible for this approved low-flow water quality sample method. OCD notes that there has been a lack of water quality information at depth and the planned testing should help to address this water quality information during the test. However, monitoring throughout the test should indicate when higher total dissolved solids and salinity fluids are upwelling into the project area from pumping.

13) The Operator shall provide all applicable attachments associated with the Order from GTHT-001, i.e., Tables 1 – 3, list of fresh water supply wells, etc.) with monitoring/sampling locations, frequencies, and parameters being monitored.

14) The Operator shall ensure in advance of the test that all well owners are notified of the schedule for the test activities with a copy of the OCD approved WQSP and have provided permission (provide documentation with the final G-104 submittals) for the operator to sample and/or monitor in accordance with the WQSP.

15) The Operator shall document and notify OCD of any well owners that deny access to their well. Well owners may choose to hire an environmental consultant to monitor their well in accordance with the WQSP.

If you have any questions, please do not hesitate to contact me by phone at (505) 476-3490, mail at the address below, or email at CarlJ.Chavez@state.nm.us.

Sincerely,

Carl J. Chávez
Environmental Engineer

Attachments: Operator's WQSP Submittal

CJC/cjc

cc: Mr. David Janney, AMEC
Mr. Scott Dawson, OCD Santa Fe
Mr. Daniel Sanchez, OCD Santa Fe
Mr. Glenn von Gonten, OCD Santa Fe
OCD Artesia Office

Chavez, Carl J, EMNRD

From: Janney, David <david.janney@amec.com>
Sent: Tuesday, July 09, 2013 6:21 PM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD; Dawson, Scott, EMNRD; Shapard, Craig, EMNRD
Subject: RE: Field Operations Test Fluid Monitoring Plan
Attachments: Field OperationsTest Fluid Monitoring Plan 7-9-13.pdf

Greetings Mr. Chavez:

Please find attached the above referenced document for Los Lobos' Lightning Dock Geothermal project in Hidalgo County, New Mexico.

This document contains revisions that meet the requirements of the May 9, 2013 order from the OCC with attached conditions of approval for the injections wells. We have included language that keeps the plan general to include "any injection well" rather than refer to specific injection wells.

Please feel free to contact me with questions.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

July 9, 2013

Project No. 1151700102

Mr. Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: Revised geothermal fluid quality monitoring plan for the proposed field operations testing of geothermal well LDG 45-7 located in the Lightning Dock Geothermal Field, Hidalgo County, New Mexico

Dear Mr. Chavez:

On behalf of Los Lobos Renewable Power, LLC (Los Lobos), AMEC Environment and Infrastructure, Inc. is pleased to submit this revised geothermal fluid quality monitoring plan for well flow testing at the above referenced site in Hidalgo County, New Mexico. This plan was revised to incorporate the recent conditions of approval in the approved G-112 forms for injection wells LDG 53-7, LDG 55-7 and LDG 63-7 dated 5/9/3013.

Los Lobos proposes to monitor the quality of the geothermal fluid during the flow test according to the following plan.

- Los Lobos will collect field fluid quality parameters (temperature, pH, oxidation/reduction potential, and specific conductance) from its production well LDG 45-7 on a daily basis. The meter used to record these field parameters will be calibrated against known standards on a weekly basis and checked against the standards daily. The calibration of the water quality meter will be recorded into a field book and a written record of the daily field geothermal fluid quality parameters will be recorded on field data sheets for inclusion into the permanent record.
- Los Lobos will collect geothermal fluid samples for laboratory analysis from LDG 45-7 at the initiation of the flow test; after 15 days of flow testing; and just prior to the conclusion of the flow test. If daily field parameter testing indicates a substantial change (+/- 25 percent), Los Lobos will collect an additional sample for laboratory analysis.
- Los Lobos will collect geothermal fluid samples for laboratory analysis from any injection well before injecting into any injection well and after the cessation of the injection into any injection well. At least 48 hours of time will lapse between cessation of injection and collection on the final sample.
- Low flow methods may be used to collect these samples from the water column and the samples will be collected according to ASTM Method E-947-83 or E-1675-95a at the surface. Samples will be transported under chain-of-custody to a certified analytical laboratory. The appropriate US Environmental Protection Agency or Standard Methods analytical methods with appropriate detection limits will be used to analyze the samples and standard laboratory quality assurance/quality control data will be submitted to OCD with the analytical results. Laboratory samples will be analyzed for the inorganic and organic constituents listed in NMAC 20.6.2.3103, pH, and total dissolved solids. Samples will be submitted to the laboratory on a standard 10-day analytical turn-around-time.

AMEC Environment & Infrastructure, Inc.
8519 Jefferson Street NE
Albuquerque, NM 87113

Tel 505.821.1801
Fax 505.821.7371

Thank you for your assistance in these matters. Please contact me at 505.821.1801 if you have any questions.

Regards,

David Janney, PG
Agent for Los Lobos Renewable Power, LLC

Cc: Randy Dade - NMOCD Artesia
Nick Goodman – Cyrq Energy/Los Lobos Renewable Power/Lightning Dock Geothermal
Chuck Smiley – Cyrq Energy/Los Lobos Renewable Power/Lightning Dock Geothermal
Michelle Henrie – Attorney for Los Lobos Renewable Power, LLC

Chavez, Carl J, EMNRD

From: Brooks, David K., EMNRD
Sent: Friday, November 09, 2012 4:19 PM
To: Michelle Henrie (michelle@mhenrie.com)
Cc: Brancard, Bill, EMNRD; Chavez, Carl J, EMNRD; VonGonten, Glenn, EMNRD
Subject: Confidential Filings

Dear Ms. Henrie

The Oil Conservation Division has become increasingly concerned about the volume of material that Los Lobos Renewable Power, LLC ("Los Lobos") has filed that are marked "Confidential."

NMSA Section 71-2-8 requires this agency to preserve the confidentiality of confidential information in possession of the agency. However, it does not define, nor provide any parameters for determining, what constitutes confidential information for which such protection is required. NMSA 14-2-1 establishes a general public policy to the effect that all information regarding agency activities should be open for public inspection unless otherwise required by law.

Although we have not received any request for inspection of any documents or information filed by Los Lobos so far, we have concluded that it is our responsibility to clarify the terms under which we have received and hold various materials in our files.

We do not interpret Section 71-2-8 as establishing a right of confidentiality, but merely as a procedural statute requiring protection for information for which a right of confidentiality otherwise exists by statute, agency rule, court rule, or some common law principle (*e.g.,* trade secrets). Since the Geothermal Resources Conservation Act and the Geothermal Rules do not provide for confidential submission of any of the required permitting or informational forms which those laws and rules require to be filed with us, we do not believe that an operator has a right to designate any of those forms or required attachments to those forms as confidential under Section 71-2-8. Establishing any such material as confidential would require, in our judgment, that the operator furnish factual proof that particular material was entitled to an statutory, evidentiary of common law privilege.

Accordingly, the Oil Conservation Division will not, after December 31, 2012, continue to hold as confidential G-forms filed by Los Lobos, or required attachments to those forms, even though designated "confidential,", unless Los Lobos furnishes a factual basis for "trade secret" or other applicable privilege for specific documents. If such a factual basis is provided, we will evaluate it and make a decision. When informed of our decision, Los Lobos will have the opportunity to request review of our decision through the administrative hearing process, and confidentiality will be preserved until that process is completed.

We are furnishing this notification so that there will be no misunderstanding as to how we will interpret our responsibilities under NMSA Section 71-2-8 and/or Section 14-2-1. We will be happy to have an informal conference with Los Lobos representatives concerning this issue if requested.

Sincerely

David K. Brooks
Assistant General Counsel

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

October 5, 2012

Mr. David W. Janney, P.G.
Designated Agent
Los Lobos Renewable Power, LLC
8519 Jefferson, NE
Albuquerque, New Mexico 87113

Re: Response to Los Lobos Renewable Power, LLC's Conditions of Approval for Wells LDG 45-7 and LDG 55-7 Forms G-104 and G-112, Hidalgo County, New Mexico

Dear Mr. Janney:

The Oil Conservation Division (OCD) is in receipt of Los Lobos Renewable Power, LLC's (Los Lobos) Letter of September 21, 2012 (letter). For efficiency in communication on the "Condition of Approval" (COA) issues presented in the letter, the OCD has inserted the contents of the letter with OCD responses provided in reduced size and different font with italics and is in consideration of the recent meeting between Los Lobos and OCD held on September 26, 2012 to discuss the letter below.

On behalf of Los Lobos Renewable Power, LLC (Los Lobos), AMEC Environment & Infrastructure, Inc. has prepared the following responses to the Conditions of Approval (COAs) dated September 6, 2012, for the flow testing of LDG 55-7 and injection of the flow test geothermal fluids into LDG 45-7 located on the Lightning Dock Geothermal Project in Hidalgo County, New Mexico.

Please note that COAs issued for G-104 and G-112 Forms apply to all aspects of short (exploratory) and long-term (operational) geothermal field activities and not solely well testing. Certain clarifications by OCD herein may reflect instances where well testing performed during exploration is a consideration and OCD provides clarification where and when needed that will help Los Lobos to proceed within the realm of the applicable regulations.

LDG 45-7 G-104 COAs

COA #1: The operator shall provide a water quality monitoring plan for well testing to OCD for review and approval at least 30 days prior to any water injection into the well. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require the operator to implement corrective action(s) if *the operation of the well has caused* water quality *to* exceed the greater of

the WQCC ground water standards or background, at any place of withdrawal of water for present or reasonably foreseeable future use.

The text change above is made only for consideration in future COAs, and reflects preferred language by Los Lobos. OCD responded at the 9/26 meeting that "causation" is the basis for the COA provision.

Environmental water quality data is needed from the well before and during well testing to help evaluate water quality conditions during full-scale geothermal power operations, since large volumes of injected water must meet the greater of background and/or WQCC water quality standards before injection into a fresh water aquifer system(s). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions based on the above.

The OCD COAs are not just for well testing. OCD has inserted preferred language for consideration in future COAs.

Los Lobos Response:
1. Los Lobos submitted baseline analytical data for LDG 45-7 and a monitoring/sampling plan for LDG 55-7 on August 9, 2012. It is impractical to sample LDG 45-7 during injection because doing so would require airlifting when we are trying to inject. Hopefully injection will create a vacuum and the two are mutually opposed to one another. Instead, the operator submitted a plan to sample the injectate from LDG 55-7, the source of the injectate. While it is feasible to collect a sample from the well after injection has stopped, assuming the well will flow freely; this sample will be of the injection water and will not be the same as the baseline sample already submitted. A better sampling plan is to sample the injectate at its source, LDG 55-7, as the operator proposed in its sampling plan dated August 9, 2012.

Yes, but 45-7 should be sampled for background and/or recent pre-existing water quality data may be substituted for a sample to establish injection well background associated with well testing before testing occurs and then an actual sample will be required at the end of testing which requires at least 48 hours to elapse before well sample collection. The term "any place of withdrawal" can apply to any well where water is extracted for sample collection. This will assist in assessing water quality conditions under dynamic conditions and evaluate any adverse impacts that may occur under fully operational conditions when power is generated.

2. Please define EPA QA/QC and DQOs. All samples will be collected according to ASTM methods in laboratory-provided containers, be properly filtered and preserved, and transported to a State- certified laboratory under chain-of-custody. Samples will be analyzed by EPA analytical methods and results will be reported with standard laboratory quality assurance/quality control packages.

OCD has authority to approve environmental sampling, laboratory, etc. methods. The OCD has referenced EPA Quality Assurance/Quality Control (QA/QC) and Data Quality Objectives (DQOs) that form the basis for Los Lobos to provide acceptable environmental water quality data to the OCD without requiring Los Lobos to submit environmental sample and laboratory plans for approval. OCD cited examples of QA/QC and DQOs at the meeting and the operator was familiar with them.

3. Please define "background concentrations" in the geothermal fluid.

OCD is attempting to establish background for well testing conditions with the operator in the COAs, but also address geothermal fluid background from the WQCC discharge permit for the facility. Los Lobos is not at the point that they have decided to produce geothermal power and establish background for the facility per the permit requirements, but do want to continue with well testing during the exploration phase and meet regulatory requirements. This means that water quality sampling constituents, i.e., general chemistry and WQCC metals may only be required during well testing aspects of the project, but background and monitoring data collected during testing will determine the feasibility of well testing in the fresh water aquifer system(s). Therefore, acceptable water quality testing at both injection and production well locations is required for short-term field well test and sampling activities.

4. Please define the term "or reasonably foreseeable future use". Both the agency and the operator need specificity so that each can know whether permit conditions have been met or not.

"Reasonably foreseeable future" may mean decades to a century or centuries depending on interpretations by the OCD from various regulations. This is a legal term which OCD is bound to apply, but for which a definitive legal definition does not exist.

5. Please define the term "at any place of withdrawal of water"; a radius of influence must be defined. Both the agency and the operator need specificity so that each can know whether permit conditions have been met or not.

This is a legal term which OCD is bound to apply, but for which a definitive legal definition does not exist. "Any place of withdrawal" could mean any well type where water is extracted or withdrawn for water quality sampling and/or production, etc. OCD acknowledges Los Lobos concerns about sampling an injection well throughout well testing because it is not possible, but samples before and after the well test from an injection well is required to assess water quality under dynamic conditions and under full-scale geothermal power production. The OCD does not mention "radius of influence" in the G-104; therefore, no response is provided.

COA #2: The operator shall comply with the production/development well terms and conditions of the Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). Since production wells may also become injection wells, all Underground Injection Control (UIC) Class V Geothermal Injection Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 - 5006 NMAC). All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

Los Lobos Response
1. The operator understands this permit condition to be applicable to the LDG 45-7 well specifically when it is being used as an injector, whether temporarily during testing or permanently if needed for optimal well field operations. Similarly, the operator would expect this permit condition might be included when any other wells are being placed on injection. The operator does not interpret this permit condition to apply to production wells never proposed for placement on injection.

The G-104 applies to both injection/production. COAs may be long-term (full-scale geothermal power production) and short-term (well testing) in their prescription. For example, an injection well may become a production well and vice versa within months and/or 5-years into full-scale power generation. Regardless, the geothermal well must comply with must comply with geothermal regulations and/or WQCC regulations when applicable. Production wells do not have to comply with injection well requirements if not permitted for injection, but such wells may

never be used for injection without first being permitted for injection. An injection well may be converted to a production only well by filing a G-103 Sundry Notice indicating a "change of plans," but would have to be re-permitted for injection before it could thereafter be used for any injection.

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, LLC. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, slate, or local laws and/or regulations.

Los Lobos Response
1. It is extremely difficult for Los Lobos to convince its lenders and investors to continue with a project when the regulating agency takes the position that it can shut down a well, effectively crippling the investment, plant operations, and contractual power delivery requirements, for reasons that are subjective. As Los Lobos reads the Geothermal Resources Conservation Act, allegations of violation of the Act trigger a hearing process. Further, Los Lobos finds no statutory authority supporting OCD's position that its regulatory authority is as broad as stated above, e.g., including water supply/diversion. Los Lobos encourages the OCD to consider the Legislative intent and purposes in enacting the Geothermal Resources Conservation Act, stated at 71-5-2 NMSA 1978: "It is hereby found and determined that the people of the state of New Mexico have a direct and primary interest in the development of geothermal resources, and that this state should exercise its power and jurisdiction through its oil conservation commission and the Division to require that wells drilled in search of, development of, or incident to the production of geothermal resources be drilled, tested, operated, maintained and abandoned in such a manner as to safeguard life, health, property, natural resources and the public welfare, and to encourage maximum economic recovery."

OCD has incorporated changes based on the 9/26 meeting with Los Lobos in consideration of future COAs issued by the OCD. OCD cannot issue a permit that renounces its authority to enforce on a continuing basis applicable provisions of the Geothermal Resources Conservation Act, the Water Quality Act, the federal Safe Drinking Water Act and applicable rules implementing these laws.

LDG 45-7 G-112 COAs

COA #1: The operator shall submit a G-104 Form with all other associated G-Forms and required information for this G-112 submittal (19.14.63 NMAC and 19.14.93 NMAC) to OCD for approval within 30 days of well completion and/or before injection may be allowed into the well.

Los Lobos Response
1. The operator has submitted these forms, is this condition suggesting that additional forms are required?

OCD includes the reference in the G-112 section because a G-104 is required by regulation. Los Lobos indicated that it had already submitted it and complied with the COA. Similar to a provision or condition in a permit that exists and applies only if the provision is applicable, COAs may be listed as a standard condition. A G-104 must be approved by the OCD for injection wells too and not just production wells. Additional information may be available at the time

injection is to commence that was not included in the G-104 provided at the time of permitting, and appropriate supplementation would, in that case, be required. Because Los Lobos has indicated that wells may become injection or production wells at any time, the OCD has decided to leave this COA as is for short and long-term applicability.

COA #2: The operator shall assess the well's potential to adversely affect environmental water quality at any place of withdrawal of water for present or reasonably foreseeable future use (including a water quality sample from waters supply wells before injection as allowed/approved by the well owner), geothermal correlative rights, etc., in wells within 1-mile from the injection well.

Los Lobos Response
1. Please define "Assess the well's potential to affect aquifer drawdown." This permit is to allow injection, which returns geothermal fluid to the aquifer, thus preventing drawdown, not causing drawdown.

Note that during the meeting this condition was recommended for removal.

Same as the OCD comment above: Long-term considerations are covered in COAs to satisfy regulatory requirements. Diminishing the capacity of the aquifer to produce prevents the extraction of heat from the resource, and thus could affect correlative rights. In addition, HB-201 makes the OCD responsible for conferring with the OSE and/or referring Los Lobos to the OSE where required because of jurisdictional authority concurrently with OCD's geothermal regulations. OCD is also currently working with OSE to address HB-201.

2. It is impractical and unnecessary to sample all the fresh water wells within a one-mile radius of LDG 45-7 because not all these wells are equipped in a way that allows sampling, e.g., with a pump. We have already proposed to monitor a limited number of wells that are equipped with pumps, screened to the greatest depths, and located at various distances away from LDG 45-7. In addition to LDG 55-7, the source of the injectate, we propose to sample Rosette State Well No. 1 or Rosette State Well No. 3, Burgett Greenhouse Well No. 2, and McCants State Well No. 1, contingent upon well owner approval. Sampling these wells will provide a cross-section of water quality for a radius of approximately 3,400 feet from LDG 45-07. Water table monitoring will also take place during testing, as it has in the past, via transducers set in the wells, as indicated our letter to BLM dated August 17, 2012, of which you received a copy.

The operator shall assess the potential for the effluent from Production Well 55-07 into Injection Well 45-07 to adversely affect ground water quality at any place of withdrawal for present or reasonably foreseeable future in water supply wells located within one-half mile from Injection Well 45-07. The Operator shall collect an environmental water quality sample from Well 45-07 and representative water supply wells within one-half mile from Injection Well 45-07 and analyze the samples for General Chemistry and WQCC 20.6.2.3103 Metals before and after the well test. The Operator may use existing water quality data for the initial background water quality in Well 45-07 or may request permission from water supply well owners to sample their wells before and after the exploratory well test.

3. It is impractical to sample wells that do not have dedicated pumps. In order to properly collect a representative sample according to ASTM D 4448-01, the operator must purge wells of three casing volumes before a representative sample can be properly collected.

Similar to the OCD comment above, the OCD does not discourage strategic sampling of wells that may be adversely impacted by Los Lobos field activities. If Los Lobos does not undertake efforts to satisfy this COA and a water supply well owner complains that Los Lobos activities have adversely impacted their water supply well, etc., Los Lobos may be considered liable because they did not sample to demonstrate that it's operations did not cause impacts to a water supply well(s) within ½ mile from the injection well. However, Los Lobos did maintain that it would be a third-party lawsuit and OCD is unsure of how the lack of monitoring may factor into a site-specific case. Based on the above, the OCD has not changed the COA. In addition to concerns about third-party lawsuits, OCD may take enforcement action if it concludes that Los Lobos' actions have degraded water quality of any well. Any data that can be collected will be useful in assessing causation in event of such damage.

COA #3: The operator shall conserve the fresh water resource(s) by implementing proven geothermal engineering power generation design, operations, and best management practices.

Los Lobos Response
1. The operator has proposed to generate electricity using a binary technology, which strips the heat from the geothermal fluid without that fluid ever leaving its pipe. All fluid is then returned to the geothermal reservoir to reheat and be reused again. Los Lobos believes that binary power production is a better approach to conserving geothermal resources than generation of electricity via steam or "flash" technology.

OCD agrees that the binary cycle geothermal power generation process is efficient. At the 9/26 meeting, Los Lobos reaffirmed that the geothermal power generation process would be similar to that proposed in the discharge permit. Conservation of the water resource is mentioned by the OCD because if the natural resource (ground water) is depleted, the capacity of the extraction well to produce on a continuous basis large daily volumes of geothermal fluid for the extraction of heat will be diminished; therefore, waste, correlative rights, etc. under the geothermal regulations may be adversely affected.

2. Los Lobos would like OCD to cite the statutory authority on which this permit condition is based.

The relevant Geothermal Statutes are: 19.14.1.7(C) NMAC (Definitions: "Correlative Rights") and 19.14.1.7(GG) NMAC (Definitions: "Waste") and OCD expects Los Lobos not to waste the resource(s) even though OCD protects waste of the geothermal resource, but not water quantity. This is of concern because if Los Lobos depletes the aquifer's capacity to produce and diminishes the extraction of heat from the geothermal reservoir/resource, it becomes a correlative rights issue under the geothermal regulations. This does make water conservation an OCD concern, and Los Lobos should be concerned about it too. Furthermore, the OCD is encouraging pollution prevention at geothermal facilities and HB-201 places some responsibility upon the OCD to be concerned about OSE issues based on the regulatory overlap between the agencies on geothermal projects in NM.

COA #4: The operator shall monitor the in-flow/out-flow rate(s) and fluid level in the centralized pond to maintain adequate free board or prevent overflow; and shall compare

injection volume vs. pond containment volume to assess leaky liner vs. evaporative loss conditions on a daily basis.

Los Lobos Response
1. Los Lobos agrees this condition is consistent with the sampling plan submitted on August 9, 2012.

Ok.

COA #5: The operator shall sample utilizing ASTM E·947·83 (Standard Specification for Sampling Single-Phase Geothermal Liquid or Steam for Purposes of Chemical Analysis) whenever possible. All OCD environmental analytical laboratory analyses during well testing shall include: General Chemistry and Metals. The operator shall notify OCD within 24-hours of daily field water quality parameter monitoring that exhibits a field test differential of +/- 25%. OCD may require the operator to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background at any place of withdrawal of water for present or reasonably foreseeable future use for injection into the well.

Los Lobos Response
1. The operator has already submitted baseline geothermal fluid analytical data for LDG 45-7. Los Lobos cannot sample a well into which it is injecting for reasons stated above in connection with LDG 45-7 G-104 COA #1. All sampling for laboratory analysis will be done according to the sampling plan we submitted on August 9, 2012, and it will be performed according to one of the ASTM methods indicated above.

OCD clarifies that "any place of withdrawal" may include withdrawal of a water quality sample from an injection well, for example, before (may be able to use recent water quality data from well in lieu of sampling?) and after a well test is performed in order to determine background at the discharge location for the purpose of well testing and compliance with applicable regulations. Also, injection wells may become production wells and vice versa and more sampling is required from production wells during well testing, etc.

2. As stated in the sampling plan dated August 9, 2012, samples of LDG 55-7 fluid will be collected for laboratory analysis at the initiation of the flow test, after 24 hours of flow testing and after 5 days of flow testing. If changes in daily field fluid quality parameters indicate a change of +/- 25% from the previous field parameters reading, an additional laboratory sample will be collected and OCD will be notified within 24 hours.
3. The metals list will include arsenic, barium, copper, iron, lithium, magnesium, manganese, strontium. Additional analytes will include boron, calcium, lithium, nitrate, potassium, sodium, sulfate, chloride, pH, TDS, and specific conductance.

Analyte list for well testing may include only General Chemistry and Metals (parameters listed in WQCC 20.6.2.3103 NMAC in addition to standard field monitoring parameters (i.e., temperature, turbidity, coloration, specific conductance, pH, etc.).

4. Please define the "background concentrations" for constituents of concern in the geothermal fluid. Both the agency and the operator need specificity so that each can know whether permit conditions have been met or not.

Background concentrations under the context of well testing analytes shall be consistent with the above paragraph while facility-wide background concentration(s) will be determined similar to "Appendix I" of the OCD discharge permit.

5. Please define the term "or reasonably foreseeable future use". Both the agency and the operator need specificity so that each can know whether permit conditions have been met or not.

Means decades to century according to WQCC Hearings, but still not definitive in regulations or judicial decisions.

COA #6: The operator shall submit an initial G-103 Sundry Notice for a Casing Test (test) or EPA Mechanical Integrity Test (Min with proposed MIT method for OCD approval at least 15 days in advance of any injection well completion, existing well MIT requirement, and after any existing well workover date(s).

Los Lobos Response
1. LDG 45-7 was drilled to total depth on February 3, 2011, and the workover was completed in March 2012. Los Lobos will provide the digital data for the CIT performed in early 2011 and proposes to run a cement bond log (CBL) prior to injection. Los Lobos does not believe that additional MIT will provide any materially new or different information that would justify the costs of the additional MIT.

Ok.

COA #7: The operator shall submit a final G-103 Sundry Notice for the EPA MIT results within 10 days of injection well completion (19.14.54.8(C) (2) NMAC). The operator shall include a detailed description of the test method employed and the results obtained by such test, and any other pertinent information required by 19.14.27.8B (5) NMAC in the final G-I03 submittal. The results of the casing test, including actual pressure held on the pipe and the pressure drop observed, shall also be reported on the form G-103 (19.14.54.8 NMAC). The first well MIT date shall mark the start date of OCD's mandatory 5-year EPA MIT schedule. Casing strings in wells drilled with cable tools may be tested as outlined in 19.14.27.8(B) (5) (a) NMAC.

Los Lobos Response
1. The operator understands this permit condition to be applicable if and only if LDG 45-7 is permanently used in as an injector when the electric power plant is in operation.

Ok.

COA #8: MITs performed subsequent to well workover, unless it occurs after the 4th year, since the last EPA MIT, shall not disrupt the 5-year MIT schedule. In general, the well must be tested every 5-years regardless of well workover MITs conducted between the required EPA MIT 5-year MIT schedule. The operator may proceed at its own risk when attempting to perform an MIT with external equipment, i.e., BOPE that could be the cause of the well MIT failure.

Los Lobos Response
1. The operator understands this permit condition to be applicable if and only if LDG 45-7 is permanently used in as an injector when the electric power plant is in operation.

Ok.

COA #9: The operator shall ensure that the MIT performed during well completion and/or during drilling shall have an adequate cement plug thickness positioned not greater than 20 feet above the casing shoe before conducting the MIT. The operator shall also receive BLM approval on MIT procedures for injection wells drilled on Federal mineral estates and/or surface estates.

Los Lobos Response
1. LDG 45-7 has a 100' overlap of liner in the bottom of the 13.375" production casing. It is impractical to try to place a cement plug inside the liner as it may not seal correctly and using a cement plug would require additional clean out of the well. The operator proposes to place a packer approximately 10 feet above the top of the liner. The operator is happy to receive BLM approval on this prior to submitting the G-103 to OCD.

Los Lobos passed the well completion MIT, which initiates the start date for any future MIT testing while a well is permitted as an injection well. In addition, OCD communicated with Los Lobos on this in advance. Los Lobos has proposed a CIT and CBL for the well to address mechanical integrity where 100 ft. of liner is set above the base of the well casing. This is acceptable to the OCD. Los Lobos will need to check with the BLM for concurrence.

COA #10: The operator shall provide a water quality monitoring plan for well testing to OCD for approval at least 30 days prior to any water injection into the well. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with to EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require the operator to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background at any place of withdrawal of water for present or reasonably foreseeable future use.

Los Lobos Response
1. Please see responses to LDG 45-7 G-104 COA #1.

Ditto for OCD.

COA #11: The operator shall obtain water quality data from the well and during well testing to help evaluate water quality conditions before and during full-scale geothermal power operations due to the large volumes of injected fluids into protectable ground water aquifer and/or reservoir system(s) « 10,000 mg/L TDS). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions in the well before and after injection based on the above.

Los Lobos Response
1. Operator has already submitted baseline analytical data for the geothermal fluid in LDG 45-7. It should be feasible to collect a sample from the well after injection has stopped, assuming the well will flow freely, but this sample will be of the injection water, not of formation water.

OCD is concerned that not all of the WQCC Metals were analyzed, i.e., Uranium, Boron, etc., from historical sampling and a new sample should be collected where General Chemistry parameters and WQCC Metals data are lacking. The samples collected at the end of exploratory well testing shall be collected soon after 48 hours from the end of exploratory well testing in order to assess geothermal reservoir water quality at a semi-equilibrium state.

COA #12: The operator shall comply with the terms and conditions of its discharge permit and OCD's Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14

NMAC). All Underground Injection Control (UIC) Class V Geothermal Injection Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 - 5006 NMAC). All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, LLC. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. In such event, OCD may order the operator to plug and abandon its well pursuant to the geothermal regulations. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Los Lobos Response
1. Please see responses to LDG 45-7 G-104 COA #2.

Ditto for OCD.

LDG 55-07 G-104 COAs

COA #1: The operator shall provide a water quality monitoring plan for well testing to OCD for review and approval at least 30 days prior to any water injection into the well. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require the operator to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background, at any place of withdrawal of water for present or reasonably foreseeable future use. Environmental water quality data is needed from the well before and during well testing to help evaluate water quality conditions during full-scale geothermal power operations, since large volumes of injected water must meet the greater of background and/or WQCC water quality standards before injection into a fresh water aquifer system(s). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions based on the above.

Los Lobos Response:
1. The operator has submitted baseline analytical data for the geothermal fluid and a monitoring plan for LDG 55-7. Please indicate the deficiencies in this monitoring plan.

Make sure well is sampled before (unless recent acceptable water quality data exists with all WQCC Metals parameters), during, and after the production well test. The protocol provided herein for production well test sampling and Los Lobos' response to the OCD noted "Deficiencies" correspondence help to address this COA.

2. Please see responses to LDG 45-7 G-104 COA #1 and LDG 45-7 G-112 COA #5.

Ditto for OCD.

COA #2: The operator shall comply with the production/development well terms and conditions of the Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). Since production wells may also become injection wells, all Underground Injection Control (UIC) Class V Geothermal Injection Wells must comply with the applicable sections of

Water Quality Control Commission Regulations (20.6.2.5000 - 5006 NMAC). All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, LLC. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. Il/ such event, OCD may order the operator to plug and abandon its well pursuant to the geothermal regulations. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, slate, or local laws and/or regulations.

Los Lobos Response
1. Please see responses to LDG 45-7 G-104 COA #1 and LDG 45-7 G-112 COA #5.

Ditto for OCD.

OCD is responding to your letter with COA clarifications to assist Los Lobos with its geothermal activities at the above subject wells and has considered Los Lobos' issues and revised the COAs (see attached OCD revised COAs) for the subject wells and in consideration of for future geothermal COAs issued by the OCD. Consequently, as discussed at the meeting on 9/26, Los Lobos may either respond to this letter with attached revised OCD COAs or proceed to hearing.

If you have any questions, please do not hesitate to contact me by phone at (505) 476-3490, mail or email at CarlJ.Chavez@state.nm.us. Thank you.

Sincerely,

Carl J. Chávez
Environmental Engineer

CJC/cjc

cc: OCD Artesia Office

Attached: OCD Revised Well 45-7 and Well 55-7 G-Form COAs

Lightning Dock Geothermal (HI-01) LLC
Project
Geothermal Production Well 45-07
(GTHT-001)

Preliminary G-104 Form
OCD Santa Fe Office
Conditions of Approval
(10/5/2012)

1) The operator shall provide a water quality sampling plan for well testing to OCD for review and approval at least 30 days prior to any water injection into the Well 45-07. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require a responsible person to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background, at any place of withdrawal of water for present or reasonably foreseeable future use.

Environmental water quality data is needed from Well 45-07 before and after well testing to help evaluate water quality conditions during full-scale geothermal power operations. Large volumes of injected water must meet the greater of background and/or WQCC water quality standards before injection into a fresh water aquifer system(s). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions based on the above.

2) The operator shall comply with the production/development well terms and conditions of the Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). All Underground Injection Control (UIC) Class V Geothermal Injection and Disposal Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 – 5006 NMAC) while such wells are being used as injection wells. All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

3) If the Operator fails to conduct operations (1) in such manner as will protect fresh water or (2) in a manner consistent with the requirements in this permit, the Division may, after notice and hearing, (or without notice and hearing in event of an emergency, subject to the provision of NMSA 1978 Section 71-5-17), terminate the injection authority granted herein.

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, L.L.C. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Lightning Dock Geothermal (HI-01) LLC
Project
Class V Injection Well 45-07
(GTHT-001)

G-112 Form
OCD Santa Fe Office
Conditions of Approval
(10/5/2012)

1) The operator shall submit a G-104 Form with all other associated G-Forms and required information for this G-112 submittal (19.14.63 NMAC and 19.14.93 NMAC) to OCD for approval within 30 days of well completion and/or before injection may be allowed into the Injection Well 45-07.

2) The operator shall assess the potential for the effluent from Production Well 55-07 into Injection Well 45-07 to adversely affect ground water quality at any place of withdrawal for the present or reasonably foreseeable future in water supply wells located within one-half mile from Injection Well 45-07. The Operator shall collect an environmental water quality sample from Injection Well 45-07 to establish the injection well background for exploratory well testing and also from representative water supply wells within one-half mile from Injection Well 45-07. The environmental water quality samples collected shall be analyzed for General Chemistry parameters and WQCC 20.6.2.3103 Metals before and after exploratory well testing. The operator may use existing water quality data only for the initial background water quality in Injection Well 45-07. Therefore, the operator will need to request permission from each water supply well owner who may allow the operator to sample their well before and after an exploratory well test is performed.

3) The operator shall prevent waste and protect correlative rights by implementing proven geothermal engineering power generation design, operations, and best management practices.

4) The operator shall monitor the in-flow/out-flow rate(s) and fluid level in the centralized pond to maintain adequate free board or prevent overflow; and shall compare injection volume vs. pond containment volume to assess leaky liner vs. evaporative loss conditions on a daily basis.

5) The operator shall sample Injection Well 45-07 utilizing ASTM E-947-83 (Standard Specification for Sampling Single-Phase Geothermal Liquid or Steam for Purposes of Chemical Analysis) whenever possible. All OCD environmental analytical laboratory analyses during exploratory well testing shall include: General Chemistry parameters and WQCC 20.6.2.3103 Metals. The operator shall notify OCD within 24-hours of its determination that it has detected a field test differential in the daily field water quality parameters of +/- 25% in the effluent from production well 55-07 into injection well 45-07. OCD may require the responsible person to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or injection well background at any place of withdrawal of water for present or reasonably foreseeable future use for injection into the Well 45-07.

6) The operator shall submit an initial G-103 Sundry Notice for a Casing Test (test) or EPA Mechanical Integrity Test (MIT) and/or OCD approved method(s) with proposed MIT method for OCD approval at least 15 days in advance of any injection well completion, existing well MIT requirement, and after any existing well workover date(s), while the well is permitted as an injection well. The operator shall file a sundry notice in a timely manner whenever an injection well is no longer needed as an

injection well. At a later date, if the same well is needed for use as an injection well, a new G-112 Form shall be filed with the OCD. The Operator shall run testing before any water injection into the well.

7) The operator shall submit a final G-103 Sundry Notice for the EPA MIT results within 10 days of injection well completion (19.14.54.8(C)(2) NMAC). The operator shall include a detailed description of the test method employed and the results obtained by such test, and any other pertinent information required by 19.14.27.8B(5) NMAC in the final G-103 submittal. The results of the casing test, including actual pressure held on the pipe and the pressure drop observed, shall also be reported on the form G-103 (19.14.54.8 NMAC). The first well MIT date shall mark the start date of OCD's mandatory 5-year EPA MIT schedule, which shall be in effect while the well is permitted as an injection well. Casing strings in wells drilled with cable tools may be tested as outlined in 19.14.27.8(B)(5)(a) NMAC.

8) While the well is permitted as an injection well, MITs performed subsequent to well workover, unless it occurs after the 4th year, since the last EPA MIT, shall not disrupt the 5-year MIT schedule. In general, the well must be tested every 5-years regardless of well workover MITs conducted between the required EPA MIT 5–year MIT schedule. The operator may proceed at its own risk when attempting to perform an MIT with external equipment, i.e., BOPE that could be the cause of a well MIT failure.

9) The operator shall ensure that an MIT performed during injection well completion and/or during drilling shall have an adequate cement plug thickness positioned not greater than 20 feet above the casing shoe before conducting the MIT. In the event that an MIT is performed after an overlapping liner is set into the production casing, a packer may be set within 10 feet above the top of the liner in lieu of setting a cement plug not greater than 20 feet above the casing shoe. The operator shall also receive BLM approval on MIT procedures for injection wells drilled on Federal Mineral Estates and/or Surface Rights.

10) The operator shall provide a water quality sampling plan for injection well testing to OCD for approval at least 30 days prior to any water injection into the well. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with to EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require the responsible person to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background at any place of withdrawal of water for present or reasonably foreseeable future use.

11) The operator shall obtain environmental water quality data from the injection well before (to establish well background water quality) and after exploratory well testing to help evaluate water quality conditions under full-scale geothermal power production because of the large volumes of injected fluids into the protectable ground water aquifer and/or geothermal reservoir system(s) (<< 10,000 mg/L TDS). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions in the well before and after injection based on the above.

12) The operator shall comply with the terms and conditions of its discharge permit and OCD's Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). All Underground Injection Control (UIC) Class V Geothermal Injection and/or Disposal Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 – 5006 NMAC) while such wells are being used as injection wells. All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, L.L.C. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. In addition, OCD approval

does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Lightning Dock Geothermal (HI-01) LLC
Project
Geothermal Production Well 55-07
(GTHT-001)

Preliminary G-104 Form
OCD Santa Fe Office
Conditions of Approval
(10/5/2012)

1) The operator shall provide a water quality sampling plan for well testing to OCD for review and approval at least 30 days prior to any water extraction from well 55-07. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require a responsible person to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background, at any place of withdrawal of water for present or reasonably foreseeable future use.

Environmental water quality data is needed from the well before, during and after Well 55-07 testing to help evaluate water quality conditions during full-scale geothermal power operations. Large volumes of injected water must meet the greater of background and/or WQCC water quality standards before injection into a fresh water aquifer system(s). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions based on the above.

2) The operator shall comply with the production/development well terms and conditions of the Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). Since production wells may also become injection wells, all Underground Injection Control (UIC) Class V Geothermal Injection and Disposal Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 – 5006 NMAC) while such wells are being used as injection wells. All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

3) If the Operator fails to conduct operations (1) in such manner as will protect fresh water or (2) in a manner consistent with the requirements in this permit, the Division may, after notice and hearing, (or without notice and hearing in event of an emergency, subject to the provision of NMSA 1978 Section 71-5-17), terminate the injection authority granted herein.

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, L.L.C. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, September 28, 2012 9:53 AM
To: 'Janney, David'; Dade, Randy, EMNRD
Cc: Shapard, Craig, EMNRD; Brooks, David K., EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD
Subject: RE: LDG 63-7

David:

Good morning. The OCD Santa Fe Office received from Los Lobos Renewable Power, LLC (Los Lobos) G-105 through G-107 Forms on around August 28th and the G-104 Form was received on September 13th.

OCD Santa Fe will review the G-Forms above in accordance with OCD's May 31, 2012 letter to Los Lobos.

Prior to commencement of injection into the proposed injection well, including injection of water extracted during the well test, you must also file Form G-104, with required attachments to the extent the information may be provided, in accordance with 19.14.55.8, and we must approve this form……..

The OCD Santa Fe Office may issue a G-104 approval and/or approval with conditions soon.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Janney, David [mailto:david.janney@amec.com]
Sent: Friday, September 28, 2012 9:01 AM
To: Dade, Randy, EMNRD; Chavez, Carl J, EMNRD
Cc: Shapard, Craig, EMNRD
Subject: LDG 63-7

Gentlemen:

I want to confirm with you that you are in receipt of the following forms with associated backup for the above referenced well.

G-104, G-105, G-106, and G-107

Our records indicate that you have receive them and that there is nothing outstanding to be submitted for this well as far as completion reports are concerned.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

Mr. Carl Chavez, CHMM
New Mexico Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, NM 87505
505-476-3490
CarlJ.Chavez@state.nm.us

September 21, 2012

RE: Response to Conditions of Approval for Wells LDG 45-7 and LDG 55-7 Forms G-104 and G-112 for Los Lobos Renewable Power, LLC, Hidalgo County, New Mexico

Dear Mr. Chavez:

On behalf of Los Lobos Renewable Power, LLC (Los Lobos), AMEC Environment & Infrastructure, Inc. has prepared the following responses to the Conditions of Approval (COAs) dated September 6, 2012, for the flow testing of LDG 55-7 and injection of the flow test geothermal fluids into LDG 45-7 located on the Lightning Dock Geothermal Project in Hidalgo County, New Mexico.

LDG 45-7 G-104 COAs

COA #1: The operator shall provide a water quality monitoring plan for well testing to OCD for review and approval at least 30 days prior to any water injection into the well. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require the operator to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background, at any place of withdrawal of water for present or reasonably foreseeable future use.

Environmental water quality data is needed from the well before and during well testing to help evaluate water quality conditions during full-scale geothermal power operations, since large volumes of injected water must meet the greater of background and/or WQCC water quality standards before injection into a fresh water aquifer system(s). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions based on the above.

Los Lobos Response:

1. Los Lobos submitted baseline analytical data for LDG 45-7 and a monitoring/sampling plan for LDG 55-7 on August 9, 2012. It is impractical to sample LDG 45-7 during injection because doing so would require airlifting when we are trying to inject. Hopefully injection will create a vacuum and the two are mutually opposed to one another. Instead, the operator submitted a plan to sample the injectate from LDG 55-7, the source of the injectate. While it is feasible to collect a sample from the well after injection has stopped, assuming the well will flow freely; this sample will be of the injection water and will not be the same as the baseline sample already submitted. A better sampling plan is to sample the injectate at its source, LDG 55-7, as the operator proposed in its sampling plan dated August 9, 2012.

2. Please define EPA QA/QC and DQOs. All samples will be collected according to ASTM methods in laboratory-provided containers, be properly filtered and preserved, and transported to a State-certified laboratory under chain-of-custody. Samples will be analyzed by EPA analytical methods and results will be reported with standard laboratory quality assurance/quality control packages.

3. Please define "background concentrations" in the geothermal fluid.

4. Please define the term "or reasonably foreseeable future use". Both the agency and the operator need specificity so that each can know whether permit conditions have been met or not.

5. Please define the term "at any place of withdrawal of water"; a radius of influence must be defined. Both the agency and the operator need specificity so that each can know whether permit conditions have been met or not.

AMEC Environment and Infrastructure
8519 Jefferson NE
Albuquerque, NM 87113
505.821.1801

COA #2: The operator shall comply with the production/development well terms and conditions of the Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). Since production wells may also become injection wells, all Underground Injection Control (UIC) Class V Geothermal Injection Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 - 5006 NMAC). All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

Los Lobos Response

1. The operator understands this permit condition to be applicable to the LDG 45-7 well specifically when it is being used as an injector, whether temporarily during testing or permanently if needed for optimal well field operations. Similarly, the operator would expect this permit condition might be included when any other wells are being placed on injection. The operator does not interpret this permit condition to apply to production wells never proposed for placement on injection.

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, LLC. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. In such event, OCD may order the operator to plug and abandon its well pursuant to the geothermal regulations. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, slate, or local laws and/or regulations.

Los Lobos Response

1. It is extremely difficult for Los Lobos to convince its lenders and investors to continue with a project when the regulating agency takes the position that it can shut down a well, effectively crippling the investment, plant operations, and contractual power delivery requirements, for reasons that are subjective. As Los Lobos reads the Geothermal Resources Conservation Act, allegations of violation of the Act trigger a hearing process. Further, Los Lobos finds no statutory authority supporting OCD's position that its regulatory authority is as broad as stated above, e.g., including water supply/diversion. Los Lobos encourages the OCD to consider the Legislative intent and purposes in enacting the Geothermal Resources Conservation Act, stated at 71-5-2 NMSA 1978: "It is hereby found and determined that the people of the state of New Mexico have a direct and primary interest in the development of geothermal resources, and that this state should exercise its power and jurisdiction through its oil conservation commission and the Division to require that wells drilled in search of, development of, or incident to the production of geothermal resources be drilled, tested, operated, maintained and abandoned in such a manner as to safeguard life, health, property, natural resources and the public welfare, and to encourage maximum economic recovery."

LDG 45-7 G-112 COAs

COA #1: The operator shall submit a G-104 Form with all other associated G-Forms and required information for this G-112 submittal (19.14.63 NMAC and 19.14.93 NMAC) to OCD for approval within 30 days of well completion and/or before injection may be allowed into the well.

Los Lobos Response

1. The operator has submitted these forms, is this condition suggesting that additional forms are required?

COA #2: The operator shall assess the well's potentially to adversely affect, i.e., aquifer drawdown, environmental water quality at any place of withdrawal of water for present or reasonably foreseeable future use (including a water quality sample from waters supply wells before injection as allowed/approved by the well owner), geothermal correlative rights, etc., in wells within I-mile from the injection well.

Los Lobos Response

1. Please define "Assess the well's potential to affect aquifer drawdown." This permit is to allow injection, which returns geothermal fluid to the aquifer, thus preventing drawdown, not causing drawdown.

2. It is impractical and unnecessary to sample all the fresh water wells within a one-mile radius of LDG 45-7 because not all these wells are equipped in a way that allows sampling, e.g., with a pump. We have already proposed to monitor a limited number of wells that are equipped with pumps, screened to the greatest depths, and located at various distances away from LDG 45-7. In addition to LDG 55-7, the source of the injectate, we propose to sample Rosette State Well No. 1 or Rosette State Well No. 3, Burgett Greenhouse Well No. 2, and McCants State Well No. 1, contingent upon well owner approval. Sampling these wells will provide a cross-section of water quality for a radius of approximately 3,400 feet from LDG 45-7. Water table monitoring will also take place during testing, as it has in the past, via transducers set in the wells, as indicated our letter to BLM dated August 17, 2012, of which you received a copy.

3. It is impractical to sample wells that do not have dedicated pumps. In order to properly collect a representative sample according to ASTM D 4448-01, the operator must purge wells of three casing volumes before a representative sample can be properly collected.

COA #3: The operator shall conserve the fresh water resource(s) by implementing proven geothermal engineering power generation design, operations, and best management practices.

Los Lobos Response

1. The operator has proposed to generate electricity using a binary technology, which strips the heat from the geothermal fluid without that fluid ever leaving its pipe. All fluid is then returned to the geothermal reservoir to reheat and be reused again. Los Lobos believes that binary power production is a better approach to conserving geothermal resources than generation of electricity via steam or "flash" technology.

2. Los Lobos would like OCD to cite the statutory authority on which this permit condition is based.

COA #4: The operator shall monitor the in-flow/out-flow rate(s) and fluid level in the centralized pond to maintain adequate free board or prevent overflow; and shall compare injection volume vs. pond containment volume to assess leaky liner vs. evaporative loss conditions on a daily basis.

Los Lobos Response

1. Los Lobos agrees this condition is consistent with the sampling plan submitted on August 9, 2012.

COA #5: The operator shall sample utilizing ASTM E-947-83 (Standard Specification for Sampling Single-Phase Geothermal Liquid or Steam for Purposes of Chemical Analysis) whenever possible. All OCD environmental analytical laboratory analyses during well testing shall include: General Chemistry and Metals. The operator shall notify OCD within 24-hours of daily field water quality parameter monitoring that exhibits a field test differential of +/- 25%. OCD may require the operator to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background at any place of withdrawal of water for present or reasonably foreseeable future use for injection into the well.

Los Lobos Response

1. The operator has already submitted baseline geothermal fluid analytical data for LDG 45-7. Los Lobos cannot sample a well into which it is injecting for reasons stated above in connection with LDG 45-7 G-104 COA #1. All sampling for laboratory analysis will be done according to the sampling plan we submitted on August 9, 2012, and it will be performed according to one of the ASTM methods indicated above.

2. As stated in the sampling plan dated August 9, 2012, samples of LDG 55-7 fluid will be collected for laboratory analysis at the initiation of the flow test, after 24 hours of flow testing and after 5 days of flow testing. If changes in daily field fluid quality parameters indicate a change of +/- 25% from the previous field parameters reading, an additional laboratory sample will be collected and OCD will be notified within 24 hours.

3. The metals list will include arsenic, barium, copper, iron, lithium, magnesium, manganese, strontium. Additional analytes will include boron, calcium, lithium, nitrate, potassium, sodium, sulfate, chloride, pH, TDS, and specific conductance.

4. Please define the "background concentrations" for constituents of concern in the geothermal fluid. Both the agency and the operator need specificity so that each can know whether permit conditions have been met or not.

5. Please define the term "or reasonably foreseeable future use". Both the agency and the operator need specificity so that each can know whether permit conditions have been met or not.

COA #6: The operator shall submit an initial G-103 Sundry Notice for a Casing Test (test) or EPA Mechanical Integrity Test (Min with proposed MIT method for OCD approval at least 15 days in advance of any injection well completion, existing well MIT requirement, and after any existing well workover date(s).

Los Lobos Response

1. LDG 45-7 was drilled to total depth on February 3, 2011, and the workover was completed in March 2012. Los Lobos will provide the digital data for the CIT performed in early 2011 and proposes to run a cement bond log (CBL) prior to injection. Los Lobos does not believe that additional MIT will provide any materially new or different information that would justify the costs of the additional MIT.

COA #7: The operator shall submit a final G-103 Sundry Notice for the EPA MIT results within 10 days of injection well completion (19.14.54.8(C) (2) NMAC). The operator shall include a detailed description of the test method employed and the results obtained by such test, and any other pertinent information required by 19.14.27.8B (5) NMAC in the final G-I03 submittal. The results of the casing test, including actual pressure held on the pipe and the pressure drop observed, shall also be reported on the form G-103 (19.14.54.8 NMAC). The first well MIT date shall mark the start date of OCD's mandatory 5-year EPA MIT schedule. Casing strings in wells drilled with cable tools may be tested as outlined in 19.14.27.8(B) (5) (a) NMAC.

Los Lobos Response

1. The operator understands this permit condition to be applicable if and only if LDG 45-7 is permanently used in as an injector when the electric power plant is in operation.

COA #8: MITs performed subsequent to well workover, unless it occurs after the 4th year, since the last EPA MIT, shall not disrupt the 5-year MIT schedule. In general, the well must be tested every 5-years regardless of well workover MITs conducted between the required EPA MIT 5-year M IT schedule. The operator may proceed at its own risk when attempting to perform an MIT with external equipment, i.e., BOPE that could be the cause of the well MIT failure.

Los Lobos Response

1. The operator understands this permit condition to be applicable if and only if LDG 45-7 is permanently used in as an injector when the electric power plant is in operation.

COA #9: The operator shall ensure that the MIT performed during well completion and/or during drilling shall have an adequate cement plug thickness positioned not greater than 20 feet above the casing shoe before conducting the MIT. The operator shall also receive BLM approval on MIT procedures for injection wells drilled on Federal Mineral Estates and/or Surface Rights.

Los Lobos Response

1. LDG 45-7 has a 100' overlap of liner in the bottom of the 13.375" production casing. It is impractical to try to place a cement plug inside the liner as it may not seal correctly and using a cement plug would require additional clean out of the well. The operator proposes to place a packer approximately 10 feet above the top of the liner. The operator is happy to receive BLM approval on this prior to submitting the G-103 to OCD.

COA #10: The operator shall provide a water quality monitoring plan for well testing to OCD for approval at least 30 days prior to any water injection into the well. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with to EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require the operator to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background at any place of withdrawal of water for present or reasonably foreseeable future use.

Los Lobos Response

1. Please see responses to LDG 45-7 G-104 COA #1.

COA #11: The operator shall obtain environmental water quality data from the well and during well testing to help evaluate water quality conditions before and during full-scale geothermal power operations due to the large volumes of injected fluids into protectable ground water aquifer and/or reservoir system(s) « 10,000 mg/L TDS). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions in the well before and after injection based on the above.

Los Lobos Response

1. Operator has already submitted baseline analytical data for the geothermal fluid in LDG 45-7. It should be feasible to collect a sample from the well after injection has stopped, assuming the well will flow freely, but this sample will be of the injection water, not of formation water.

COA #12: The operator shall comply with the terms and conditions of its discharge permit and OCD's Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). All Underground Injection Control (UIC) Class V Geothermal Injection Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 - 5006 NMAC). All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, LLC. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. In such event, OCD may order the operator to plug and abandon its well pursuant to the geothermal regulations. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Los Lobos Response

1. Please see responses to LDG 45-7 G-104 COA #2.

LDG 55-07 G-104 COAs

COA #1: The operator shall provide a water quality monitoring plan for well testing to OCD for review and approval at least 30 days prior to any water injection into the well. The operator shall comply with OCD's approved ASTM sample procedure(s) with environmental water quality sampling and analytical laboratory that complies with EPA QA/QC and DQOs for any OCD required environmental sampling and analyses. OCD may require the operator to implement corrective action(s) if water quality exceeds the greater of the WQCC ground water standards or background, at any place of withdrawal of water for present or reasonably foreseeable future use.

Environmental water quality data is needed from the well before and during well testing to help evaluate water quality conditions during full-scale geothermal power operations, since large volumes of injected water must meet the greater of background and/or WQCC water quality standards before injection into a fresh water aquifer system(s). Well testing provides an opportunity for the operator and OCD to evaluate water quality conditions based on the above.

Los Lobos Response:

1. The operator has submitted baseline analytical data for the geothermal fluid and a monitoring plan for LDG 55-7. Please indicate the deficiencies in this monitoring plan.

2. Please see responses to LDG 45-7 G-104 COA #1 and LDG 45-7 G-112 COA #5.

COA #2: The operator shall comply with the production/development well terms and conditions of the Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). Since production wells may also become injection wells, all Underground Injection Control (UIC) Class V Geothermal Injection Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 - 5006 NMAC). All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

Please be advised that OCD's approval does not relieve Los Lobos Renewable Power, LLC. from responsibility if their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. Il/ such event, OCD may order the operator to plug and abandon its well pursuant to the geothermal regulations. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, slate, or local laws and/or regulations.

Los Lobos Response

1. Please see responses to LDG 45-7 G-104 COA #1 and LDG 45-7 G-112 COA #5.

Thank you very much for your assistance in the development of this important energy project. Should you have questions regarding these responses, please do not hesitate to contact me by email at David.Janney@amec.com or by phone at (505) 821-1801.

Respectfully submitted,

David W. Janney

David W. Janney, PG
Agent for Los Lobos Renewable Power, LLC

Cc: Jami Bailey - NMOCD
Glenn Von Gonten – NMOCD
David Brooks – NMOCD
Randy Dade - NMOCD
TC Shapard – NMOCD
Nick Goodman – Los Lobos Renewable Power, LLC
Chuck Smiley – Los Lobos Renewable Power, LLC
Michelle Henrie – Attorney for Los Lobos Renewable Power, LLC

Chavez, Carl J, EMNRD

From: Janney, David <david.janney@amec.com>
Sent: Tuesday, September 18, 2012 12:37 PM
To: Smith, Michael A; Chavez, Carl J, EMNRD; Phillips, Haddy L., OSE; Shapard, Craig, EMNRD
Cc: michelle@mhenrie.com; Nick Goodman; John Perry
Subject: FW: 54-12

Greetings:

We are still analyzing recently collected data from LDG 63-7. Our initial findings suggest our interpretations of the underlying geology, specifically structures most likely to contain good permeability, may need to be adjusted.

While we complete our analysis and assess what adjustments, if any, are needed to our injection sites, we believe it best to place on hold any further permitting of LDG 54-12.

We recognize the amount of time and effort each agency has put into the permit reviews and greatly appreciate your efforts, however, we don't want to pursue this well if there is any chance we end up requesting an adjustment to the location.

Please feel free to contact me with any questions you may have.

Regards,

David W. Janney, PG
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

Chavez, Carl J, EMNRD

From: Brooks, David K., EMNRD
Sent: Thursday, September 13, 2012 8:54 AM
To: Janney, David
Cc: Chavez, Carl J, EMNRD
Subject: RE: Los Lobos Phone Call 9/11 and Operator Issues with OCD COAs on Wells 45-7 and 55-7

Dear Mr. Janney

That's fine!

The purpose of my email was not to draw a line in the sand, but merely to be sure that a customer who might be aggrieved by a decision made in the Department was advised of their due process rights, especially as much of our procedure is not real clear in our rules.

Sincerely

David Brooks

From: Janney, David [mailto:david.janney@amec.com]
Sent: Wednesday, September 12, 2012 4:44 PM
To: Brooks, David K., EMNRD
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Subject: RE: Los Lobos Phone Call 9/11 and Operator Issues with OCD COAs on Wells 45-7 and 55-7

Mr. Brooks:

Thank you. I really think a public hearing is too formal. I would propose another conference room meeting to hash things out and perhaps present to OCD and other agencies a course on geothermal resource development.

We will prepare a written response and hopefully formulate with OCD, a plan that will allow us to move forward.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

From: Brooks, David K., EMNRD [mailto:david.brooks@state.nm.us]
Sent: Wednesday, September 12, 2012 9:18 AM
To: Janney, David

Cc: Sanchez, Daniel J., EMNRD; Chavez, Carl J, EMNRD; VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD
Subject: RE: Los Lobos Phone Call 9/11 and Operator Issues with OCD COAs on Wells 45-7 and 55-7

Dear Mr. Janney

As an addendum to Carl's observations, be advised that Los Lobos has the right to request a hearing regarding conditions of approval OCD declines to change. The right could be exercised by filing an application for hearing with the Division Clerk, Florine Davidson.

Sincerely

David K. Brooks

From: Chavez, Carl J, EMNRD
Sent: Wednesday, September 12, 2012 7:09 AM
To: Janney, David (david.janney@amec.com)
Cc: Brooks, David K., EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD
Subject: Los Lobos Phone Call 9/11 and Operator Issues with OCD COAs on Wells 45-7 and 55-7

David:

Good morning.

Regarding yesterday's phone call and the G-104 requirements for Well 45-7, the OCD includes language under G-104 for production vs. injection well requirements. In addition, Los Lobos has stated that a well may be used for injection or production; therefore, the G-104 COA language for Well 45-7 (injection) is similar to Well 55-7 (production).

In the G-112 for Well 45-7, Los Lobos should sample the injection well to determine background before any well testing, unless Los Lobos has recent analysis that meet QA/QC and DQOs.

Please remember that OCD COA are conditions set by the OCD. Los Lobos may send comments about them, but the OCD reserves the right once COAs are issued to not change any COA. Los Lobos may think about the COAs as conditions identified by the OCD that shall cover all conditions that occur at the project location in consideration of operator field activities and applicable regulations that the operator needs to consider for its short and long-term field activities.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Thursday, September 06, 2012 4:14 PM
To:	Janney, David (david.janney@amec.com); Michelle Henrie (michelle@mhenrie.com)
Cc:	Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD; Brooks, David K., EMNRD
Subject:	Lightning Dock Geothermal Project (GTHT-001) OCD G-Forms with attached Conditions of Approval for Wells 45-7 and 55-7
Attachments:	LDG 45-7 G-104 Approval 9-6-2012.pdf; LDG 55-7 G-104 Approval 9-6-2012.pdf; LDG 45-7 G-112 Approval 9-6-2012.pdf; AmeriCulture Final 9-5-2012.pdf

David and Michelle:

The New Mexico Oil Conservation Division (OCD) has completed its review of the G-104 and G-112 Forms with attached forms and applicable information for the above subject wells. In addition, the OCD received and reviewed Los Lobos Renewable Power, LLC's (Los Lobos) responses to OCD Deficiencies and correspondence from AmeriCulture with concerns related to the above subject wells. OCD responded to communications between AmeriCulture and Los Lobos (see attached "AmeriCulture..." file).

The OCD hereby **approves** the applicable G-104 and 112 Forms (see applicable attachments) for the above subject wells.

OCD is currently reviewing the applicable G-Forms for Well 54-12, which OCD notices that there were apparently no geothermal well operators and/or lease owners within a ½ mile from the well. In addition, OCD will be submitting its position on "Confidentiality" for Los Lobos consideration in order to properly maintain its Administrative Record.

Please contact me if you have questions. Thank you for your cooperation in this matter.

*Please be advised that OCD approval of the G-Forms does not relieve **Los Lobos Renewable Power, LLC** of responsibility should their operations fail to adequately investigate and remediate contamination that poses a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve **Los Lobos Renewable Power, LLC** of responsibility for compliance with any other federal, state, or local laws and/or regulations.*

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, September 06, 2012 11:55 AM
To: 'Janney, David'; Shapard, Craig, EMNRD
Cc: Dade, Randy, EMNRD; Brooks, David K., EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD
Subject: RE: LDG 63-7 Sundry Notice for Reserve Pits

David:

The OCD has determined that waste effluent derived from wells under construction and/or completion must be handled under the OCD Discharge Permit Provisions; therefore, G-103 Sundry Notices are not acceptable to the OCD for waste effluent issues.

The OCD is aware of Los Lobos environmental sample collection directly from the formation in injection well 63-7 and from the pit(s) where waste effluent (i.e., produced water and drill cuttings) is temporarily being stored. It appears that Los Lobos wants to provide a comparison of waste effluent from the formation with aerated contained waste effluent from the well in order to request approval to dispose of the waste effluent back into Well 63-7 or some other existing project well? In addition, Los Lobos is evaluating the EPA NPDES Permit Requirements for discharges at the project location.

The OCD will review the water quality data with operator proposal for final disposition. However, please be aware that the OCD has allowed temporary storage of the waste effluent and the operator should be considering all waste disposition options in order to comply with the temporary storage period.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Janney, David [mailto:david.janney@amec.com]
Sent: Tuesday, August 21, 2012 4:54 PM
To: Chavez, Carl J, EMNRD; Shapard, Craig, EMNRD
Cc: Dade, Randy, EMNRD
Subject: LDG 63-7 Sundry Notice for Reserve Pits

Gentlemen:

Please find attached an emergency sundry notice for the use of the reserve pits at the LDG 53-7 and/or the 47-7 to contain excess cuttings or completions fluids from the LDG 63-7.

The originals are in the FedEx to you today.

We anticipate the need to do this as early as tomorrow. We have taken steps to insure that the next reserve pit will be large enough to accommodate the cuttings and completions fluids.

We have a verbal approval from BLM for this action and they will require justification for the size of the next reserve pit.

Please call me with questions.

Sincerely

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

September 5, 2012

Mr. Damon E. Seawright, President
AmeriCulture
25 Tilapia Trail
Animas, NM 88020

Re: **OCD REVIEW OF LETTER Lightning Dock Geothermal No. 1 (HI-01) Discharge Permit (GTHT-001) Well 45-7, Hidalgo County, New Mexico**

Dear Mr. Seawright:

The Oil Conservation Division (OCD) has completed its review of AmeriCulture letters (letters) dated August 9, and 31, 2012, which address the G-112 Application by Los Lobos Renewable Power, LLC (Los Lobos) to use well LDG 45-7 as an injection well.

OCD requested that Los Lobos respond to the August 9 letter and to specifically address AmeriCulture's wells within the Area of Review (AOR) submitted with its G-104 submittal to the OCD. Los Lobos responded on August 23, 2012. The OCD allowed AmeriCulture to respond to the Los Lobos letter by August 31st.

Based on a review of the letters and institutional working knowledge of the application and project, OCD has identified the following issues and is providing AmeriCulture with its observations and conclusions.

AmeriCulture Letters:

1) The Permittee (Los Lobos) must ensure that all discharges shall be consistent with the terms and conditions of the WQCC Permit.
2) The letter refers to the Water Quality Control Commission (WQCC) discharge permit (GTHT-001) conditions and associated (WQCC) regulations. AmeriCulture states that those regulations prevent the discharge of poorer quality water into a higher quality water reservoir.
3) AmeriCulture's letter does not acknowledge the fact that the Discharge Permit may be modified following WQCC regulations. Modifications may occur to change the permit from the original terms and conditions.
4) OCD is tasked with protecting all ground water with an existing concentration of 10,000 mg/L or less Total Dissolved Solids by ensuring that Los Lobos' discharge does not exceed WQCC ground water standards or background, whichever concentration is greater, at any place of withdrawal.
5) The water quality table that AmeriCulture presented does not provide dates and times of sample collection; however, water quality appears to be very good with some natural background exceptions.
6) AmeriCulture refers to two different aquifer systems, but did not provide OCD with any research reports that document the two aquifer system(s) in the Animas Valley. OCD is aware of one report that refers to a deeper thermal reservoir that upwells into the shallow reservoir via faults/fractures.

7) The OCD agrees with AmeriCulture's statement: "stratigraphic sections show that the deeper geothermal reservoir in 55-7 is in mid Tertiary rhyolite ash-flow tuff and Bisbee Group from "approximately 1,200 to 1,800 feet below ground surface" and not in "Tertiary volcaniclastic rocks and Horquilla Formation".

Los Lobos Letter:

1) Los Lobos indicates that it did assess background ground water quality concentrations in the project area, although background concentrations at depth have not been determined.
2) Los Lobos uses the term "geothermal fluid flow interval" to describe a fracture zone transecting permeable and impermeable rock formations where preferential flow is occurring in the project area.
3) Los Lobos submitted geologic lith-logs and geophysical cross-sections to OCD that document that well 45-7 is structurally lower relative to well 55-7.
4) Los Lobos' letter did not address the water quality and temperature affect(s) that may occur during the well test and/or under full-scale operational conditions. OCD required Los Lobos to conduct an Area of Review to identify any uncemented and/or perforated wells within the injection interval that may require corrective action(s) before injection may be allowed or if problems arise from injection.
5) On May 20, 2012, Los Lobos opted to proceed with geothermal exploration and well testing under the OCD Geothermal Regulations (regulations). These regulations do not supersede any applicable federal, state and/or local regulations. Los Lobos must also comply with WQCC injection and/or other applicable regulations under its WQCC Discharge Permit.

OCD Observations:

1) The aquifer and/or thermal reservoir system(s) where Los Lobos is conducting exploration drilling and well completions appear to be fresh water and are surrounded by nearby water supply wells.
2) Los Lobos has yet to propose ground water treatment before discharge or direct injection into the fresh aquifer system(s) in writing. OCD also notices that Los Lobos desires to inject produced fluids mixed with drill cuttings from wells (wells) being drilled under construction and well completion back into the wells without any treatment and/or filtration. Los Lobos indicates that the water quality of the extracted ground water will likely change somewhat while stored within the centralized pond before reinjection due to oxygenation, aeration, evaporation, etc. This appears to be due to the lack of evaporation pond area(s) and/or containment. Based on the extremely large geothermal fluid production volumes associated with geothermal production plants, it appears that an NPDES Permit will eventually be required to discharge large volumes of fresh produced geothermal fluids into "Waters of the State" to recharge the aquifer system(s), since containment would likely be impossible to provide by an operator.
3) During the hearing, OCD discussed exploration issues that may require Los Lobos to modify its Discharge Permit.
4) Los Lobos' Discharge Permit requires it to determine the background water quality of the extracted ground water through monitoring before injecting the extracted ground water when it begins full-scale operations to produce geothermal power.
5) Los Lobos has submitted cross-sections and seismic sections, supporting its interpretation that the extracted ground water will be produced and injected into the same stratigraphic interval.
6) The ASTM sample method provides more reliable water quality results for pH and carbonate in ground water, but does not affect monitoring for other chemicals of concern, i.e., chlorides, fluorides, & sulfates.

OCD Conclusions:

1) Los Lobos did not address and/or propose any corrective actions for any uncemented wells and/or perforated wells within the Area of Review. Los Lobos must demonstrate that its geothermal power operations will not adversely affect the AmeriCulture wells during well testing and throughout its operations. Los Lobos must be ready to undertake contingency measures and/or corrective action(s) to prevent any adverse effect to AmeriCulture's wells. OCD permitting does not insulate Los Lobos from civil liability in the event of any damage to neighboring wells. Los Lobos must also address water draw-down and/or state water diversion regulations and/or federal regulations on federal lands with mineral interest or estate.
2) AmeriCulture is a pre-existing aquaculture business relying on the natural water quality and thermal extraction of heat to economically operate its business.
3) AmeriCulture and OCD must allow Los Lobos the opportunity to demonstrate during well exploration, well testing, and throughout its operations that it is not adversely affecting fresh water supply wells within one-half mile of any injection well or the correlative rights of other geothermal leaseholders.
4) The water quality data indicate that the water quality is very good with TDS generally less than 1,500 ppm. Los Lobos' well testing to date appears to address internal engineering requirements but does not adequately address all state regulatory requirements.
5) OCD accepts Los Lobos' structural, but not stratigraphic interpretations. Well testing to date has identified a geothermal reservoir system(s) created by faulting/fracturing throughout permeable and impermeable rock formations.
6) The data depicts a geothermal reservoir system with well-developed permeability that occurs within and at the contact between two different formations, i.e., the lower Tertiary Volcaniclastic and upper Horquilla Formations as explained by Los Lobos. The Volcaniclastics identified by Los Lobos appears to be a clastic breccia and/or conglomerate consisting of alluvium and volcanics. However, the Horquilla Formation is known to exist at greater depth within the Animas Valley and not at the shallow depth described by Los Lobos. The geothermal reservoir system has been described as a semi-confined aquifer system (OSE Report). There also appears to be an upper geothermal reservoir indicating that a water table aquifer system (SWL: ~ 75 – 85 ft. bgl) is present and is documented to be in connection with the semi-confined aquifer or reservoir system via faults/fractures with an upwelling thermal plume between reservoirs at the project location.
7) OCD cannot copy AmeriCulture on any future documentation and correspondence in the possession of the OCD pertaining to Los Lobos' operations. However, AmeriCulture may periodically request that information under New Mexico's Inspection of Public Records Act (IPRA). This also applies to AmeriCulture's last paragraph of the letter concerning notifications, deviations from permit conditions, etc.

Please contact Mr. Carl Chavez of my staff at (505) 476-3490 or CarlJ.Chavez@state.nm.us if AmeriCulture has questions.

Sincerely,

Daniel Sanchez
UIC Director

DS/cjc

cc: GTHT-001 Well File "General Correspondence"
OCD District Office
David Janney- Los Lobos

Witcher and Associates
Geothermal Resources Evaluation and Exploration
P. O. Box 3142
Las Cruces, NM 88003
505/521-0146
505/649-4893

28 August 2012

AmeriCulture
Damon Seawright
25 Tilapia Trail
Animas, NM 88020

Damon,

I have reviewed the information provided by Mr. David Janney in his letter to you on 23 August, 2012 and have a number of questions and comments.

In his letter, Mr. Janney provided no definitive information on whether or not the reservoir(s) or aquifer(s) encountered in 45-7 are equivalent or the same as the reservoir(s) or aquifer(s) in 55-7. I have four major issues or questions concerning reservoir correlation and chemistry, regardless of depth: **1)** Are they actually the same lithology or formation? **2)** Are the undisturbed and *in situ* water chemistries actually the same? **3)** Are the reservoirs in significant natural hydrologic communication? **4)** Does a deep, high-quality and potable water resource exist at depth as may have been encountered by 45-7 in the structural eastside of the Animas basin that could be harmed by injection of brackish or saline geothermal water and have importance basin wide?

With regard to the above questions, the potential problems are outlined in the following discussion framework:

A) Well 45-7 is located just west or with in a large normal fault zone, dipping steeply west (probably greater than 70 degrees) and which drops the stratigraphic section progressively downward to the west to form the Animas basin. Gravity data and limited well drilling information support the existence of the fault prior to drilling 45-7.

B) Well 55-7 is located east of the normal fault which also forms a western boundary of a buried horst block (the "hot wells" horst) that gravity shows underlies and or contains the bulk of the shallow outflow plume for the Lightning Dock geothermal system as detailed by heat flow and temperature gradient information.

C) Lithology logs and geophysical logs show that the 55-7 and AmeriCulture 2 wells drilled on the "hot wells" horst block have nearly identical subsurface geology, except that top of the Bisbee Group is 96 ft deeper in 55-7 and increases thickness around 93 ft towards 55-7. The thickness increase is compatible with a geologic model for the Bisbee Group, representing

alluvial deposits shed from a Jurassic to Early Cretaceous rift uplift to the north into an alluvial Bisbee basin to the south. The stratigraphic sections show that the deeper geothermal reservoir in 55-7 is in mid Tertiary rhyolite ash-flow tuff and Bisbee Group from "approximately 1,200 to 1,800 feet below ground surface" and not in "Tertiary volcaniclastic rocks and Horquilla Formation" as Mr. Janney describes for 55-7.
I do not know what unit or formation that Mr. Janney describes as "volcaniclastic sediments." Actually, the entire alluvial section from the surface to the top of the mid-Tertiary rhyolite units is "volcaniclastic" and includes Recent alluvium and older Miocene Gila Group basin fills. The gravels in the Bisbee Group are clasts of older Paleozoic units.

D) The Pennsylvanian Horquilla Formation, predominantly a limestone, is not known to be a productive reservoir and geochemistry of Lightning Dock fluids that I have studied do not indicate a residence time in a carbonate reservoir or reaction with limestone at 250 to 300°F. The strontium isotope ratios ($^{87}Sr/^{86}Sr$) from Lightning Dock fluids sampled from AmeriCulture and Burgett production wells (0.728-0.725) are consistent with storage and flow in high silica rhyolite ash-flow tuff of mid-Tertiary age and/or in Precambrian granite. A major component of Pennsylvanian sea strontium isotope ratios in a chemically-reactive Horquilla limestone at elevated temperature would be much less. Sulfur isotopes ($^{34}S/^{32}S$ per mill compared to standard) are too low (8.5 to 8.84) for late Paleozoic marine sulfate (10 to 30) and may indicate a source from a single oxidized mineral such as accessory pyrite found in rhyolite or granite and are consistent with a magmatic sulfur isotope source.

E) Well-45-7 may have encountered excellent quality water in a mid-Tertiary rhyolite ash flow tuff that is heated-conductively by virtue of being a few hundred ft from the "hot wells" horst block and bounding fault. A chemical analysis reported by Turner Laboratories on 2/11/2011 for sample #1 taken on 1/31/2011 indicates fresh water (TDS= 580 mg/L) except for the high silica concentration. The sodium sulfate character of the water is consistent with water contained in rhyolite. There was no analysis given for carbonate species (HCO_3, CO_3, dissolved CO_2) in the Turner Laboratories report of analysis. A field measurement of carbonate species is not provided either.

F) Silica is shown as "silica" equals 120 mg/L in the Turner Lab report. It was unclear whether the concentration was reported as elemental silicon (Si) or as dissolved SiO_2 . The colorometric lab method that was used suggests SiO_2. If the reported analysis is in SiO_2 units, the silica (Qtz) geothermometer is 141 C (286°F), which is most reasonable. If silica is reported as elemental silicon, then the actual SiO_2 concentration is 256.7 mg/L. This gives a Qtz geothermometer of 455.6°C (852°F) and is totally unrealistic. I called Turner Laboratories late on Friday and they told me the results are reported as SiO_2 with the method they used, as I suspected.

G) The reported high silica of 120 mg/L is probably approaching or just below the temperature equilibration with reservoir rhyolite (quartz). Equilibration can happen very quickly at temperatures approaching 300°F, both as dissolution or precipitation of quartz. The reported high pH is largely from silica, regardless of carbonate species present. Silica will buffer the pH of the water as a dissociation of the main dissolved silica species when at high concentration. The reaction is $4H_2O + 2SiO_2\ (qtz) = H_4SiO_4^0 + H_3SiO_4^- + H^+$ and may have nothing to do with boiling and loss of gases such as CO_2. Log concentration of H+ is

reported as pH. If sample #1 represents a residual water after boiling and gas lost, the *in situ* water is probably even better quality than 580 mg/L TDS and the pH may still be very basic (high pH) in the reservoir, assuming a relatively low CO_2 gas content and low carbonate dissolved species water from a rhyolite reservoir. Well, one reason for a low dissolved carbonate species may indicate the water has never been in contact with limestone (Horquilla). Any groundwater recharge with higher or modest dissolved CO_2 will react with alumino-cation-silicate minerals to release Na, K, Ca, and SiO_2 into water and leave behind clay minerals (aluminum rich). A general chemical equation would be $H_20 + CO_2$ + Na-K rich feldspar (solid) = clay (solid) + $K^+ + Na^+ + HCO_3^- + H^+$ and would tend to consume dissolved CO2 and increase the pH, also. Ultimately, temperature controls the SiO_2 concentration and pH in water when CO_2 is largely "eaten" up by the reactions with minerals described above and quartz or chalcedony is present.

H) Mr. Janney describes chemistry taken from 45-7 in December 2011 (#2) and in January 2012 (#3) that gives different chemical results from each other and from sample (#1). I would like to see a time line of when water air-lifting, pump testing, and/or injection occurred in 55-7 and 45-7, respectively. Could the difference in chemistry be related to injection of geothermal water from 55-7 into a "hot fresh water reservoir" in 45-7? Or could pumping of 45-7 have created a situation where fluid break through from the "hot wells" horst block occurs across the fault that in static conditions acts as a barrier to flow. There is a term for this and it is called compartmentalization. Tracer-test information along with interpretations by the contractor responsible for conducting the tracer test should also be presented.

I) Mr. Janney should provide the two later analyses (#2) and (#3) in complete detail with all measured constituents, including detail on the field measurements, as required by the geothermal sampling protocol of ASTM standard, and show how these became different than the (#1) January 2011 results. Gas measurements, including noble gases, should be included as a check to determine any atmospheric gas contamination.

J) Mr. Janney outlines evidence for low permeability in some poorly described basin-fill units or stratigraphy and I agree with his analysis with caveats. The evidence presented does show little or no "fracture" permeability in Janney's "little or no permeability" intervals. Not knowing the mud weights, not having seen electric logs, or provided detailed lithologic description of the zones he describes does not give me a lot of confidence that the units are impermeable to the point they should be regarded as "cap rocks." As for 100 psi difference or "overpressure," it is not clear to me what is meant. Is it mud weight difference from the surface compared to water at the surface or is it the difference from the static water level to the bit face compared to a mud column back to the surface? I may be splitting hairs; however, I would like to know.

The following discussion summarizes the concerns pertaining to questions brought up at the beginning of this letter.

Issues 1, 2, and 4: The problem may not be some error in the lab or field collection and measurement method, because at 250 to 300°F there is not enough steam loss to account for the apparent discrepancy that Mr. Janney would have you believe by only discussing fluoride

without showing other constituents. The data should be shown in full and discussed. This is not an academic question and is rather practical and potentially illuminating as to the facts one way or the other.

Issue 4): High quality water at several thousand feet in southwest New Mexico and southeastern Arizona in Tertiary silicic volcanic rocks and in deeper basin fill deposits is observed. For instance, in 2009, I consulted with a large greenhouse operator in drilling a 4,000 ft production well to heat his greenhouse in southeast Arizona. The sodium sulfate water has a pH of 8.8 and a TDS of 208 mg/L and the well will sustain high production over 1,000 gpm from a fractured, vitrophyric (welded) rhyolite ash flow tuff. The greenhouse operator can heat his greenhouse in winter and grows a chile crop a half-mile distance (with some heat loss in surface piping) with a pivot irrigation system, using the same water in summer. I can give more examples from the Tucson basin in Arizona from deep wells (2,500 ft depth) that Tucson Electric Power uses for cooling tower water. These deep hot waters (120 to 135°F) are a perfect match of low TDS water and soft (sodium-sulfate chemistry with higher pH) for cooling tower application. Gila Hot Springs, Mimbres Hot Springs, and Turkey Creek Hot Springs in New Mexico are other examples of high quality thermal water from rhyolite reservoirs. All of these reservoirs have relatively high but variable fluoride content.

Issue 1): No information on lithology is given other than Mr. Janney's imprecise and confusing formation calls and their depths. Mr. Janney may not understand the stratigraphy in well 55-7. Mr. Janney provides no geophysical logs (such as a gamma log), no lithology descriptions (not even general), no paleontology, and no radiometric age dates. Therefore, Janney's description of the units being the same is highly problematic and therefore questionable.

In conclusion, the overriding issue is that information given by Mr. Janney is without detail, precision, or a sound stratigraphic framework. I will give Mr. Janney, geologist, the benefit of the doubt and assume that he was trying to explain to you simply, a Los Lobos stance without detail, assuming you are a layman and not the scientist you are. I suspect that Mr. Janney, is limited with what "secret" information can be disclosed and is likely bound by a non-disclosure agreement that seriously limits what he can or can not say. Alternatively, Mr Janney may have a very limited understanding of Lightning Dock geoscience. Having not met Mr. Janney, I don't know which is the case.

I continued to be troubled with the lack of science presented to date by Los Lobos (aka: Cyrq and Raser) and their consultants to AmeriCulture and other users in the Animas Valley. The questions presented are very real world and need real world answers with some degree of supporting information that can be defended scientifically in adequate detail.

Sincerely,

James C. Witcher

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 28, 2012 4:03 PM
To: 'Damon Seawright'
Cc: Brooks, David K., EMNRD; 'James Witcher'; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD
Subject: RE: Damon Seawright's request to respond

Damon:

Please submit the response letter to the OCD by COB this Friday. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Damon Seawright [mailto:dseawright@gmail.com]
Sent: Tuesday, August 28, 2012 1:48 PM
To: Chavez, Carl J, EMNRD
Cc: Brooks, David K., EMNRD; 'James Witcher'
Subject: RE: Damon Seawright's request to respond

Dear Carl,

Jim Witcher is working on the response to David Janney's recent communication. However, Jim's schedule is extremely congested this week. Consequently, would it be alright with the OCD if we sent our response by COB Friday? If so, we would still aspire to provide our response earlier if possible.

Please advise,

Damon Seawright
AmeriCulture, Inc.

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, August 28, 2012 11:32 AM
To: dseawright@gmail.com
Cc: Brooks, David K., EMNRD
Subject: FW: Damon Seawright's request to respond

Damon:

Please submit AmeriCulture's response letter to the Lobos 8/23 letter to the OCD by COB tomorrow.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 28, 2012 10:34 AM
To: 'Janney, David'; Shapard, Craig, EMNRD
Cc: VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Sanchez, Daniel J., EMNRD; Brooks, David K., EMNRD; Shapard, Craig, EMNRD
Subject: RE: LDG 63-7

David:

See OCD responses in red italics below. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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From: Janney, David [mailto:david.janney@amec.com]
Sent: Tuesday, August 28, 2012 9:56 AM
To: Chavez, Carl J, EMNRD; Shapard, Craig, EMNRD
Cc: VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Sanchez, Daniel J., EMNRD
Subject: RE: LDG 63-7

Good morning:

Thank you very much.

Can you please provide an update on the status of the previous sundry to re-inject the drilling fluid/formation water into the 63-7?

Under no circumstances shall Los Lobos re-inject any well drilling/completion fluids into a well, unless you have proposed treatment of the produced fluids and muds to the OCD for approval. In addition, any produced fluids from any well under drilling, construction and/or completion must handle produced fluids as a waste product. Therefore, a G-103 Sundry for waste products may not be appropriate. OCD has provided path forward for disposition of waste under the OCD GTHT-001 discharge permit (contains waste handling provisions) to address the G-103 submittal for transfer of waste to pits at another location for temporary storage of drill cuttings and produced fluids. Los Lobos will need to seek approval from the OCD District Office (DO) to treat the wastes before any injection could allowed back into a fresh aquifer system. In addition, Los Lobos was directed to the OCD DO for beneficial reuse of drilling mud for drilling at another well location, etc.

Can you please provide an update on the 45-7/55-7 testing?

The OCD review and final response to the G-112s and 104s is pending resolution of AmeriCulture concerns associated with the OCD's review of the aforementioned forms, etc. AmeriCulture is preparing a reply to the Los Lobos 8/23 letter

(letter). OCD is awaiting the AmeriCulture response in order to make a final determination of the concerns of AmeriCulture and the OCD after review of the Los Lobos letter.

Did you receive the G-101/G-102 package for the LDG 54-12?

No, not yet.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, August 28, 2012 7:41 AM
To: Janney, David; Shapard, Craig, EMNRD
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD; Sanchez, Daniel J., EMNRD
Subject: RE: LDG 63-7

See attachment.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 28, 2012 7:40 AM
To: 'Janney, David'; Shapard, Craig, EMNRD
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD; Sanchez, Daniel J., EMNRD
Subject: RE: LDG 63-7

Mr. Janney:

Please find the approved G-103 attached.

Please be advised that any references to the Environmental Handbook that you refer to shall not be regarded by the New Mexico Oil Conservation Division to be substitute for the geothermal and environmental regulations.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Janney, David [mailto:david.janney@amec.com]
Sent: Friday, August 24, 2012 4:54 PM
To: Shapard, Craig, EMNRD; Chavez, Carl J, EMNRD
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD
Subject: LDG 63-7

Good Afternoon:

Please find attached a Sundry Notice for the use of fresh water to conduct the injection tests for the LDG 63-7. This is the rig injection test that is described in the drilling handbook submitted with the G 101.

The source of the water is Los Lobos' fresh drinking water well, 14-7. This water meets the requirements of NMAC 20.6.2.3105 A. Please feel free to contact me with questions.

The hard copy has been submitted to you via FedEx.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

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Mr. Damon E. Seawright
AmeriCulture
25 Tilapia Trail
Animas, New Mexico 88020

August 23, 2012

RE: Response to letter from Americulture to Mr. David Brooks of NMOCD dated August 9, 2012: Discharge Permit (GTHT-001), Hidalgo County, New Mexico

Dear Mr. Seawright:

On behalf of Los Lobos Renewable Power, LLC (Los Lobos), AMEC Environment and Infrastructure, Inc. has prepared this response to the concerns you expressed in the above referenced letter. Mr. Carl Chavez of the NMOCD requested that Los Lobos respond directly to you and provide a copy to NMOCD. Los Lobos is extremely sensitive to everyone's concerns regarding potential effects to water quality or quantity as the result of the exploration, development, and production of the Lightning Dock Geothermal resource. Los Lobos is happy to address your concerns.

Your letter stated that: *(1). "the aquifer associated with well 45-7 and the aquifer associated with well 55-7 are different aquifers".*

Response: The geothermal aquifer associated with LDG 45-7 and LDG 55-7 is the same. The producing geothermal fluid flow interval in LDG 45-7 ranges from approximately 2,200 to 2,600 feet below ground surface and is comprised of the lower portion of the Tertiary volcaniclastic rocks and the upper portion of the Horquilla Formation. The producing geothermal fluid flow interval in LDG 55-7 ranges from approximately 1,200 to 1,800 feet below ground surface and is comprised of the lower portion of the Tertiary volcaniclastic rocks and the upper portion of the Horquilla Formation. Regardless of the depths below surface, these geothermal fluid flow intervals occur in the same geological formations. It appears that the stratigraphic section in LDG 45-7 has been down-dropped by faulting relative to the section in LDG 55-7.

Los Lobos has shown that there is at least 300 feet of very low permeability formations above the first geothermal fluid flow interval including: the bottom 200 feet of alluvium and the upper 100 feet of Tertiary volcaniclastic rocks. Los Lobos has conducted three spinner log surveys in LDG 45-7. Each survey indicates no measurable permeability in the uppermost 100 feet of the Tertiary volcaniclastic rocks. Further evidence of permeability distribution comes from the drilling records and temperature surveys. As previously described to NMOCD in the daily drilling reports, LDG 45-7 was drilled to 1,703 feet with full returns using a 12.25-inch bit. Since the overpressure of the drilling fluid exceeded 100 pounds per square inch from 1,500 feet on, we may reasonably conclude that there is little or no permeability in at least the lower-most couple hundred feet of the alluvium.

(2). Your letter also stated that: "Injection of water from well 55-7 into well 45-7 would almost certainly result in an exceedance of background for fluoride"... You also cited potential differences in chloride, sulfate, and TDS concentrations.

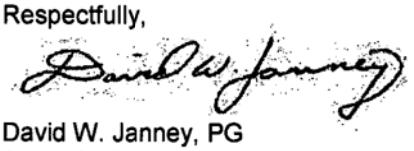
Response: The geothermal fluid *in situ* exists as a single-phase liquid and only divides into vapor and liquid fractions upon production and pressure reduction (flashing). The process of flashing causes some chemicals to concentrate in different proportions in the vapor and liquid fractions, neither of which then accurately reflects the composition of the original liquid. Other chemicals, notably carbon dioxide, react in the flashing process to alter the chemical composition and elevate the pH of the remaining liquid. Only reconstructed samples collected by ASTM methods represent the chemistry of the liquid and vapor phases of the produced geothermal fluid before the unavoidable alterations associated with sampling and are therefore more representative of actual fluid chemistry than would be sample of just the liquid fraction of the geothermal fluid.

You cite a single sample collected from LDG 45-7 in January 2011 as an indication of water quality from this portion of the geothermal fluid flow interval. In fact there are two additional samples collected from LDG 45-7 in December 2011 and January of 2012 that have fluoride concentrations of 10 and 11.1 parts per million (ppm), respectively. In addition, other wells with temperatures above 70° C in the greenhouse area have fluoride and total dissolved solids (TDS) concentrations that range from 11 to 13 ppm and from 982 to 1628 ppm, respectively. Additionally, a number of the shallow and relatively cold wells in the Animas Valley with temperatures below 70° C have TDS concentrations in this range although fluoride concentrations may be somewhat lower. The January 2011 sample from LDG 45-7 is inconsistent with later LDG 45-7 samples collected according to the ASTM E 947 – 83 (Standard Specification for Sampling Single-Phase Geothermal Liquid or Steam for Purposes of Chemical Analysis) and ASTM E 1675 – 95a (Standard Practice for Sampling Two-Phase Geothermal Fluid for Purposes of Chemical Analysis). The later samples are, therefore, representative of the water quality in LDG 45-7 and these samples have water quality consistent with the LDG 55-7 and other wells above 70° C in the greenhouse area.

In summary, the aquifer or geothermal fluid flow intervals in LDG 45-7 and LDG 55-7 are the same in relation to either formation or lithology and water chemistry. Multiple samples collected from LDG 45-7 using accepted ASTM methods indicate that this geothermal fluid has chemical concentrations consistent with background water quality concentrations indicated by LDG 55-7 and other wells in the greenhouse area.

Thank you for your concern about these matters. Please contact me at 505.821.1801 if you have further questions.

Respectfully,



David W. Janney, PG
Agent for Los Lobos Renewable Power, LLC

Cc: David Brooks, NMOCD
Carl Chavez, NMOCD
Randy Dade, NMOCD
Nick Goodman – Cyrq Energy/Los Lobos Renewable Power/Lightning Dock Geothermal
Michelle Henrie – Attorney for Los Lobos Renewable Power, LLC

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, August 16, 2012 11:56 AM
To: 'Michelle Henrie'
Cc: dseawright@gmail.com; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD; Janney, David
Subject: RE: Well 45-7 AmeriCulture Letter of 8/9/2012

Michelle:

Yes that will work.

I notice that the AmeriCulture State Well No. 2 is 999 ft. away from Well 45-7 and is constructed with open borehole from 1455 – 2100 feet. Los Lobos Renewable Power, LLC should be aware of situations where wells penetrating the injection zone without cement may be adversely affected by injection wells. The OCD utilizes an Area of Review (click here) algorithm under 20.6.2 et seq. NMAC to calculate the influence that an injection well may have based on site-specific aquifer characteristics, injection information, volumes, etc. Los Lobos may wish to examine this algorithm to assess this situation.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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From: Michelle Henrie [mailto:michelle@mhenrie.com]
Sent: Thursday, August 16, 2012 11:35 AM
To: Chavez, Carl J, EMNRD
Cc: dseawright@gmail.com; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD; Janney, David
Subject: RE: Well 45-7 AmeriCulture Letter of 8/9/2012

Hi Carl,
Thank you for sending this letter. We will provide a response directly to Mr. Seawright and cc OCD. I am concerned about the timeframe—I do not think we can have a response ready by COB tomorrow (I have a pleading due today that I am working on now). So, I need to ask for an extension. Would COB Monday, August 20 be allowable?
Michelle

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Wednesday, August 15, 2012 3:44 PM
To: Michelle Henrie (michelle@mhenrie.com)
Cc: dseawright@gmail.com; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD
Subject: Well 45-7 AmeriCulture Letter of 8/9/2012

Ms. Henrie:

Please find attached the letter from Mr. Damon Seawright (AmeriCulture regarding Wells 45-7 and 55-7 for Los Lobos Renewable Power, L.L.C.'s (Los Lobos) review.

The New Mexico Oil Conservation Division (OCD) requests that Los Lobos respond to the concerns outlined in the letter with a copy to the OCD by or before close of business 8/17.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

File: General Correspondence

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, August 15, 2012 3:44 PM
To: Michelle Henrie (michelle@mhenrie.com)
Cc: dseawright@gmail.com; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD
Subject: Well 45-7 AmeriCulture Letter of 8/9/2012
Attachments: Brooks, David 080912.pdf

Ms. Henrie:

Please find attached the letter from Mr. Damon Seawright (AmeriCulture regarding Wells 45-7 and 55-7 for Los Lobos Renewable Power, L.L.C.'s (Los Lobos) review.

The New Mexico Oil Conservation Division (OCD) requests that Los Lobos respond to the concerns outlined in the letter with a copy to the OCD by or before close of business 8/17.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

File: General Correspondence

AmeriCulture

August 9, 2012

David Brooks
Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: LOS LOBOS RENEWABLE POWER, L.L.C. - LIGHTNING DOCK GEOTHERMAL NO. 1 (HI-01) DISCHARGE PERMIT (GTHT-001) NE/4 SW/4 OF SECTION 7, TOWNSHIP 25 SOUTH, RANGE 19 WEST, NMPM, HIDALGO COUNTY, NEW MEXICO CLASS V INJECTION WELLS AND GEOTHERMAL PRODUCTION OR DEVELOPMENT WELLS, TOWNSHIP 25 SOUTH, RANGES 19 AND 20 WEST, NMPM, HIDALGO COUNTY, NEW MEXICO

Dear David:

On behalf of AmeriCulture, I hereby provide the following comments pertaining to the G-112 application by Los Lobos Renewable Power, LLC (hereinafter LLRP) to use well LDG-45-7 as an injection well.

LLRP was issued a discharge permit for three Class V geothermal injection wells in July, 2009, pursuant to Water Quality Control Commission (WQCC) Regulations 20.6.2.3104 through 20.6.2.3114 NMAC (Permitting and Ground Water Standards) and 20.6.2.5000 through 20.6.2.5299 (Underground Injection Control).

Under the Conditions of Approval for said permit, "pursuant to WQCC Regulation 20.6.2.3104 NMAC, when a permit has been issued, the owner/operator must ensure that all discharges shall be consistent with the terms and conditions of the permit."

The permit states in paragraph 21.F that, "The production/injection method that the owner/operator shall follow is as follows: High temperature (>250°F) geothermal water shall be brought to surface from the Horquilla Formation or geothermal reservoir at approximately 3,400 feet below ground level by five (5) production or development wells at approximately 3,000 gpm per well. Hot water shall be routed in parallel and in series through approximately 50 binary cycle (self-contained heat exchanger, evaporator and condenser) power generation units. Condensed produced or effluent water (approximately 225°F) shall be routed directly to three (3) Class V geothermal wells and into the same depth within the Horquilla Formation or geothermal reservoir."

The permit language clearly states that the produced geothermal fluid will be returned via injection into the same geothermal aquifer. In his May 29, 2009 Order of the Division (the Order), then Division Director Mark Fesmire states in paragraph 23 that, "From a reading of the entirety of Paragraph 21.F, it is plain that it authorizes injection into the reservoir from which the geothermal was produced, be it the Horquilla or some

• 25 Tilapia Trail, Animas, NM 88020 • Ph: 505.670.5220 • Fax: 815.301.8809
• e-mail: dseawright@gmail.com • www.americulture.com

AmeriCulture

other formation." In paragraph 28 of the Order, the Director reaffirms the prohibition against the operation of the Class V injection if, "...the injection process causes excursion of the injected fluids, or migration of other waters, into another aquifer (distinct from the source formation) so as to cause an exceedance of standards or background in that aquifer.

Although the application is silent on the source of fluids proposed to be injected, we have been told that LLRP has expressed intent to inject geothermal fluids from well T-55-7 into LDG-45-7. Following is a summary of certain water quality parameters present in the waters of both wells, according to analytical results provided to the OCD by LLRP.

	45-7	T-55
Fluoride	4.3	12.5
Chloride	44	92
Sulfate	220	537
TDS	580	1115

Provided that the above water chemistry remains approximately the same under production conditions, the aquifer associated with well 45-7 and the aquifer associated with well 55-7 are different aquifers and therefore production from one well and injection to another, irrespective of which well is produced and which well is injected into, would be strictly prohibited according to the permit language. Furthermore, injection of water from well 55-7 into well 45-7 would almost certainly result in an exceedance of background for fluoride, a contaminant specified in 20.6.2.3103 NMAC, for well 45-7. According to LLRP's analytical results, the fluoride concentration in well 55-7 is 12.5 mg/l and the fluoride concentration in well 45-7 is 4.3 mg/l.

Based on the forgoing, AmeriCulture requests that the prohibition against (a) injection into an aquifer other than the producing aquifer, and (b) the injection of produced water having higher than background contaminant concentration, be included in any conditions of approval corresponding to the use of well 45-7 as an injection well. We also request to be copied on any and all documentation and correspondence in the possession of the OCD pertaining to said application.

Furthermore, AmeriCulture requests to be notified of any and all proposed modifications to, or deviations from, permit conditions for any and all injection or production wells of LLRP.

Sincerely Yours,

Damon E. Seawright
President

• 25 Tilapia Trail, Animas, NM 88020 • Ph: 505.670.5220 • Fax: 815.301.8809
• e-mail: dseawright@gmail.com • www.americulture.com

Chavez, Carl J, EMNRD

From: Brooks, David K., EMNRD
Sent: Wednesday, August 15, 2012 10:35 AM
To: Michelle Henrie
Cc: Chavez, Carl J, EMNRD
Subject: RE: Sundry / Form G-103 for 63-7

Copy is fine.

David

From: Michelle Henrie [mailto:michelle@mhenrie.com]
Sent: Wednesday, August 15, 2012 9:44 AM
To: Brooks, David K., EMNRD
Cc: Chavez, Carl J, EMNRD
Subject: RE: Sundry / Form G-103 for 63-7

Power of Attorney attached. Do you need the original?

From: Brooks, David K., EMNRD [mailto:david.brooks@state.nm.us]
Sent: Tuesday, August 14, 2012 12:01 PM
To: Michelle Henrie
Cc: Chavez, Carl J, EMNRD
Subject: RE: Sundry / Form G-103 for 63-7

Please furnish a power of attorney. I do not want to make it difficult either, but if asked what is legally correct, I have to be precise. Clearly an attorney in fact can sign anything except a will!

David Brooks

From: Michelle Henrie [mailto:michelle@mhenrie.com]
Sent: Tuesday, August 14, 2012 11:58 AM
To: Brooks, David K., EMNRD
Cc: VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD; Chavez, Carl J, EMNRD; Janney, David
Subject: RE: Sundry / Form G-103 for 63-7

David, just a reminder that you and I previously talked about me signing G-forms as the operator's attorney, which I have done in the past.

I don't want to make this harder than it needs to be. I can get a POA, I can sign as the attorney, or I can wait for David Janney to get back tomorrow and re-sign these sundries.

BTW, BLM allows multiple designated agents. OSE allows me to sign as attorney. Just tell me what you want us to do.

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, August 14, 2012 11:52 AM
To: Brooks, David K., EMNRD
Cc: Michelle Henrie (michelle@mhenrie.com); VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: RE: Sundry / Form G-103 for 63-7

David:

Hi. Point of clarification, if each individual that Los Lobos provides Power of Attorney (PA) documentation to the OCD for, then OCD can treat it retroactive so that no new forms with signatures need to be submitted to the OCD right? OCD will regard Mr. Janney to be the only designated agent, but even he can get PA status for signing G-forms. The OCD will then regard any PA personnel to be Los Lobos members.

Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
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"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

---

From: Brooks, David K., EMNRD
Sent: Tuesday, August 14, 2012 11:46 AM
To: Chavez, Carl J, EMNRD
Cc: Michelle Henrie (michelle@mhenrie.com)
Subject: RE: Sundry / Form G-103 for 63-7

I think there can be only one designated agent under 19.14.1.17. That does not preclude an officer of the company or any other person authorized by power of attorney from signing forms. We should be furnished with copies of PA's for those who will be signing.

David

From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 14, 2012 9:31 AM
To: Brooks, David K., EMNRD
Cc: VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD
Subject: FW: Sundry / Form G-103 for 63-7

David:

Good morning. Could you please give me an opinion on the multiple (3) designated agents letter (David Janney's backups).

I'm copying TC in Artesia on the Well 63-7 Sundry to see if he is ok with the casing changes proposed by Los Lobos. TC could you provide you opinion on the G-103 Sundry? Thanks in advance.

Lastly, we need to discuss the AmeriCulture letter with Glenn today as the letter appears to require a response and the EB can discuss the WQ issues with you to derive a path forward on the letter and the well 45-7 and 55-7 OCD G-104s and G-112 reviews.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department

Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

---

From: Michelle Henrie [mailto:michelle@mhenrie.com]
Sent: Monday, August 13, 2012 11:40 AM
To: Shapard, Craig, EMNRD; Chavez, Carl J, EMNRD
Cc: Dade, Randy, EMNRD; Janney, David; Nick Goodman; John Perry; LECIII@capuanoengineering.com; Phillips, Haddy L., OSE; Rappuhn, Doug H., OSE; Smith, Michael A
Subject: Sundry / Form G-103 for 63-7

Good morning TC and Carl,

Attached please find:

(1) Sundry / Form G-103 for 63-7 reporting the casing depth, and
(2) Agent Authorization letter allowing me to sign this form (David Janney is out of town).

I will overnight three originals of the G-103 to TC and Randy in Artesia.

Please let me know if you have any questions. 505-842-1800.

Thanks,

Michelle

Michelle Henrie | Attorney · LEED AP

MHenrie | Land · Water · Law
P.O. Box 7035 . Albuquerque, New Mexico . 87194-7035
225 E. DeVargas . Santa Fe, New Mexico . 87501
505-842-1800 | fax 505-842-0033
michelle@mhenrie.com

POWER OF ATTORNEY

Cyrq Energy, Inc., and its wholly-owned project companies, Lightning Dock Geothermal HI-01, LLC and Los Lobos Renewable Power, LLC ("Companies"), hereby grant and delegate authority to Michelle Henrie to act on behalf of the Companies as their agent for the purpose of taking any action reasonably related to agency permitting of the Companies' geothermal power project located within Hidalgo County, New Mexico ("the Project").

Without limiting the scope or intent of the foregoing, Michelle Henrie is expressly authorized to undertake the following actions as the Companies' agent.

1. Take any action stated in and reasonably related to the Bureau of Land Management ("BLM") Federal Geothermal Resources Lease NM34790 ("the Federal Lease").

2. Take any action stated in and reasonably related to BLM permits, approvals or notices associated with and acquired for the purpose of benefiting the Project.

3. Take any action stated in and reasonably related to New Mexico Oil Conservation Division ("OCD") permits, approvals or notices associated with and acquired for the purpose of benefiting the Project.

4. Take any action stated in and reasonably related to New Mexico Office of the State Engineer ("OSE") permits, approvals or notices associated with and acquired for the purpose of benefiting the Project.

5. Perform and comply with all laws, rules, orders, ordinances, regulations, and requirements of every governmental authority, department, bureau, or agency having jurisdiction over the Project (an "Agency").

6. Prepare applications, provide information, file documents, and perform any other act relating to the Project that is reasonably requested by any Agency.

Provided, however, that Michelle Henrie does not have the power to permanently transfer any interest in the Project to a third party.

The rights, powers, and authority of Michelle Henrie to exercise any and all of the rights and powers herein granted shall commence and be in full force and effect on January 1, 2012, and shall remain in full force and effect until 31 December, 2013, or unless specifically extended or rescinded earlier by either party.

Dated: 14 August, 2012

CYRQ ENERGY, INC., a Delaware limited liability company

By: Nicholas Goodman

Name: Nicholas Goodman

Its: CEO

STATE OF Utah)

) ss.

COUNTY OF Salt Lake)

The foregoing instrument was acknowledged before me on this 14 day of August, 2012 by Nicholas Goodman as CEO of Cyrq Energy, Inc., on behalf of said company.

STACY A. KAMAYA
Notary Public State of Utah
My Commission Expires on
December 1 2012
Comm Number 576949

Stacy A Kamaya

Notary Public

My commission expires:

12/1/2012

Chavez, Carl J, EMNRD

From: Brooks, David K., EMNRD
Sent: Tuesday, August 14, 2012 12:01 PM
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Cc: Chavez, Carl J, EMNRD
Subject: RE: Sundry / Form G-103 for 63-7

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Oil Conservation Division, Environmental Bureau
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Michelle

Michelle Henrie | Attorney · LEED AP

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225 E. DeVargas . Santa Fe, New Mexico . 87501
505-842-1800 | fax 505-842-0033
michelle@mhenrie.com

Cyrq

Lightning Dock
geothermal

August 13, 2012

Carl Chavez
Environmental Bureau
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

Via email to: carlj.chavez@state.nm.us

RE: Addition to Designated Agent Authorization for Cyrq Energy, Inc. and its wholly-owned project companies, Lightning Dock Geothermal HI-01, LLC and Los Lobos Renewable Power, LLC; Hidalgo County, New Mexico

Dear Mr. Chavez,

Earlier this year, Michael Hayter, former Project Manager for the Lightning Dock Geothermal project, wrote to you designating Authorized Agents for this project. The primary Authorized Agent is David Janney of AMEC Environment and Infrastructure, Inc. ("AMEC"). As a back-up Authorized Agent, we have designated Jeff Cotter, also of AMEC.

By this letter, please know that we would also like to designate our attorney, Michelle Henrie, as an Authorized Agent.

Thank you for your assistance. Please let me know if you have any additional questions. I can be reached at 801-875-4200 or by email at nick.goodman@cyrqenergy.com.

Kind regards,

Nicholas Goodman

Nick Goodman
Chief Executive Officer
Cyrq Energy / Los Lobos Renewable Power / Lightning Dock Geothermal

136 South Main Street
(p) 801.875.4200

Suite 600
info@cyrqenergy.com

Salt Lake City, UT 84101
(f) 801.374.3314

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-101
Adopted 10-1-74
Revised 10-1-78

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Operator		
Land Office		

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK--GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease: STATE ☐ Federal ☑

5.a Lease No.: Federal NM 34790

1a. Type of Work: Drill ☑ Deepen ☐ Plug Back ☐

b. Type of Well: Geothermal Producer ☑ Temp Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐

7. Unit Agreement Name: NA

8. Farm or Lease Name:

2. Name of Operator: Los Lobos Renewable Power, LLC

9. Well No.: LDG 63-7

3. Address of Operator: 136 South Main Street, Suite 600, Salt Lake City, Utah 84101

10. Field and Pool, or Wildcat:

4. Location of Well: UNIT LETTER G LOCATED 1722 FEET FROM THE North LINE AND 1420 FEET FROM THE East LINE OF SEC. 7 TWP. 25 S RGE. 19 W NMPM

12. County: Hidalgo

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
3400	Limestone	Mud Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
4209 GR	$50K multi-bond active	Trinity Exploration,LLP	May 30, 2012

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
26"	20"	94#	150'	357	GL
17.5"	13.375"	54.5#	1500'	915	GL
12.25"	9.625" (liner)	36#	3400'	None	1400'

This is a revised submittal/form for this proposed new geothermal production well on Federal Lease NM 34790.

The well constrcution casing schedule has been revised to reflect the requirments of the BLM. The 20" casing will not be installed to a depth of 150', not 63' as inititally proposed.

Form G-102 is attached.

Revised LDG 63-7 Drilling Handbook by Capuano Engineering Consultants is attached.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed: David O. Janney, PG Title: Agent for Los Lobos Renewable Power, LLC Date: May 17, 2012

(This space for State Use)

APPROVED BY: T. C. Shepard TITLE: Geologist DATE: 6/6/2012

CONDITIONS OF APPROVAL, IF ANY: ATTACHED (DATED 6/6/2012) EXPIRATION DATE 6/6/2014

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form G-103
Adopted 10-1-74
Revised 10-1-78

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Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease State ☐ Fee ☐

5.a State Lease No. Federal NM34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☐ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☑

7. Unit Agreement Name

2. Name of Operator: Los Lobos Renewable Power, LLC

8. Farm or Lease Name

3. Address of Operator: 136 South Main Street, Suite 600, Salt Lake City, Utah 84101

9. Well No. LDG 63-7

4. Location of Well Unit Letter ___ 1722 ___ Feet From The North Line and 1420 Feet From The East Line, Section 7 Township 25S Range 19W NMPM.

10. Field and Pool, or Wildcat

15. Elevation *(Show whether DF, RT, GR, etc.)*

12. County Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG & ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☑	CASING TEST AND CEMENT JOB ☐	
OTHER Change in production casing setting depth ☑		OTHER ☐	

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

Change of casing schedule from that submitted on the G-101 for this well as specified in NMAC 19.15.54.8.

This well is currently being drilled.

Change in setting depth of the 13.375 inch production casing. The approved casing schedule is as follows:

30 inch -118# - single piece - 3/8 inch wall to 35 feet
20 inch - 94# - welded - 3/8 inch wall to 150 feet
13.375 inch - 54.5# - BT&C - J-55 to 1,500 feet
9.625 inch - 36# - BT&C - K-55 liner to 3,400 feet

This sundry notice is submitted in order to change the setting depth of the 13.375 inch production casing to 1,541 feet Kelly Bushing (1,514 feet from ground level).

This change occurred between 0800 and 2400 hours on August 12, 2012.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED ___ TITLE Agent, Los Lobos Renewable Power, LLC DATE August 13, 2012

APPROVED BY ___ TITLE ___ DATE ___

CONDITIONS OF APPROVAL, IF ANY:

Chavez, Carl J, EMNRD

From: Michelle Henrie <michelle@mhenrie.com>
Sent: Tuesday, August 14, 2012 11:31 AM
To: Chavez, Carl J, EMNRD; Shapard, Craig, EMNRD; david.janney@amec.com; Rappuhn, Doug H., OSE; Phillips, Haddy L., OSE; john.perry@cyrqenergy.com; leciii@capuanoengineering.com; Smith, Michael A; nick.goodman@cyrqenergy.com; Dade, Randy, EMNRD
Cc: RigManager Cyrq
Subject: G-103 LDG 63-7 casing and cement
Attachments: LDG G-103 cement & casing 08-14-12.pdf

Attached please find the G-103 mentioned below. Original (in triplicate) will be overnighted to OCD Artesia.
Thanks,
Michelle

From: Michelle Henrie [mailto:michelle@mhenrie.com]
Sent: Tuesday, August 14, 2012 10:17 AM
To: 'CarlJ.Chavez@state.nm.us'; 'craig.shapard@state.nm.us'; 'david.janney@amec.com'; 'doug.rappuhn@state.nm.us'; 'haddy.phillips@state.nm.us'; 'john.perry@cyrqenergy.com'; 'leciii@capuanoengineering.com'; 'mikesmith@blm.gov'; 'nick.goodman@cyrqenergy.com'; 'Randy.Dade@state.nm.us'
Cc: RigManager Cyrq (rigmgrcyrq@gmail.com)
Subject: FW: Morning report for LDG 63-7

You probably already read the attached morning report. I wanted to point out that we cemented yesterday, finishing at 1:00 AM. Casing test is planned for today at about 1:00 PM. I am preparing a sundry for OCD with this information and will email it around shortly.
Thanks,
Michelle

From: RigManager Cyrq [mailto:rigmgrcyrq@gmail.com]
Sent: Tuesday, August 14, 2012 6:06 AM
To: CarlJ.Chavez@state.nm.us; craig.shapard@state.nm.us; david.janney@amec.com; doug.rappuhn@state.nm.us; haddy.phillips@state.nm.us; john.perry@cyrqenergy.com; leciii@capuanoengineering.com; michelle@mhenrie.com; mikesmith@blm.gov; nick.goodman@cyrqenergy.com; Randy.Dade@state.nm.us
Subject: Morning report for LDG 63-7

Thank you
Steve Summit

Michelle Henrie | Attorney · LEED AP

MHenrie | Land · Water · Law
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SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State ☐ Fee ☐
5.a State Lease No.: Federal NM34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☐ Temp. Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☑
7. Unit Agreement Name:
2. Name of Operator: Los Lobos Renewable Power, LLC
8. Farm or Lease Name:
3. Address of Operator: 136 South Main Street, Suite 600, Salt Lake City, Utah 84101
9. Well No.: LDG 63-7
4. Location of Well: Unit Letter ___ 1722 ___ Feet From The North Line and 1420 Feet From The East Line, Section 7 Township 25S Range 19W NMPM.
10. Field and Pool, or Wildcat:
15. Elevation (Show whether DF, RT, GR, etc.)
12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☑	PLUG & ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER casing test ☑		OTHER run and cement casing ☑	

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work)* SEE RULE 203.

8/3/2012 spud 36" hole @ 0900. TD 36" at 65'. Run 30" 118# welded casing and set shoe at 62'. Run 10 CY cement from a truck. WOC.

8/5/2012 spud 26" hole @ 1630. TD 26" at 187'. Run 20" 64# J-55 butt casing and set shoe at 187'.

8/6/2012 Run 5 bbls H20,.190 sxs tail w3% calc cement D:15 Y:1.74 W:7.74; 116 sxs neat tail cement D:15 Y:1.74 W:7.78; Displace with 55 bbls H20. WOC.

8/8/2012 RIH with 17.5" bit/mud motor @ 0300.

8/11/2012 TD 17.5" at 1555'; Run 13 3/8" 54.5# J-55 butt casing and set shoe at 1541'. Circulate and cool down to 110 degrees for cement.

8/12/2012 Run 30 bbls H20 test lines to 2000 psi, mix and pump 220 sxs geolite 140 D:13:5 Y:2.14 W:9.48; mix and pump 220 sxs geolite with 0.25# sx polyflake D:13.5 Y:1.14 W:9.48; mix and pump 130 sxs geotail 15 1.75 W: 7.78; Displace with 26 bbls H20. WOC

8/13/2012 Run 1" steel line btw 20" and 1 3/8" casing to pump top job; pump top; pump 7 bbl geotail D:15# Y:1.75 W:7.78 to surface

Los Lobos respectfully requests permission to test casing to 1000# for 30 min.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED ___ TITLE Agent, Los Lobos Renewable Power, LLC DATE August 14, 2012

APPROVED BY ___ TITLE ___ DATE ___

CONDITIONS OF APPROVAL, IF ANY:

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, August 10, 2012 12:31 PM
To: 'Janney, David'; Rappuhn, Doug H., OSE; Phillips, Haddy L., OSE; Smith, Michael A; Dade, Randy, EMNRD
Cc: Michelle Henrie; RigManager Cyrq; leciii@capuanoengineering.com
Subject: RE: Morning report for LDG 63-7

Mr. Janney:

If Los Lobos is deviating from the OCD Geothermal Regulatory casing requirements (see Regs below) for high temp. thermal fluids, please contact Mr. TC Shepard in the OCD Artesia DO to discuss directly.

District 2 - ARTESIA
811 S. First St.
Artesia, NM 88210
OFFICE: (575) 748-1283 FAX: (575) 748-9720
Business Hours:
7:00 AM - 12:00 PM and 1:00 PM - 4:00 PM
Monday through Friday
Craig Shapard - District Geologist
Phone extension: 103

- APD processing, pool rules, pool mapping, geology

Thank you.

****

19.14.27.8 CASING AND CEMENTING REQUIREMENTS:

A. All wells drilled for the production of geothermal resources, including low-temperature thermal wells, and all specialty wells, including injection and disposal wells, shall be cased and cemented in such manner as to protect surface waters, if any, useable ground waters, geothermal resources, and life, health and property. Thermal gradient wells shall be drilled, completed and plugged in such a manner as to protect surface waters, in any, and useable ground waters. The division may require casing and cementing as is deemed necessary for such wells.

B. All casing strings reaching the surface shall provide adequate anchorage for blowout prevention equipment, hole pressure control, and protection for all natural resources. Although specifications for casing programs shall be determined on a well-to-well basis, the following general casing requirements should be used as guidelines in submitting form G-101, application for permit to drill, deepen, or plug back-geothermal resources well.

(1) Conductor Pipe: A minimum of 90 feet and a maximum of 200 feet. In special cases the division may allow conductor pipe to be run and cemented at deeper depths. Annular space is to be cemented solid to the surface. An annular blowout-preventer or equivalent approved by the division shall be installed on conductor pipe on exploratory wells and on development wells when deemed necessary by the division. Note: For thermal gradient wells and low-temperature thermal wells the conductor pipe requirement may be reduced or waived by the division. The above conductor pipe requirements are not meant to be applicable to the single or double joint of large diameter pipe often run to keep mud out of the cellar.

(2) Surface Casing: Except in the case of thermal gradient wells and low-temperature thermal wells, the surface casing hole shall be logged with an electrical or radioactivity log, or equivalent, before running casing. Note: This requirement may vary from area to area, depending upon the amount of subsurface data available, and may be waived under certain conditions. Requests for exceptions to the logging requirement should be noted on form G-101 when applying for a drilling permit. Surface casing shall provide for control of formation fluids, for protection of useable ground water and for adequate anchorage for blowout-prevention equipment. All surface casing shall be, if possible, cemented solid to the surface.

(a) Length of Surface Casing:

(i) In areas where subsurface geological conditions are variable or unknown, surface casing in general shall be set at a depth equalling or exceeding 10 percent of the proposed total depth of the well. A minimum of 200 feet and a maximum of 1,500 feet of surface casing shall be set.
(ii) In areas of known high formation pressure, surface casing shall be set at a depth determined by the division after a careful study of geological conditions. The division will make such a determination within 30 days. Drilling shall not commence until such determination has been made.
(iii) Within the confines of designated geothermal fields, the depth at which surface casing shall be set shall be determined by the division on the basis of known field conditions. Requirements (a)(1) and (a)(2) [now (i) and (ii) of Subparagraph (a) and (b)of Paragraph (2) of Subsection B of 19.14.27.8 NMAC] above may be waived for low-temperature thermal wells.
(b) Cementing Point for Surface Casing:
(i) In areas where subsurface geological conditions are variable or unknown, surface casing shall be set in accordance with (a) (1) [now (i) Subparagraph (a) of Paragraph (2) of Subsection B of 19.14.27.8 NMAC] above and through a sufficient series of low permeability, competent lithologic units (such as claystone or siltstone) to ensure a solid anchor for blowout-prevention equipment and to protect useable ground water and surface water from contamination. A second string of surface casing may be required if the first string has not been cemented through a sufficient series of low permeability, competent lithologic units and either a rapidly increasing thermal gradient or rapidly increasing formation pressures are encounted.
(ii) In areas of known high formation pressure, surface casing shall be set in accordance with (a) (2) [now (ii) Subparagraph (a) of Paragraph (2) of Subsection B of 19.14.27.8 NMAC] above and through a sufficient series of low permeability, competent lithologic units (such as claystone, siltstone or basalt) to ensure a solid anchor for blowout-prevention equipment and to protect useable ground water and surface water from contamination. A second string of surface casing may be required, before drilling into the known high pressure zone is permitted, if the first string of surface casing has not been cemented through a sufficient series of low-permeability, competent lithologic units.
(iii) Within the confines of designated geothermal fields, cementing point shall be determined by the division on the basis of known field conditions. Requirements (b)(1) and (b)(2) [now (i) and (ii) of Subparagraph (b) of Paragraph (2) of Subsection B of 19.14.27.8 NMAC] above may be waived for low-temperature thermal wells.
(c) Return mud temperatures: Return mud temperatures shall be entered into the log book after each joint of pipe has been drilled down. See Rule G-106(b) [now Subsection B of 19.14.25.8 NMAC].
(d) Blowout-prevention equipment (BOPE): BOPE capable of shutting in the well during any operation shall be installed on the surface casing and maintained ready for use at all time (see Section H) [see compiler's note].
(3) Intermediate casing: Intermediate casing shall be required for protection against anomalous pressure zones, caveins, washouts, abnormal temperature zones, uncontrollable lost circulation zones or other drilling hazards. Intermediate casing strings shall be, if possible, cemented solid to the surface. This requirement (to circulate cement) may be waived if the production casing will be cemented to the surface.
(4) Production casing: Production casing may be set above or through the producing or injection zone and cemented above the objective zones. Sufficient cement shall be used to exclude overlying formation fluids from the zone, to segregate zones and to prevent movement of fluids behind the casing into zones that contain useable ground water. Production casing shall either be cemented solid to the surface or lapped into intermediate casing, if run. If the production casing is lapped into an intermediate string, the casing overlap shall be at least 50 feet, the lap shall be cemented solid, and it shall be pressure tested to ensure its integrity. In order to reduce casing corrosion, production casing used to produce corrosive brine reservoirs shall be of the same nominal inside diameter from the shoe of the casing to the ground surface.
(5) Casing and Cement Tests: All casing strings shall be tested after cementing and before commencing any other operations on the well. Form G-103 shall be filed for each casing string reporting the grade and weight of pipe used. In the case of combination strings utilizing pipe of varied grades or weights, the footage of each grade and weight used shall be reported. The results of the casing test, including actual pressure held on the pipe and the pressure drop observed, shall also be reported on the form G-103. See Rule G-203C(2) [now Paragraph (2) of Subsection C of 19.14.54.8 NMAC].
(a) Casing strings in wells drilled with rotary tools shall be pressure-tested. Minimum casing test pressure shall be approximately one-third of the manufacturer's rated internal yield pressure except that the test pressure shall not be less than 600 pounds per square inch and need not be greater than 1,500 pounds per square inch. In cases where combination strings are involved, the above test pressures shall apply to the lowest pressure-rated casing used. Test pressures shall be applied for a period of 30 minutes. If a drop of more than ten percent of the test pressure should occur, the casing or cement job shall be considered defective and corrective measures shall be taken before commencing any further operations on the well.
(b) Casing strings in wells drilled with cable tools may be tested as outlined in Rule 5(a) [now Subparagraph (a) of Paragraph (5) of Subsection B of 19.14.27.8 NMAC] above, or by bailing the well dry, in which case the well must remain satisfactorily dry for a period of at least one hour before commencing any further operations on the well.
(6) Defective casing or cementing: If the cementing of any casing appears to be defective, or if the casing in any well appears to be defective or corroded or parted, or if there appears to be any underground leakage for whatever other reason, which may cause or permit underground waste, the operator shall proceed with diligence to use the appropriate method or methods to eliminate such hazard. If such hazard of waste cannot be eliminated, the well shall be plugged and abandoned in accordance with a division approved plugging program.

(7) Logging: All wells, except thermal gradient wells and low-temperature thermal wells, shall be logged with an electrical or radioactivity log, or equivalent, from total depth to the surface casing shoe. This requirement may be waived by the division depending upon geological or engineering conditions.
[Recompiled 12/31/01]

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Janney, David [mailto:david.janney@amec.com]
Sent: Friday, August 10, 2012 11:32 AM
To: Rappuhn, Doug H., OSE; Phillips, Haddy L., OSE; Chavez, Carl J, EMNRD; Smith, Michael A; Dade, Randy, EMNRD
Cc: Michelle Henrie; RigManager Cyrq; leciii@capuanoengineering.com
Subject: FW: Morning report for LDG 63-7

Good morning:

As you can see from the attached report it is likely we will penetrate the volcanics over the weekend and will need to set and cement casing. Any changes to casing setting depth will be communicated to you via email over the weekend and were applicable, followed by sundry notices within 48 hours. Any cement job notifications will also be communicated to you via email over the weekend.

Please call or email with questions.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

From: RigManager Cyrq [mailto:rigmgrcyrq@gmail.com]
Sent: Friday, August 10, 2012 6:41 AM
To: CarlJ.Chavez@state.nm.us; Janney, David; doug.rappuhn@state.nm.us; haddy.phillips@state.nm.us; john.perry@cyrqenergy.com; leciii@capuanoengineering.com; michelle@mhenrie.com; mikesmit@blm.gov; nick.goodman@cyrqenergy.com; Randy.Dade@state.nm.us
Subject: Morning report for LDG 63-7

Thank you
Steve Summit
(530) 304-5590

AmeriCulture

August 9, 2012

David Brooks
Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: LOS LOBOS RENEWABLE POWER, L.L.C. - LIGHTNING DOCK GEOTHERMAL NO. 1 (HI-01) DISCHARGE PERMIT (GTHT-001) NE/4 SW/4 OF SECTION 7, TOWNSHIP 25 SOUTH, RANGE 19 WEST, NMPM, HIDALGO COUNTY, NEW MEXICO CLASS V INJECTION WELLS AND GEOTHERMAL PRODUCTION OR DEVELOPMENT WELLS, TOWNSHIP 25 SOUTH, RANGES 19 AND 20 WEST, NMPM, HIDALGO COUNTY, NEW MEXICO

Dear David:

On behalf of AmeriCulture, I hereby provide the following comments pertaining to the G-112 application by Los Lobos Renewable Power, LLC (hereinafter LLRP) to use well LDG-45-7 as an injection well.

LLRP was issued a discharge permit for three Class V geothermal injection wells in July, 2009, pursuant to Water Quality Control Commission (WQCC) Regulations 20.6.2.3104 through 20.6.2.3114 NMAC (Permitting and Ground Water Standards) and 20.6.2.5000 through 20.6.2.5299 (Underground Injection Control).

Under the Conditions of Approval for said permit, "pursuant to WQCC Regulation 20.6.2.3104 NMAC, when a permit has been issued, the owner/operator must ensure that all discharges shall be consistent with the terms and conditions of the permit."

The permit states in paragraph 21.F that, "The production/injection method that the owner/operator shall follow is as follows: High temperature (>250°F) geothermal water shall be brought to surface from the Horquilla Formation or geothermal reservoir at approximately 3,400 feet below ground level by five (5) production or development wells at approximately 3,000 gpm per well. Hot water shall be routed in parallel and in series through approximately 50 binary cycle (self-contained heat exchanger, evaporator and condenser) power generation units. Condensed produced or effluent water (approximately 225°F) shall be routed directly to three (3) Class V geothermal wells and into the same depth within the Horquilla Formation or geothermal reservoir."

The permit language clearly states that the produced geothermal fluid will be returned via injection into the same geothermal aquifer. In his May 29, 2009 Order of the Division (the Order), then Division Director Mark Fesmire states in paragraph 23 that, "From a reading of the entirety of Paragraph 21.F, it is plain that it authorizes injection into the reservoir from which the geothermal was produced, be it the Horquilla or some

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• e-mail: dseawright@gmail.com • www.americulture.com

AmeriCulture

other formation." In paragraph 28 of the Order, the Director reaffirms the prohibition against the operation of the Class V injection if, "...the injection process causes excursion of the injected fluids, or migration of other waters, into another aquifer (distinct from the source formation) so as to cause an exceedance of standards or background in that aquifer.

Although the application is silent on the source of fluids proposed to be injected, we have been told that LLRP has expressed intent to inject geothermal fluids from well T-55-7 into LDG-45-7. Following is a summary of certain water quality parameters present in the waters of both wells, according to analytical results provided to the OCD by LLRP.

	45-7	T-55
Fluoride	4.3	12.5
Chloride	44	92
Sulfate	220	537
TDS	580	1115

Provided that the above water chemistry remains approximately the same under production conditions, the aquifer associated with well 45-7 and the aquifer associated with well 55-7 are different aquifers and therefore production from one well and injection to another, irrespective of which well is produced and which well is injected into, would be strictly prohibited according to the permit language. Furthermore, injection of water from well 55-7 into well 45-7 would almost certainly result in an exceedance of background for fluoride, a contaminant specified in 20.6.2.3103 NMAC, for well 45-7. According to LLRP's analytical results, the fluoride concentration in well 55-7 is 12.5 mg/l and the fluoride concentration in well 45-7 is 4.3 mg/l.

Based on the forgoing, AmeriCulture requests that the prohibition against (a) injection into an aquifer other than the producing aquifer, and (b) the injection of produced water having higher than background contaminant concentration, be included in any conditions of approval corresponding to the use of well 45-7 as an injection well. We also request to be copied on any and all documentation and correspondence in the possession of the OCD pertaining to said application.

Furthermore, AmeriCulture requests to be notified of any and all proposed modifications to, or deviations from, permit conditions for any and all injection or production wells of LLRP.

Sincerely Yours,

Damon E. Seawright
President

• 25 Tilapia Trail, Animas, NM 88020 • Ph: 505.670.5220 • Fax: 815.301.8809
• e-mail: dseawright@gmail.com • www.americulture.com

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, August 09, 2012 11:33 AM
To: 'Damon Seawright'; Brooks, David K., EMNRD
Cc: VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD
Subject: RE: Comments on LDG-45-7

Sensitivity: Personal

Damon:

Good morning.

You may recall the OCD's inquiry about the OSE Permit ID for the AmeriCulture Federal No. 1 Well that is within ½ mile radius of Well 45-7.

I have queried the OSE Well Search Database and found the following well information (see below) based on well identification numbers that you provided the OCD in an 8/3/2012 telephone call.

POD Number: A 00045 AS (Well Depth is 399 feet) NW NE NE 7-25S-19W (Note: POD Number A 00568 displays water bearing statifications for this well)
POD Number: A 00444 (Well Depth is 223 feet) NW NW NE 7-25S-19W

Based on well plotting the OSE well locations, the A 00045 appears to be the AmeriCulture State Well No. 1 on state land, while the A 00444 appears to be the AmeriCulture Federal Well No. 1 on Federal land? Therefore, the OCD must conclude that the AmeriCulture Federal No. 1 Well Depth is 223 feet deep.

Please contact me by e-mail and/or telephone is you disagree with the OCD's well depth determination for Well LDG 45-7 highlighted above.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Damon Seawright [mailto:dseawright@gmail.com]
Sent: Thursday, August 09, 2012 8:29 AM
To: Brooks, David K., EMNRD
Cc: Chavez, Carl J, EMNRD
Subject: Comments on LDG-45-7
Sensitivity: Personal

Dear David,

AmeriCulture will provide you with comments on the recent G-112 application for well LDG-45-7 by Los Lobos Renewable Power, LLC, by the close of business today.

Regards,

Damon Seawright

New Mexico Office of the State Engineer
Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest)						(NAD83 UTM in meters)	
	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
A	00045 AS	1	2	2	07	25S	19W	138578	3563660*

Driller License: MCBEE DRILLING CO.
Driller Name: MCBEE, JIM

Drill Start Date:	07/02/1996	**Drill Finish Date:**	07/12/1996	**Plug Date:**	
Log File Date:	05/31/2002	**PCW Rcv Date:**	12/29/2003	**Source:**	Shallow
Pump Type:	TURBIN	**Pipe Discharge Size:**	4.00	**Estimated Yield:**	
Casing Size:		**Depth Well:**	399 feet	**Depth Water:**	65 feet

Water Bearing Stratifications:	Top	Bottom	Description
	378	399	Basalt/Rhyolite/Tuff

Meter Number:	7534	**Meter Make:**	SEA METRICS
Meter Serial Number:	08021370	**Meter Multiplier:**	1.0000
Number of Dials:	9	**Meter Type:**	Diversion
Unit of Measure:	Gallons	**Return Flow Percent:**	
Usage Multiplier:		**Reading Frequency:**	Monthly

Meter Readings (in Acre-Feet)

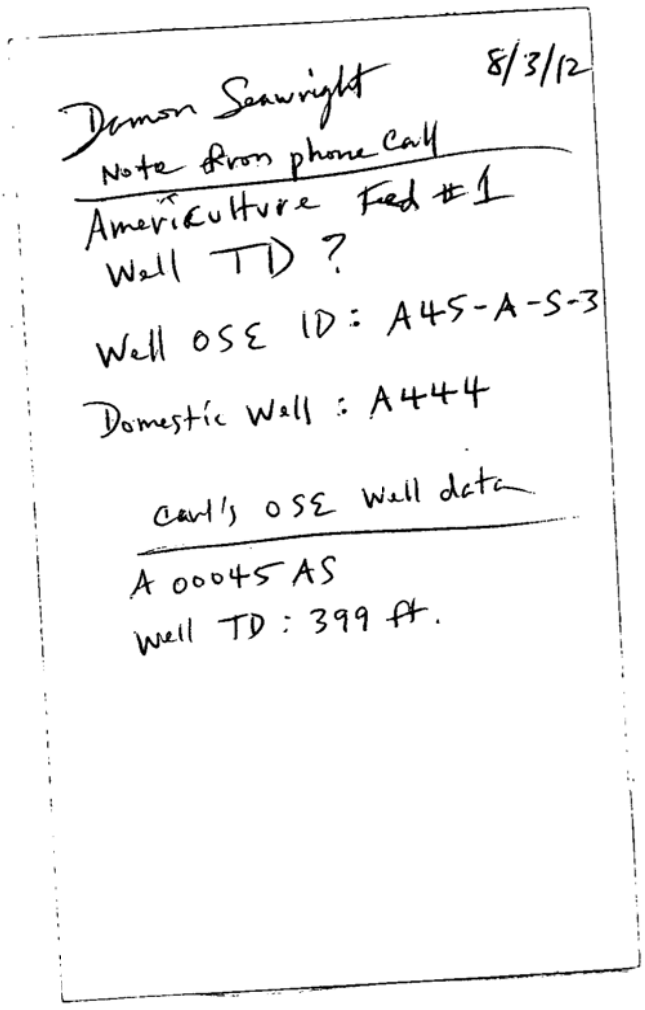
Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount
12/30/2003	2003	272800	A	am		0
01/05/2004	2004	424211	A	am		0.465
02/18/2004	2004	1627758	A	DS		3.694
03/05/2004	2004	1627758	E	DS		0
01/01/2005	2005	1636800	A	am		0.028
02/01/2005	2005	3273600	A	am		5.023
03/01/2005	2005	4296600	A	am		3.139
04/01/2005	2005	4910400	A	am		1.884
10/01/2005	2005	5524200	A	am		1.884
11/01/2005	2005	6547200	A	am		3.139
12/01/2005	2005	8184000	A	am		5.023
01/01/2006	2006	9820800	A	am		5.023
02/01/2006	2006	11457600	A	am		5.023
03/01/2006	2006	12480600	A	am		3.139
04/01/2006	2006	13094400	A	am		1.884
09/01/2006	2006	13094400	A	am		0
10/01/2006	2006	13708200	A	am		1.884

***UTM location was derived from PLSS - see Help**

Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount
11/01/2006	2006	14731200	A	am		3.139
12/01/2006	2006	16368000	A	am		5.023
01/01/2007	2007	18004800	A	am		5.023
01/31/2007	2007	19641600	A	am		5.023
03/31/2007	2007	20664600	A	am		3.139

**YTD Meter Amounts:	Year	Amount
	2003	0
	2004	4.159
	2005	20.120
	2006	25.115
	2007	13.185



Damon Seawright 8/3/12

Note from phone call

AmeriCulture Fed #1

Well TD ?

Well OSE ID: A45-A-S-3

Domestic Well : A444

Carl's OSE Well data

A 00045 AS

Well TD : 399 ft.

New Mexico Office of the State Engineer
Point of Diversion Summary

POD Number	Q64	Q16	Q4	Sec	Twp	Rng	X	Y
A 00568	1	2	2	07	25S	19W	138578	3563660*

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)
(NAD83 UTM in meters)

Driller License: ELBROCK DRILLING, L.L.C.
Driller Name: MCBEE DRILLING FINISHED

Drill Start Date:	06/17/1996	**Drill Finish Date:**	07/12/1996	**Plug Date:**	
Log File Date:	09/25/1996	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	10.75	**Depth Well:**	399 feet	**Depth Water:**	65 feet

Water Bearing Stratifications:	Top	Bottom	Description
	0	4	Other/Unknown
	4	18	Sandstone/Gravel/Conglomerate
	18	40	Sandstone/Gravel/Conglomerate
	40	60	Sandstone/Gravel/Conglomerate
	60	77	Sandstone/Gravel/Conglomerate
	77	80	Other/Unknown
	80	90	Other/Unknown
	90	100	Other/Unknown
	100	135	Other/Unknown
	135	292	Sandstone/Gravel/Conglomerate
	278	376	Basalt/Rhyolite/Tuff
	292	302	Other/Unknown
	378	399	Other/Unknown

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest)					(NAD83 UTM in meters)	
POD Number		**Q64**	**Q16**	**Q4**	**Sec**	**Tws**	**Rng**	**X**	**Y**
A	00064 S	3	1		07	25S	19W	137474	3563203*

Driller License:	JIM MCBEE DRILLING				
Driller Name:	MCBEE, JIM				
Drill Start Date:	05/01/1959	**Drill Finish Date:**	05/05/1959	**Plug Date:**	
Log File Date:	11/12/1959	**PCW Rcv Date:**	12/30/1959	**Source:**	Shallow
Pump Type:	TURBIN	**Pipe Discharge Size:**		**Estimated Yield:**	500
Casing Size:	16.00	**Depth Well:**	283 feet	**Depth Water:**	30 feet

Casing Perforations:	**Top**	**Bottom**
	100	280

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
A 00231	4	1		07	25S	19W	137861	3563188*

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)
(NAD83 UTM in meters)

Driller License: JIM MCBEE DRILLING
Driller Name: JIM MCBEE

Drill Start Date:		**Drill Finish Date:**		**Plug Date:**	
Log File Date:	02/06/1958	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.00	**Depth Well:**	120 feet	**Depth Water:**	

Water Bearing Stratifications:	Top	Bottom	Description
	1	20	Other/Unknown
	20	30	Other/Unknown
	30	50	Sandstone/Gravel/Conglomerate
	50	70	Other/Unknown
	70	83	Sandstone/Gravel/Conglomerate
	83	104	Other/Unknown
	104	108	Sandstone/Gravel/Conglomerate
	108	118	Other/Unknown
	118	120	Other/Unknown

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
A 00266	2	4	4	07	24S	19W	139097	3572081*

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)
(NAD83 UTM in meters)

Driller License:	MCBEE DRILLING CO.				
Driller Name:	C. J. MCBEE				
Drill Start Date:	02/01/1961	**Drill Finish Date:**	02/11/1961	**Plug Date:**	
Log File Date:	06/12/1962	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.00	**Depth Well:**	150 feet	**Depth Water:**	107 feet

Water Bearing Stratifications:	Top	Bottom	Description
	0	2	Other/Unknown
	2	20	Other/Unknown
	20	110	Sandstone/Gravel/Conglomerate
	110	128	Shallow Alluvium/Basin Fill
	128	148	Sandstone/Gravel/Conglomerate
	148	150	Other/Unknown

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
A 00444	1	1	2	07	25S	19W	138176	3563675*

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)
(NAD83 UTM in meters)

Driller License: ELBROCK DRILLING, L.L.C.
Driller Name: OASIS DRILLING

Drill Start Date:	12/15/1983	**Drill Finish Date:**	12/20/1983	**Plug Date:**	
Log File Date:	01/12/1984	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	50
Casing Size:	8.63	**Depth Well:**	223 feet	**Depth Water:**	60 feet

Water Bearing Stratifications:	Top	Bottom	Description
	0	24	Other/Unknown
	24	80	Sandstone/Gravel/Conglomerate
	80	150	Sandstone/Gravel/Conglomerate
	150	180	Sandstone/Gravel/Conglomerate
	180	223	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	60	223

***UTM location was derived from PLSS - see Help**

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, August 03, 2012 4:05 PM
To: Janney, David (david.janney@amec.com)
Cc: Sanchez, Daniel J., EMNRD; Brooks, David K., EMNRD; VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD; Phillips, Haddy L., OSE; Smith, Michael A (michaelsmith@blm.gov)
Subject: OCD G-Form Review of Wells LDG 45-7 and LDG 55-7 and Deficiencies
Attachments: OCD G-112 Inj Well 45-7 Defficiencies 8-3-2012.doc; OCD G-104 Well 45-7 Deficiencies 8-3-2012.doc; OCD G-104 Well 55-7 Deficiencies 8-3-2012.doc

Mr. Janney:

The New Mexico Oil Conservation Division (OCD) has completed its preliminary review of the above subject G-Forms.

Please find attached "Deficiencies" that must be addressed before the OCD may issue any approvals on the G-Forms.

The OCD anticipates completion of the review process by COB next Friday, if Los Lobos Renewable Power, L.L.C. addresses the Deficiencies in a timely manner, the OCD may complete the G-Forms by COB next Friday.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

Lightning Dock Geothermal (HI-01) LLC Project
Class V Injection Well 45-07 (GTHT-001)

G-112 Form
OCD Santa Fe Office Deficiencies
(8/3/2012)

1) The operator shall submit a G-104 Form with all other associated G-Forms and required information for this G-112 submittal (19.14.63 NMAC and 19.14.93 NMAC) to the OCD for approval within 30 days of well completion and/or before injection may be allowed into the well. The highlighted text below identifies missing information that is hereby requested by the OCD.

19.14.93.8 METHOD OF MAKING APPLICATION:

A. (1) A plat showing the location of the proposed injection/disposal well and the location of all other wells within a radius of one mile from said well, and indicating the perforated or open-hole interval in each of said wells.

2) The operator shall submit a legible copy of the Pressure, Temperature and Spinner (PTS) Survey.

3) The operator shall submit water quality data from the well. It appears that a reconstructed "brine" and "steam" analysis reports were submitted instead.

4) The operator shall submit a well test monitoring plan to the OCD for approval at least 30 days before injection into the well with water quality reporting due to the OCD within 30 days of completion of the well test. The operator has not proposed to monitor injected fluids during exploratory well testing to demonstrate that water quality will meet the greater of background and/or WQCC water quality standards. The information will serve to assess water quality conditions under full-scale geothermal power conditions.

5) The operator shall comply with the terms and conditions of the discharge permit and associated Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). All Underground Injection Control (UIC) Class V Geothermal Injection Wells must comply with the applicable sections of Water Quality Control Commission Regulations (20.6.2.5000 – 5006, et seq. NMAC). All geothermal field activities must comply with 20.6.2 et seq. NMAC and 20.6.4 et seq. NMAC).

Please be advised that OCD final approvals of forms require submittal of any requested information above to address deficiencies identified during the OCD review process.

Lightning Dock Geothermal (HI-01) LLC Project
Geothermal Production Well 45-07
(GTHT-001)

G-104 Form
OCD Santa Fe Office Deficiencies
(8/3/2012)

1) In accordance with the OCD's May 31, 2012 letter to Los Lobos Renewable Power, L.L.C., the section entitled, "Permitting Production Wells for Proposed Well Test", provide the required information (i.e., length of well test, estimated production volume, and flow rate). Specify the purpose of well testing and the regulatory agency requirements that will be addressed by the test. The information shall be submitted as an addendum to the G-104.

2) The operator shall certify that all division rules and regulations pertaining to the well have been complied with. The information shall be submitted as an addendum to the G-104.

Please be advised that OCD final approvals of forms require submittal of any requested information above to address deficiencies identified during the OCD review process.

Lightning Dock Geothermal (HI-01) LLC Project
Geothermal Production Well 55-07
(GTHT-001)

G-104 Form
OCD Santa Fe Office Deficiencies
(8/3/2012)

1) In accordance with the OCD's May 31, 2012 letter to Los Lobos Renewable Power, L.L.C., the section entitled, "Permitting Production Wells for Proposed Well Test", provide the required information (i.e., length of well test, estimated production volume, and flow rate). Specify the purpose of well testing and the regulatory agency requirements that will be addressed by the test. The information shall be submitted as an addendum to the G-104.

2) The operator shall certify that all division rules and regulations pertaining to the well have been complied with. The information shall be submitted as an addendum to the G-104.

Please be advised that OCD final approvals of forms require submittal of any requested information above to address deficiencies identified during the OCD review process.

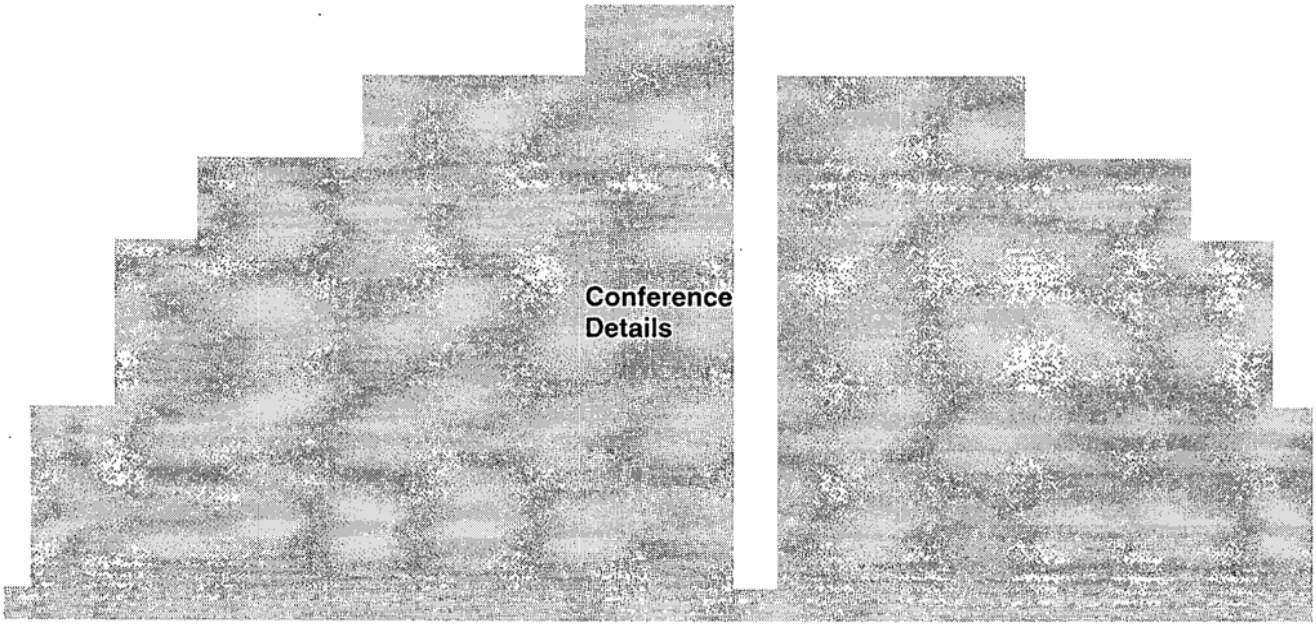
Chavez, Carl J, EMNRD

Subject:	Mr. McCants July 2, 2012 Public Notice Inquiry & Whether Public Notice Was Required (CANCELLATION OF CALL)
Location:	Telephone Conference Call Update (OCD SF Conference Room)
Start:	Thu 7/26/2012 1:30 PM
End:	Thu 7/26/2012 2:30 PM
Recurrence:	(none)
Meeting Status:	Meeting organizer
Organizer:	Chavez, Carl J, EMNRD
Required Attendees:	dunjabp@yahoo.com; Michelle Henrie (michelle@mhenrie.com); Brooks, David K., EMNRD; Gerholt, Gabrielle, EMNRD; VonGonten, Glenn, EMNRD; Shapard, Craig, EMNRD

Ladies and Gentlemen:

FYI, Mr. McCants has requested that the telephone call be cancelled until further notice. Therefore the phone call is hereby cancelled.

Thank you.



Scheduled Conference Date:	Thursday, July 26, 2012
Scheduled Start Time:	01:30 PM Mountain Daylight Time
Scheduled End Time:	02:55 PM Mountain Daylight Time
Scheduled # of Participants:	8
Type of Conference:	Web-Scheduled Standard
Dial-in Number:	1-213-342-3000 (Los Angeles, CA)
Participant Access Code:	4509670
Organizer Access Code:	*693464 (you must include the leading star key)
Conference Controls:	Conversation Mode (all Participants can be heard) Entry Chimes - Enabled Exit Chimes - Enabled Conference Ends When Organizer Leaves - Enabled

Please send any agenda items as appropriate before the meeting.

The draft agenda for the meeting or call is as follows:

1) Introductions
2) Mr. McCants Information submittal
3) Mrs. Henrie's Information submittals
4) OCD Attorney review of information
5) Conclusions
6) Miscellaneous
7) Path Forward

Chavez, Carl J, EMNRD

From: Tim McCants <dunjabp@yahoo.com>
Sent: Tuesday, July 24, 2012 12:02 PM
To: Chavez, Carl J, EMNRD
Cc: Michelle Henrie (michelle@mhenrie.com); Gerholt, Gabrielle, EMNRD; VonGonten, Glenn, EMNRD; Brooks, David K., EMNRD; Shapard, Craig, EMNRD
Subject: Re: Mr. McCants July 2, 2012 Public Notice Inquiry & Whether Public Notice Was Required

Good Morning Mr. Chavez,

In reviewing the attachments, it appears that Los Lobos does not acknowledge the McCants Operating Agreement signed with prior BLM lease holders, Amax, which I provided to Mrs. Henrie and the OCD. In regards to the attachment from Mrs. Henrie, I have never asserted that we had any state lease rights, which I was fully aware they were lost many years ago.

There is no need for a teleconference on my part to discuss with Mrs. Henrie (Los Lobos Representative) and the OCD that we no longer have a state lease, this is known. What is at question, is the operating agreement with Amax going to be acknowledged by Los Lobos! This can be directed with Mrs. Henrie aside from the OCD.

My appologies for the G-112 notification concern to the OCD directly, as in my communications with Mr. Hayter (Raser) in past he acknowledged the operating agreements existence and it being withstanding at that time.

Timothy McCants
361-877-3528

From: "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
To: "dunjabp@yahoo.com" <dunjabp@yahoo.com>; "Michelle Henrie (michelle@mhenrie.com)" <michelle@mhenrie.com>; "Brooks, David K., EMNRD" <david.brooks@state.nm.us>; "Gerholt, Gabrielle, EMNRD" <Gabrielle.Gerholt@state.nm.us>; "VonGonten, Glenn, EMNRD" <Glenn.VonGonten@state.nm.us>; "Shapard, Craig, EMNRD" <craig.shapard@state.nm.us>
Sent: Tuesday, July 24, 2012 9:55 AM
Subject: Mr. McCants July 2, 2012 Public Notice Inquiry & Whether Public Notice Was Required
Ladies and Gentlemen:

Scheduled Conference Date:	Thursday, July 26, 2012
Scheduled Start Time:	01:30 PM Mountain Daylight Time
Scheduled End Time:	02:55 PM Mountain Daylight Time
Scheduled # of Participants:	8
Type of Conference:	Web-Scheduled Standard
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1. Introductions
2. Mr. McCants Information submittal
3. Mrs. Henrie's Information submittals
4. OCD Attorney review of information
5. Conclusions
6. Miscellaneous
7. Path Forward

Chavez, Carl J, EMNRD

From: Janney, David <david.janney@amec.com>
Sent: Wednesday, July 18, 2012 12:44 PM
To: Chavez, Carl J, EMNRD; VonGonten, Glenn, EMNRD
Cc: Brooks, David K., EMNRD; Sanchez, Daniel J., EMNRD; Bailey, Jami, EMNRD
Subject: Additional Water Quality Data
Attachments: GRED final public report[1].pdf

Good afternoon Mr. Chavez:

Please consider this a response to your email to me dated 7/13/12 regarding the pH of the geothermal fluids that were presented on the water quality comparison table *Analytes in NMAC Standard, Americulture State #2 and Lightning Dock Geothermal wells*, OCD received from Michelle Henrie on 7/3/12.

As you know, the chemistry of high temperature geothermal fluids is complicated and there are two phenomena peculiar to geothermal wells that must be considered to avoid misleading conclusions:

1. Samples of flashed geothermal fluid commonly show pH values 1-3 units higher than the in situ (i.e., pre-flash) value for the same fluid. This applies to all of the samples for which pH>9 in the table *Analytes in NMAC Standard, Americulture State #2 and Lightning Dock Geothermal wells.*

2. Drilling fluids are normally maintained at pH>9 through additions of soda ash (pH 11.6) in order to prevent clay hydration and hole instability. Drilling fluid filtrate is produced along with formation water in the initial stages of well production, resulting in high pH readings. This effect is most evident in the samples from TG 52-7 in 2003 and LDG 45-7 in January 2011.

The pH in LDG 45-7's later samples after more production, and without flashing, in December 2011 and January 2012 shows the expected decline to values <7. The values of pH<9 found in Americulture State #2 in 2000 and TFD 55-7 in June 2010 confirm the acceptable pH of the deep geothermal water.

We do not believe the pH of the deeper geothermal fluids is a concern and we believe that the pH of the deeper geothermal fluids is within the 6-9 range as required by the regulations. We encourage you to evaluate the trend in the samples collected from the LDG 45-7 and the LDG 55-7. We believe the changes in water quality of these samples over time represents the removal of drilling fluids with flow or pumping of the well and that the samples collected in January 2012 and June 2010 from these wells are the most representative of the geothermal fluids. Each of these samples has a pH below 9.

Please keep in mind that LDG 53-7 and LDG 52-7 have been subjected to very little flow and may, therefore, still contain drilling additives. As I mentioned in our telephone conversation yesterday, the components of the drilling mud include a number of additives with a high pH which are used to minimize the hydration of clays in formation. These additives may include Hydrogel-bentonite mud (pH 9), soda ash (pH 11.6), or sodium bicarbonate (pH 8.3). All of these products are routinely used in fresh water, oil/gas, and geothermal drilling operations and we have included the MSDSs for these products in the Drilling Handbook for well LDG 63-7.

Further to the question of pH changes in flashing fluids, please find attached DOE's Final GRED Report on the Animas Valley Geothermal Resource. On page 52 of this document, please find a discussion of the water quality that describes how changes in pH occur when geothermal fluids are brought to the surface for sampling.

We note two points in the referenced GRED report which we do not endorse. First, we do not see evidence of the precipitation mentioned on page 53 and believe that flashing alone is sufficient to explain the changes in pH. Second, we wish to point out that the tests described as "drill stem tests" (DSTs) were not performed as oil/gas field DSTs. A conventional DST uses a packer set in the well bore to isolate a zone for sampling and no such isolation took place in TG 52-7. We believe this was a misuse of the term "DST."

In the words of an email to me from Roger Bowers, a co-author of the GRED report, "Regarding the DOE report, pages 52-54: None of these were drill-stem tests. ... No packers were set, no zones were isolated. All water samples were

acquired by air lift. Samples came from the entire open-hole wellbore and we never clearly identified the permeable zones, other than one at 630-670'.... Basically, we continued the air lifting until water ran fairly clear at the end of the blooie line, but there was still a lot of drilling mud in the well.

The deeper sample from about 2320' was more confined, but still not a DST. We had set casing to 2220', then drilled ahead. Got a water entry just below 2320, but eventually drilled ahead to TD of 2528'. The well flowed on us, but we used mud to try to control it. Once we called TD, we ran a 2-hour air lift to get a final water sample from the bottom 300' of hole. Sure the sample had a higher pH - it still had drilling mud in it. I am not aware of a true DST ever being run on any well at Lightning Dock."

We also understand that you are concerned about possible mixing of high and low pH fluids, and have contemplated using deeper injection of geothermal fluids as a means of fluoride remediation in the shallow alluvial groundwater. We are unclear how this type of fluoride remediation would work and look forward to hearing a complete description of the process.

Please feel free to contact me with any questions you may have.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

Glenn:

A key question is depth of the wells (shallow vs. deep) in the provided tables. Also, many of the wells depicted on the map do not have SC or pH data on the table. I do notice that if these are all shallow wells, the pH is near neutral, while pH levels of concern appear to be much higher from deeper wells, i.e., 55-7 w/ pH >= 9. This would be of concern with well testing and injecting at a shallower depth. In a recent e-mail responding to BLM questions on Wells 45-7 & 55-7, Los Lobos indicates that the volcaniclastic zones are all highly fractured. Therefore, I do conclude at Well 63-7 that injection of extracted deeper formation water with elevated pH and reinjection at the 1500 ft. casing depth would be less protective as Los Lobos has indicated and shown through geophysics the fractured strata and drill recorded losses of fluid while drilling in the project area. In my opinion, deeper is better, and even under a 24/7 injection of 2.5 Mgpd scenario, it may not be protective enough from a pH standpoint. Fluorides, which as we know are very similar to chlorides from a contaminant fate perspective appear to be elevated throughout shallow, intermediate and deep wells and taking a conservative position to inject deeper may actually cleanup or improve the fluoride water quality problem in the shallow zone. OCD required monitoring in the shallow zone during the 30 day test may help to confirm this?

That's about all I have to say about this unless we really want to examine the water quality data I sent you yesterday, which includes the F and TDS table, but not the more recent sampling table provided. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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FINAL TECHNICAL REPORT
GEOTHERMAL RESOURCE EVALUATION AND DEFINITION (GRED) PROGRAM — PHASES I, II and III
for
THE ANIMAS VALLEY, NM GEOTHERMAL RESOURCE

United States Department of Energy
Albuquerque Operations Office
Cooperative Agreement No. DE-FC04-00AL66977

By:

Roy A. Cunniff and Roger L. Bowers
Lightning Dock Geothermal, Inc.
Las Cruces, New Mexico

August 2005

CONTENTS

FIGURES

Examination of the measured values for dissolved mineral species indicates that probably only the sample acquired from the lost circulation zone at 2320 feet is noticeably different from the samples taken from more shallow zones. In comparison with earlier samples, the deep zone has sharply elevated values for total dissolved solids, chlorides, sulfates, sodium, molybdenum, iron, boron and barium. In addition, the deep zone has an alkalinity value almost three times higher than the shallower water samples.

However, this deep zone sample is the only sample that had not boiled before sampling; hence, possibly this is the best measure of in situ water in the Animas Valley at a depth of about 2,300 feet. However, this sample is depleted in silicon dioxide (SiO_2) and fluoride relative to temperature, and the Na-Ca-Mg geothermometer for this water produces an inferred temperature of only 90.6°C (195°F). Since this temperature is substantially cooler than the in situ temperatures measured in the completed borehole, and also is substantially cooler than the temperature measured by the Welaco tool at about 600 feet of depth during the 23-hour flow test, it is unlikely that this sample accurately reflects in situ geothermal fluid before mixing and cooling occurs.

All of the samples can be characterized as carbonate waters, and the influence of the underlying sedimentary rock appears to be present in the in situ water. Notably, however, the waters are relatively enriched in selected mineral assemblages (sulfates, calcium, sodium) compared to those concentrations normally expected to be present for waters originating in or with long dwell time in volcanic rock such as water from the Geysers area of Iceland. Notably, all of the samples had measured values of SiO_2 at concentrations (50-60 mg/l) roughly one-third of the values measured for the shallow hot wells located in the greenhouse complex. This datum suggests that all of the samples taken from TG52-7 represented mixed water as a combination of the hotter geothermal fluid and the cooler valley groundwater.

Notably, all of the samples were at an elevated pH (range of 9.3 to 9.6). This elevated pH value is strongly suggestive of a mechanism whereby dissolved carbon dioxide (CO_2) is suddenly released because of reduced pressure resulting from air entrained boiling, and

this release in turn triggers a change in the pH from slightly acidic (less than 7.0) to strongly basic (pH values higher than 8.5). This pH change also triggers a solubility decrease for dissolved iron, sulfates, silica and carbonate species that causes portions of these species to precipitate. (Cunniff, 1989.)

It is noted that the geothermal water sampled from TG52-7 had a pH of between 9.24 and 9.33, and these values are sharply higher than the comparative model analyzed by Cunniff (1989). Moreover, the Animas water had a significantly higher temperature, which could act to increase the solubility of CO_2. Accordingly, it is likely that the Animas Valley geothermal water contains a significant dissolved CO_2 content. Among other factors, if this inference is correct, there should be a significant gas lift to add to the elevated pieziometric head caused by elevated temperature. Because of the mechanical constraints imposed by airlift, it was not possible to obtain a pressurized water sample. Accordingly, although interesting, the water analyses do not provide for an accurate gauge of in situ geothermal fluid.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

JULY 18, 2012

Mr. Nicholas Goodman
Cyrq Energy --
136 S. Main Street, Ste. 600
Salt Lake City, UT 84101

RE: Lightning Dock Geothermal (HI-01) LLC Project
Class V Injection Well 63-07 (GTHT-001)
G-112 Form
OCD Santa Fe Office Conditions of Approval (7/18/2012)

Dear Mr. Goodman:

OCD staff has reviewed the additional information that Los Lobos provided to support its request to set casing at 1,500 feet bgs rather than the 2,200 feet depth that OCD specified in its Conditions of Approval to the G-112 dated June 22, 2012. After review, OCD has determined that the proposed casing depth of 1,500 feet adequately protects ground water at the site. Attached is OCD's revised Condition of Approval to the G-122 for Injection Well 63-07

If you have any questions, please contact Carl Chavez of my staff at (505-476-3490) or E-mail: CarlJ.Chavez@state.nm.us.

Sincerely,

Jami Bailey
Director

JB/gvg

Lightning Dock Geothermal (HI-01) LLC
Project
Class V Injection Well 63-07
(GTHT-001)

G-112 Form
OCD Santa Fe Office
Conditions of Approval
(7/18/2012)

1) The Operator shall comply with the casing program specified in the G-101 Form dated May 17, 2012.

2) The Operator shall construct the 63-07 well with 13 3/8" casing set to a minimum depth of 1,500 feet, cemented to surface, to comply with the OCD Discharge Permit requirement(s).

3) The Operator shall submit a G-104 Form with all other associated G-Forms to OCD for approval within 30 days of well completion and before commencing injection operations.

4) The Operator shall have adequate environmental monitoring during well drilling operations in order to implement contingency measures and/or corrective action(s) to protect ground water (< 10,000 ppm TDS). The Operator shall collect, analyze a representative water quality sample (EPA QA/QC and DQOs) at each casing point and at total depth and submit the results to the OCD Santa Fe and Artesia Offices within 30-days of well completion to determine water quality conditions. OCD may require corrective action(s) to be implemented in the event a water quality problem is identified.

5) The Operator shall comply with the terms and conditions of its discharge permit and the Geothermal Regulations (Chapter 71, Article 5 NMSA 1978 and Title 19, Chapter 14 NMAC). The Operator shall comply with all applicable sections of the Water Quality Control Commission Regulations (20.6.2.5000 – 5006 NMAC). All geothermal field activities must comply with 20.6.2 NMAC and 20.6.4 NMAC).

Please be advised that OCD approval does not relieve Los Lobos Renewable Power, L.L.C. from responsibility should their operations pose a threat to ground water, subsurface trespass, water supply/diversion, surface water, human health or the environment. In such event, a well may be ordered plugged and abandoned and/or used in accordance with the geothermal regulations. In addition, OCD approval does not relieve Los Lobos Renewable Power, L.L.C. of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, July 13, 2012 4:15 PM
To: 'Janney, David'
Cc: Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Shapard, Craig, EMNRD
Subject: RE: Well 55-7

Mr. Janney:

There is no API# for Well 55-7 nor any other geothermal well associated with the permit and I believe project.

You observed that API#s were originally developed by the Artesia District Office for the wells specified in the OCD Discharge Permit (GTHT-1).

However, after discussing the OCD RBDMS and OGRID electronic tracking system for oil and gas wells and a possible similar geothermal well API# process under RBDMS, the OCD UIC Director Mr. Daniel Sanchez decided not to issue API# for geothermal wells in New Mexico at this time, which includes the API#s specified in the OCD Discharge Permit GTHT-001.

The OCD does have an RBDMS tracking system and OCD Online query system for manual searches of geothermal thumbnails placed under designated permit numbers by the OCD, i.e., "GTLT" and "GTHT" searchable order names with designated order numbers, which provides a manual method of searching for well information, etc. However, API# searches for geothermal wells similar to oil and gas wells is not possible at this time.

This is the reason the OCD is fixated on the Well ID number for bond tracking, well files, etc. because it presents the main means to track geothermal project related activity with well information under the existing RBDMS geothermal tracking system.

I hope this helps. Please contact me if you have questions or need further assistance in this matter. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
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E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Janney, David [mailto:david.janney@amec.com]
Sent: Friday, July 13, 2012 3:15 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Well 55-7

Greetings Mr. Chavez:

Do you have the API # for the 55-7 well?

I don't seem to have it in my records and have checked the OCD on-line files where I would expect it and did not locate it.

Regards,

David

Chavez, Carl J, EMNRD

From: Michelle Henrie <michelle@mhenrie.com>
Sent: Thursday, July 12, 2012 11:31 AM
To: 'Janney, David'; VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Cc: 'Michael Hayter'
Subject: RE: Temperature Distribution
Attachments: A-567.pdf

Just to clarify. I believe that the well shown on this report is the McCants well that was placed on State Lands under lease number GTR-304—a lease which has expired. See attached. The State Land Office now claims any water rights associated with that well (which is A-567 in OSE records). I have never seen that well, so hence the reason I believed it to be P&A'd. I have not found any P&A records.

There is a different McCants well located where McCants owns the surface, which is well 47 on our map. I do not know the history of that well but it appears to be a separate well to me.

From: Janney, David [mailto:david.janney@amec.com]
Sent: Thursday, July 12, 2012 11:17 AM
To: VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Cc: Michelle Henrie; Michael Hayter
Subject: Temperature Distribution

Greetings:

Please find attached a DOE report that includes a temperature contour figure (page 14 of the pdf [page 6, Figure 2 in the document]) that presents the temperature distribution in the shallow subsurface.

We believe that this will provide the temperature gradient information that you requested in our meeting on July 11.

We believe that the well indicated as the McCants State well in this figure has been P&Ad.

Please feel free to contact me with any questions you may have on this issue.

Regards,

David W. Janney, PG
Senior Geologist
AMEC Environment and Infrastructure
8519 Jefferson, NE
Albuquerque, NM 87113
505.821.1801 off
505.821.7371 fax
505.449.8457 cell

READ INSTRUCTIONS ON BACK Revised June 1991

APPLICATION TO APPROPRIATE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES

3-01924 $5.00

1. Name and mailing address of applicant:

Thomas W. McCourt
HC65 Box 265
Animas, NM

File No. A-567

2. Describe well location under one of the following subheadings:

a. NE ¼ NE ¼ SW ¼ of Sec. 7 Twp. 25 Rge. 19 NMPM, in _____ County.

b. X = _____ feet, Y = _____ feet, New Mexico Coordinate System _____ Zone in the _____ Grant.

3. Approximate depth (if known) 250' feet; outside diameter of casing 9 inches.

Name of driller (if known) Unknown

4. Use of water (check use applied for):

✓ One household, non-commercial trees, lawn and garden not to exceed one acre.

____ Livestock watering.

____ More than one household, non-commercial trees, lawns and gardens not to exceed a total of one acre.

____ Drill and test a well intended to be used for domestic, drinking and sanitary or stock water purposes in conjunction with the building or dwelling unit.

____ Drinking and sanitary purposes and the irrigation of non-commercial trees, shrubs and lawns in conjunction with a commercial operation.

____ Prospecting, mining or drilling operations to discover or develop natural resources.

____ Construction of public works, highways and roads.

If any of the last three items were marked, give name and nature of business under Remarks (Item 5).

STATE ENGINEER OFFICE
DEMING, NEW MEXICO
'96 MAR 1 AM 10 38

5. Remarks: _____

I, Thomas W. McCourt, affirm that the foregoing statements are true to the best of my knowledge and belief and that development shall not commence until approval of the permit has been obtained.

Thomas W. McCourt, Applicant

By: _____ Date: 2-29-96

ACTION OF STATE ENGINEER

This application is approved for the use indicated, subject to all general conditions and to specific conditions numbered 4 on the reverse side hereof. This permit will automatically expire unless this well is drilled or driven and the well record filed on or before March 31, 1997.

Thomas C. Turney, State Engineer

By: R Rogers
R.Q. Rogers, Supervisor, District 3

Date: March 5, 1996 File No. A-567

GENERAL CONDITIONS OF APPROVAL

A. The maximum amount of water that may be appropriated under this permit is 3 acre-feet in any year.
B. The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated. A licensed driller shall not be required for the construction of a driven well; provided, that the casing shall not exceed two and three-eights (2 3/8) inches outside diameter (Section 72-12-12).
C. Driller's well record must be filed with the State Engineer within 10 days after the well is drilled or driven. Failure to file the well record within that time shall result in automatic cancellation of the permit. Well record forms will be provided by the State Engineer upon request.
D. The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.
E. If the well under this permit is used at any time to serve more than one household or livestock in a commercial feed lot operation, or for drinking and sanitation purposes in conjunction with a commercial operation, the permittee shall comply with Specific Conditions of Approval number 5(b).
F. In the event this well is combined with other wells permitted under Section 72-12-1 New Mexico Statutes Annotated, the total outdoor use shall not exceed the irrigation of one acre of non-commercial trees, lawn, and garden, or the equivalent outside consumptive use, and the total appropriation for household and outdoor use from the entire water distribution system shall not exceed 3 acre-feet in any year.
G. If artesian water is encountered, all rules and regulations pertaining to the drilling and casing of artesian wells shall be complied with.

SPECIFIC CONDITIONS OF APPROVAL

(Applicable only when so indicated on the other side of this form.)

1. Depth of the well shall not exceed the thickness of the (a) valley fill or (b) Ogallala formation.
2. The well shall be constructed to artesian well specifications and the State Engineer shall be notified before casing is landed or cemented.
3. Appropriation and use of water under this permit shall not exceed a period of one year from the date of approval.
4. Use shall be limited to household, non-commercial trees, lawn and garden not to exceed one acre and/or stock use.
5. A totalizing meter shall be installed before the first branch of the discharge line from the well and the installation shall be acceptable to the State Engineer; the Engineer shall be advised of the make, model, serial number, date of installation, and initial reading of the meter prior to appropriation of water; pumping records shall be submitted to the District Supervisor: (a) for each calendar month, on or before the 10th day of the following month (b) on or before the 10th of January, April, July and October of each year for the three preceding calendar months (c) for each calendar year on or before the 10th day of January of the following year.
6. The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.
7. Final approval for the use of the well shall be dependent upon a leakage test made by the State Engineer.
8. Use shall be limited strictly to household, drinking and sanitary purposes; water shall be conveyed from the well to the place of use in closed conduit and the effluent returned to the underground so that it will not appear on the surface. No irrigation of lawns, gardens, trees or use in any type of pool or pond is authorized under this permit.
9. No water shall be used from this well unless and until a permit has been issued to an applicant who intends to use the water for any of the purposes described in § 72-12-1.

INSTRUCTIONS

The application shall be made in the name of the actual user of the well for the purpose specified in the application.

The application shall be filed in triplicate and forwarded with a $5.00 filing fee to the State Engineer.

A separate application must be filed for each well to be drilled or used.

If well to be used is an existing well, an explanation (and the file number, if possible) should be given under Remarks (Item 5).

Applications for appropriation, well records and requests for information in the following basins should be addressed to the State Engineer at the location indicated.

Bluewater, Estancia, Rio Grande, Sandia, Gallup and San Juan Basins
District No. 1, 3311 Candelaria, NE, Suite A, Albuquerque, NM 87107

Capitan, Carlsbad, Curry County, Fort Sumner, Hondo, Jal, Lea County, Penasco, Portales, Roswell, Tucumcari and Upper Pecos Basins District No. 2, 1900 West Second Street, Roswell, NM 88201

Animas, Gila-San Francisco, Lordsburg, Mimbres, Nutt-Hockett, Playas, San Simon and Virden Valley Basins
District No. 3, P.O. Box 844, Deming, NM 88031

Lower Rio Grande, Tularosa, Hueco, Las Animas Creek and Hot Springs Basins
District No. 4, 133 Wyatt Drive, Suite 3, Las Cruces, NM 88005

Canadian River Basin
State Engineer Office, P.O. Box 25102, Santa Fe, NM 87504-5102

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

May 30, 2006

Steven G Hughes, Associate Counsel
New Mexico State Land Office
310 Old Santa Fe Trail
P.O. Box 1148
Santa Fe, New Mexico 87504-1148

Greetings:

I am in receipt of your letter of January 27, 2006 to state engineer John D'Antonio regarding water rights associated with POD A 00567 on lands previously leased by Mr. Thomas W. McCants in Hidalgo County. Please excuse the lack of timeliness in my reply.

Permit A 00567, approved March 3, 1996 in accordance with NMSA 72-12-1, permitted the diversion of an amount of water not to exceed 3.0 acre-feet for household, non-commercial trees, lawn and garden and/or stock use. This permit is not transferable, but may still be valid for the purposes for which it was approved.

If you have questions about this matter, or if further discussion would be helpful, please advise.

Sincerely,

Charles L. Jackson, MPA
District 3 Supervisor

CLJ:clj

PATRICK H. LYONS
COMMISSIONER

State of New Mexico
Commissioner of Public Lands
310 OLD SANTA FE TRAIL
P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

COMMISSIONER'S OFFICE
Phone (505) 827-5760
Fax (505) 827-5766
www.nmstatelands.org

January 24, 2006

Mr. John D'Antonio P.E.
New Mexico State Engineer
Office of the State Engineer
PO Box 25102
Santa Fe, NM 87504-5102

JAN 2006

Dear Mr. D'Antonio:

Mr. Thomas W. McCants leased the SW quarter of the NE quarter of the NE quarter of Section 7, Township 25 South, Range 19 West in Hidalgo County under New Mexico State Land Office lease GTR-304. Mr. McCants drilled a well on this site as a result of his geothermal lease and obtained a permit (A-00567) from your office for domestic use. The New Mexico State Land Office terminated geothermal lease GTR-0304 with Mr. McCants effective September 7, 2001 and expired all his rights to this site.

The Commissioner wishes to put the Office of the State Engineer on notice that certain water rights, located on property at Section 07, Township 25 South, Range19 West, NE / NE / SW, are the property of the trust administered by the Commissioner.

There are several reasons for this notice. First, in this particular instance, water rights have been abandoned by Mr. McCants the lessee of the property. The lease was terminated in 2001, and although all other improvements have been removed, the well and rights have not. The lessee's failure to renew, and the abandonment of these improvements on the former leasehold, is a matter of record.

Further, for the reasons set out below, the Commissioner considers all water rights developed by lessees on trust lands to be developed for the primary benefit of the trust. The Commissioner cannot make improvements on trust lands, *see Lake Arthur Drainage District v. Fields*, 27 N.M. 183 (1921). He therefore relies on lessees and other users to make improvements. Water rights are improvements per NMSA 1978, § 19-7-15. The Commissioner's duties are strictly owed to the trust and its beneficiaries in accordance with *Ervien v. United States*, 251 U.S. 41 (1919). Therefore lessee improvements are allowed only because they are for the benefit of the trust. A water right is owned by the party who develops it and puts it to beneficial use (72-5-10), unless a lease or other contract provides to the contrary. A lessee is simply entitled to develop and use water on trust lands as an incident of his lease, but it is the Commissioner who is the beneficial owner and user of the water rights developed. *See Department of State Lands v.*

Pettibone, 702 P.2d 948, 955 (Mont. 1985). A water right is an item of personal property apart from the land where the water is appropriated, except in the case of appurtenant rights, *see KRM Inc. V. Caviness*. A lessee or easement holder cannot obtain a valuable private property right on trust lands, this being "a thing of value directly or indirectly derived from" the trust lands, without full compensation to the Commissioner per *Ervien v. United States*, 251 U.S. 41 (1919). Leases and easements do not provide for payment for water rights, and nothing can be obtained from the trust by implication, *see Bogle Farms v. Baca*, 1996-NMSC-051, 122 N.M. 422, 431, 925 P.2d 1184. Since a lease or easement does not allow the holder to obtain a free water right at the trust's expense, those water rights are developed for the benefit of the trust.

The Commissioner intends to begin leasing out these rights in the near future. In the interim, the purpose of this letter is to put you on notice of the status of the subject water rights in the event that any person or entity attempts to otherwise dispose of them. Please add this letter to the Office of the State Engineer's file on POD number A 00567.

Sincerely,
Patrick H. Lyons
Commissioner of Public Lands

By: Stephen G. Hughes

Steven G. Hughes, Associate Counsel
Office of the General Counsel
New Mexico State Land Office

PHL/JHB/ewd

New Mexico Office of the State Engineer
Water Right Summary

Back

DB File Nbr: A 00567
Primary Purpose: DOM 72-12-1 DOMESTIC ONE HOUSEHOLD
Primary Status: PMT Permit
Total Acres: 0
Total Diversion: 3
Owner: THOMAS W. MCCANTS

Documents on File

Doc	File/Act	Status 1 2 3	Trans_Desc	From/To	Acres	Diversion	Consumpt
72121	03/05/1996	PMT LOG PRC	A 00567	T	0	3	

Point of Diversion POD Number	Source	Tws	Rng	Sec	(qtr are 1=NW 2=NE 3=SW 4=SE) (qtr are biggest to smallest) q	q	q	X Y are in Feet Zone	X	Y	UTM are in UTM_Zone	E
A 00567	Shallow	25S	19W	07	2	2	3				13	

New Mexico Office of the State Engineer
Transaction Summary

Back

72121 All Applications Under Statute 72-12-1

Trn_nbr: 160170 **Trn_desc:**A 00567 **File Date:**03/01/1

Primary status: PMT Permit
Secondary status: LOG Well Log Received
Person assigned: *******
Applicant: THOMAS W. MCCANTS

Events

	Date	Type	Description	Comment
	03/05/1996	APP	Application Received	*
	03/05/1996	FIN	Final Action on Application	
	03/05/1996	WAP	General Approval Letter	
	09/25/1996	LOG	Well Log Received	*
	09/26/2005	SAR	Set Application Received	

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
A 00567	0	3	0	DOM 72-12-1 DOMESTIC ONE HOUSEHOLD

Point of Diversion
A 00567 25S 19W 07 NE NE SW in Hidalgo County

Conditions
4 :Use shall be limited to household, non-commercial trees, lawn and garden not to exceed one acre and/or stock use.

Action of the State Engineer
Approval Code: A Approved
Action Date: 03/05/1996
log due date: 03/31/1997
State Engineer: Thomas C. Turney
By:

New Mexico Office of the State Engineer
Point of Diversion Summary

Back

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y
A 00567	25S	19W	07	2	2	3			

Driller Licence: 806 ELBROCK DRILLING, L.L.C.
Driller Name: ELBROCK, EDWARD
Source: Shallow
Drill Start Date: 06/12/1996
Drill Finish Date: 06/16/1996
Log File Date: 09/25/1996
PCW Received Date:
Pump Type:
Pipe Discharge Size:
Casing Size: 6.63
Estimated Yield:
Depth Well: 200
Depth Water: 62

Water Bearing Stratifications:

Top	Bottom	Description
0	6	Other/Unknown
6	15	Sandstone/Gravel/Conglomerate
15	26	Other/Unknown
26	55	Sandstone/Gravel/Conglomerate
55	60	Other/Unknown
60	70	Sandstone/Gravel/Conglomerate
70	76	Other/Unknown
76	95	Other/Unknown
95	130	Other/Unknown
130	200	Sandstone/Gravel/Conglomerate

Commissioner of Public Lands
Patrick H. Lyons
310 OLD SANTA FE TRAIL P.O. BOX 1148
SANTA FE, NEW MEXICO 8750[illegible]-1148

ALBUQUERQUE NM 874

24 JAN 2006

U.S. POSTAGE

[illegible] John D'An[illegible]
New Mexico [illegible]er
[illegible]
P.O. Box 2510[illegible]
Santa Fe, NM [illegible]

87504+5102

MEMORANDUM

File

STATE ENGINEER OFFICE
Deming, New Mexico
June 10, 1996

FILE A-567

TO R. Q. Rogers

FROM Larry W. Lytle LWL

SUBJECT Domestic Permit

PERMITTEE Thomas W. McCants

COMMENTS June 10, 1996, Tom McCants phone State Engineer Office. Mr. McCants stated driller had hit clay and not much water producing strata. Mr. McCants asked if he could put 8 inch casing in the bottom of this hole, so that he could pump what water was available and choke down to 6 5/8 inch casing at top of hole. This would allow him to use this well and not have to redrill.

I told Mr. McCants OK, but that I would discuss with supervisor.

LWL:jp

Telecon with Mr. McCants 6-17-96. Mr. McCants advised SEO that this well was cased top to bottom with 6" casing.

LWL/6/17/96 2 pm.

Field Report by EEK to follow.

---

noted PDR June 26, 1996

STATE OF NEW MEXICO
STATE ENGINEER OFFICE
DEMING

THOMAS C. TURNEY
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
FAX: (505) 546-2290

March 5, 1996

FILE: A-567

Thomas W. McCants
HC65, Box 265
Animas, New Mexico 88020

Dear Mr. McCants:

Enclosed is your copy of Domestic Well Permit A-567, which has been approved.

"Guidelines for the installation of Domestic Water Supply Wells in New Mexico" are enclosed for your review.

Your attention is called to the reverse side of this permit to General Conditions of Approval, particularly B and D, which state as follows:

B. The well shall be drilled only by a driller licensed in the State of New Mexico....

D. The casing shall not exceed 7 inches....

Well Record shall be filed in this office within ten (10) days after completion of drilling.

This permit will expire March 31, 1997, unless the well is drilled and the well record filed in this office on or before that date.

Sincerely,

R. Q. Rogers
Supervisor, District 3

By: Larry W. Lytle
Larry W. Lytle
Animas Basin Supervisor

RQR:np
Encls: Approved Permit
Guidelines
cc: State Engineer

Chavez, Carl J, EMNRD

From: Tim McCants <dunjabp@yahoo.com>
Sent: Thursday, July 12, 2012 10:12 AM
To: Michelle Henrie
Cc: Chavez, Carl J, EMNRD; Tom McCants; Bill McCants; Brooks, David K., EMNRD
Subject: Re: C112 Application filed by Los Lobos Renewable Energy

Mrs. Henrie,

Please send notice to 120 N. Aransas St. Alice, Texas 78332 to my attention. And no there is no misrepresentation as this action being a waiver on the behalf of your client(s), it's what is required under the regulatory authority regarding injection wells which needs to be followed.

As your clients representative, you now personally have a copy of the McCants Operating Agreement within the Lightning Dock KGRA. It is expected from this point forward that your client(s) do not "overlook" our rights as part owners of the Lightning Dock KGRA mineral resource, to include patent mineral rights and a majority of surface rights. Communication with visibility between the McCants and Los Lobos is key as your client(s) move forward with the development of this geothermal resource.

Respectfully,

Timothy McCants
361-877-3528

From: Michelle Henrie <michelle@mhenrie.com>
To: 'Tim McCants' <dunjabp@yahoo.com>; "'Brooks, David K., EMNRD'" <david.brooks@state.nm.us>
Cc: "'Chavez, Carl J, EMNRD'" <CarlJ.Chavez@state.nm.us>
Sent: Wednesday, July 11, 2012 6:03 PM
Subject: RE: C112 Application filed by Los Lobos Renewable Energy

Mr. Brooks, Mr. McCants,

I have not had a chance to analyze this situation fully, so please do not misinterpret this email as a waiver of any of my clients rights. Nevertheless, it seems that it's easy enough to send notice. A copy of the C-112 Application is attached.

Mr. McCants, the address in the Operating Agreement is Star Route, Box 265, Animas, New Mexico 88020. Is this address current? If so, I'll follow up with a hard copy by certified mail.

Michelle Henrie

From: Tim McCants [mailto:dunjabp@yahoo.com]
Sent: Tuesday, July 10, 2012 11:16 AM
To: Brooks, David K., EMNRD
Cc: Michelle Henrie (michelle@mhenrie.com); Chavez, Carl J, EMNRD
Subject: Re: C112 Application filed by Los Lobos Renewable Energy

Mr. Brooks,

Please see attached operating agreement that was signed by the initial Lightning Dock lease holder, Amax. This operating agreement grants the surface holder (McCants) the rights of down to 1,000 feet in depth of geothermal mineral for any use other then electrical generation within the half-mile radius of the proposed injection well. This agreement is still in place, see page 13, Successors In Interest. Mr Hayter is fully aware of this agreement and it's good standing with whoever succeeds with the Lightning Dock KGRA, which currently is Los Lobos Renewable Energy.

Also attached is transfer of ownership for an exploratory well on our surface property.

Respectfully,

Timothy McCants
361-877-3528

From: "Brooks, David K., EMNRD" <david.brooks@state.nm.us>
To: "dunjabp@yahoo.com" <dunjabp@yahoo.com>
Cc: "Michelle Henrie (michelle@mhenrie.com)" <michelle@mhenrie.com>; "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
Sent: Tuesday, July 10, 2012 9:55 AM
Subject: C112 Application filed by Los Lobos Renewable Energy

Dear Mr. McCants

Rule 19.14.93.8.B NMAC prescribes that notice of an application to permit a geothermal injection or disposal well shall be furnished to "all geothermal lessees, if any there be, within one-half mile radius of the proposed injection/disposal well."

The operator, Los Lobos Renewable Power, LLC, represented to us that you were not included in that description. If this representation was incorrect, please furnish us copies of the geothermal lease and any assignments thereof under which you hold.

Sincerely

David K. Brooks
Assistant General Counsel

Chavez, Carl J, EMNRD

From: Michelle Henrie <michelle@mhenrie.com>
Sent: Wednesday, July 11, 2012 5:04 PM
To: 'Tim McCants'; Brooks, David K., EMNRD
Cc: Chavez, Carl J, EMNRD
Subject: RE: C112 Application filed by Los Lobos Renewable Energy
Attachments: G-112 for 63-7.pdf

Mr. Brooks, Mr. McCants,

I have not had a chance to analyze this situation fully, so please do not misinterpret this email as a waiver of any of my clients rights. Nevertheless, it seems that it's easy enough to send notice. A copy of the C-112 Application is attached.

Mr. McCants, the address in the Operating Agreement is Star Route, Box 265, Animas, New Mexico 88020. Is this address current? If so, I'll follow up with a hard copy by certified mail.

Michelle Henrie

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Sent: Tuesday, July 10, 2012 11:16 AM
To: Brooks, David K., EMNRD
Cc: Michelle Henrie (michelle@mhenrie.com); Chavez, Carl J, EMNRD
Subject: Re: C112 Application filed by Los Lobos Renewable Energy

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Respectfully,

Timothy McCants
361-877-3528

From: "Brooks, David K., EMNRD" <david.brooks@state.nm.us>
To: "dunjabp@yahoo.com" <dunjabp@yahoo.com>
Cc: "Michelle Henrie (michelle@mhenrie.com)" <michelle@mhenrie.com>; "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
Sent: Tuesday, July 10, 2012 9:55 AM
Subject: C112 Application filed by Los Lobos Renewable Energy

Dear Mr. McCants

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The operator, Los Lobos Renewable Power, LLC, represented to us that you were not included in that description. If this representation was incorrect, please furnish us copies of the geothermal lease and any assignments thereof under which you hold.

Sincerely

David K. Brooks
Assistant General Counsel

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

CONFIDENTIAL

Form C-112
Adopted 10-1-78
Revised 10-1-78

APPLICATION TO PLACE WELL ON INJECTION-GEOTHERMAL RESOURCES AREA

Operator: Los Lobos Renewable Power, LLC		Address: 136 S. Main Street, Salt Lake City, UT 84101	
Lease Name: Federal Lease No. NM 34790	Well No.: LDG-63-7	Field:	County: Hidalgo
Location: Unit Letter G; Well is Located 1722 Feet From The North Line And 1420 Feet From The East Line; Section 7; Township 25 S; Range 19 W; NMPM.			

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
Conductor Pipe	20"	150'	375	GL	tag with tape
Surface Casing	13.375"	1500'	915	GL	tag with tape
Long String					
Tubing	9.625"	3400'	Name, Model and Depth of Tubing Packer: NA		

Name of Proposed Injection Formation: Horquilla Fm.	Top of Formation: ~ 1400'	Bottom of Formation: 3000' - 4000
Is Injection Through Tubing, Casing, or Annulus?: Production Casing 9.625"	Perforations or Open Hole?: Open Hole	Proposed Interval(s) of Injection: 1400' - 3400'
Is This a New Well Drilled For Injection?: Yes	If Answer is No, For What Purpose was Well Originally Drilled?	Has Well Ever Been Perforated in Any Zone Other Than the Proposed Injection Zone?: Not Applicable - No

List All Such Perforated Intervals and Sacks of Cement used to Seal Off or Squeeze Each: Not Applicable

Depth of Bottom of Deepest Fresh Water Zone in This Area: Unknown	Is This Injection for Purpose of Pressure Maintenance or Water Disposal? (See Rules 501 and 502): Re-injection of produced geothermal fluids				
Anticipated Daily Injection Volume: Gallons	Minimum: 2,169,000	Maximum: 3,000,000	Open or Closed Type System: Open System	Is Injection to be by Gravity or Pressure?: Gravity	Approx. Pressure (psi): < 100

Answer Yes or No Whether the Following Waters are Mineralized to such a Degree as to be Unfit for Domestic, Stock, Irrigation, or Other General Use:	Water to be Injected: No	Natural Water in Injection Zone: No	Are Water Analyses Attached?: Yes (Well TFD 55-7)

Name and Address of Surface Owner (or Lessee, if State or Federal Land): Rosette, Inc., P.O. Box 1618, Roswell, NM 88202-1618

List Names and Addresses of all Operators Within One-Half (½) Mile of This Injection Well:

Rosette, Inc., P.O. Box 1618 Roswell, NM 88202-1618

Americulture, Inc. 25 Tilapia Trail, Animas, NM 88020

Have Copies of this Application Been Sent to Each Operator Within One-Half Mile of this Well?	Yes ✓	No	
Are the Following Items Attached to this Application (see Rule 503)	Plat of Area: Yes ✓	No	Electrical Log: Yes	No ✓	Diagrammatic Sketch of Well: Yes ✓	No

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

David Stanley, PG (Signature) — Agent for Los Lobos Renewable Power, LLC (Title) — May 22, 2012 (Date)

NOTE: Should waivers from all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Division will hold the application for a period of 20 days from the date of receipt by the Division's Santa Fe office. If at the end of the 20-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing. If the applicant so requests, SEE RULE 503.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, July 11, 2012 8:08 AM
To: Janney, David (david.janney@amec.com); Henslee, Gale W (Gale.Henslee@XCELENERGY.COM)
Cc: Brooks, David K., EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD
Subject: Geothermal Regulations Administrative Process for Well Testing (Injection vs. Production Wells)
Attachments: OCD Geothermal Admin Process Letter 5-31-2012 .pdf

Mr. Janney, et al.:

Good morning.

Based on your G-103 inquiry to produce from the LDG-55-7 well during the well test at yesterday's meeting. The OCD needs to receive a G-104 with associated attached forms and information for all existing production wells. Any new production wells may not have the additional forms until after the well is completed and the OCD COA may be to provide the forms in advance of production for OCD approval?

You may recall the OCD letter (see attachment) to Los Lobos Renewable Power, LLC dated May 31, 2012 that outlines the geothermal administrative forms submittal process to achieve geothermal well exploration testing.

G-103 submittals do not apply to well production, but do apply to the following:

19.14.54.8 SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELL (FORM G-103): Form G-103 is a dual purpose form to be filed with the Santa Fe office of the division to obtain approval prior to commencing certain operations and also to report various completed operations.

A. Form G-103 as a notice of intention: form G-103 shall be filed in duplicate by the operator and approval obtained from the division prior to:

(1) Effecting a change of plans from those previously approved on form G-101 or form G-103.
(2) Altering a drilling wells casing program or pulling casing or otherwise altering an existing well's casing installation.
(3) Temporarily abandoning a well. (See Rule G-303 B) [now 19.14.73.9 NMAC].
(4) Plugging and abandoning a well. (See Rules G-302 and G-303 A) [now 19.14.72 NMAC and 19.14.73.8 NMAC].
(5) Performing remedial work on a well which, when completed, will affect the original status of the well. (This shall include making new perforations in existing wells or squeezing old perforations in existing wells, but is not applicable to new wells in the process of being completed not to old wells being deepened or plugged back to another zone when such recompletion has been authorized by an approved form G-101, application for permit to drill, deepen, or plug back, nor to acidizing, fracturing or cleaning out previously completed wells.).
(6) In the case of well plugging operations, the notice of intention shall include a detailed statement of the proposed work, including plans for shooting and pulling casing, plans for mudding, including weight of mud, plans for cementing, including number of sacks of cement and depths of plugs and the time and date of the proposed plugging operations. (See Rules G-302 and G-303 A) [now 19.14.72 NMAC and 19.14.73.8 NMAC].

B. Form G-103 as a Subsequent Report. Form G-103 as a subsequent report of operations shall be filed in accordance with the section of this Rule applicable to the particular operation being reported. Form G-103 is to be used in reporting such completed operations as:

(1) Commencement of drilling operations
(2) Casing and cement test
(3) Altering a well's casing installation
(4) Temporary abandonment
(5) Plugging and Abandonment
(6) Plugging back or deepening
(7) Remedial work
(8) Change in ownership of a drilling well
(9) Such other operations which affect the original status of the well but which are not specifically covered herein.

C. Filing Form G-103 as a Subsequent Report. Information to be entered on form G-103, subsequent report, for a particular operation is as follows:

(1) Report of Commencement of Drilling Operations. Within ten days following the commencement of drilling operations, the operator of the well shall file a report thereof on form G-103 in duplicate. Such report shall indicate the hour and the date the well was spudded.
(2) Report of Results of Test of Casing and Cement Job; Report of Casing Alteration. A report of casing and cement test shall be filed by the operator of the well within ten days following the setting of each string of casing or liner. Said report shall be filed in duplicate on form G-103 and shall present a detailed description of the test method employed and the results obtained by such test, and any other pertinent information required by Rule G-108 B(5) [now Paragraph (5) of Subsection B of 19.14.27.8 NMAC]. The report shall also indicate the top of the cement and the means by which such top was determined. It shall also indicate any changes from the casing program previously authorized for the well.
(3) Report of Temporary Abandonment. A report of temporary abandonment of a well shall be filed by the operator of the well within ten days following completion of the work. The report shall be filed in duplicate and shall present a detailed account of the work done on the well, including location and type of plugs used, if any, type and status of surface and downhome equipment, and other pertinent information relative to the overall status of the well.
(4) Report on Plugging of Well.
(a) A report of plugging operations shall be filed by the operator of the well within 30 days following completion of plugging operations on any well. Said report shall be filed in triplicate on form G-103 and shall include the date the plugging operations were begun and the date the work was completed, a detailed account of the manner in which the work was performed including the depths and lengths of the various plugs set, the nature and quantities of materials employed in the plugging operations including the weight of the mud used, the size and depth of all casing left in the hole and any other pertinent information. (See Rules G-301 - G-303) [now 19.14.71 NMAC - 19.14.73 NMAC] regarding plugging operations.
(b) No plugging report will be approved by the division until all forms and reports on the well have been filed and the pits have been filled and the location leveled and cleared of junk. It shall be the responsibility of the operator to contact the Santa Fe office of the division when the location has been so restored in order to arrange for an inspection of the plugged well and the location by a division representative.
(5) Report of Remedial Work. A report of remedial work performed on a producing well or former producing well shall be filed by the operator of the well within 30 days following completion of such work. Said report shall be filed in duplicate on form G-103 and shall present a detailed account of the work done and the manner in which such work was performed; the daily production from the well both prior to and after the remedial operation; the size and depth of shots; the quantity of sand, acid, chemical or other materials employed in the operation and any other pertinent information. Among the types of remedial work to be reported on form G-103 are the following:
(a) Report on shooting, fluid fracturing or chemical treatment of a previously completed well
(b) Report on squeeze job
(c) Report on setting of liner or packer
(d) Report of any other remedial operations which are not specifically covered herein
(e) Report on deepening or plugging back
(6) Report of Change in Ownership of a Drilling Well. A report of change of ownership shall be filed by the new owner of any drilling well within ten days following actual transfer of ownership. Said report shall be filed in triplicate on form G-103 and shall include the name and address of both the new owner and the previous owner, the effective date of the change of ownership and any other pertinent information. No change in the ownership of a drilling well will be approved by the division unless the new owner has an approved bond in accordance with Rule G-101 [now 19.14.20 NMAC] and has filed satisfactory "Designation of Agent (Rule G-100) [now 19.14.1.17 NMAC]. The former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule G-101(b) [now Subsection B of 19.14.20.8 NMAC]. (Form G-104 [now 19.14.23 NMAC] shall be used to report transfer of ownership of a completed well; see Rule G-204) [now 19.14.55 NMAC].
(7) Other Reports on Wells. Reports on any other operations which affect the original status of the well which are not specifically covered herein shall be submitted to the division on form G-103, in triplicate, by the operator of the well within ten days following the completion of such operation.
[Recompiled 12/31/01]

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/

"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

May 31, 2012

Los Lobos Renewable Power, L.L.C.
c/o: Mr. David Janney, PG
8519 Jefferson, NE
Albuquerque, NM 87113

Re: Lightning Dock Geothermal Project (GTHT-001), Hidalgo County, New Mexico Geothermal Regulatory Requirements

Dear Mr. Janney:

This letter sets forth the regulatory requirements under the Geothermal Resources Conservation Act for Los Lobos Renewable Power, L.L.C.'s (Los Lobos) contemplated well test as described in a meeting in Santa Fe on May 8, and in a telephone conversation on May 25. This letter will serve as a response to Ms. Henrie's (Los Lobos Attorney) e-mail to OCD Attorney, Mr. David Brooks, on May 29.

We understand that the proposed well test will involve production from one or more of your existing production wells into an injection well for a period of thirty days. The produced water will be either directly injected or temporarily stored or contained before injection into the injection well so that no discharge occurs to land or "waters of the state", and no other chemicals or fluids will be added or commingled.

We understand that Los Lobos will be drilling a new well (Well 63-7) (hereinafter called "the proposed injection well") that will be used for injection of water pumped from the geothermal reservoir production well(s) during your contemplated well test. Please note that Los Lobos will need to communicate and/or coordinate with the appropriate agencies based on the well test to ensure that it is satisfying any regulatory requirements or objectives concurrently with its own well testing objectives. This will help avoid miscommunications based on the well testing in the future. The proposed injection well will also be one of the wells you may use to re-inject water into the geothermal reservoir for commercial production of geothermal power.

Permitting the Proposed Injection Well

You have filed a Form G-101 (Application for Permit to Drill) for the proposed injection well with our Artesia District Office. Upon receipt of the approved G-101 and OCD bond approval, you may commence drilling the well.

You have filed a Form G-112 (Application to Place Well on Injection) for the proposed injection well with the Environmental Bureau in our Santa Fe Office. That form is currently being reviewed and there is a 20-day waiting period before the G-112 may be approved. Subject to the OCD's receipt of proof of mailing of the notices required by 19.14.93.8.B NMAC, which you indicated on May 25 that you were sending to the OCD, the 20-day period begins to run from the later of the date (May 24) on which

the OCD received your Form G-112, or the date on which the required notices were mailed to offsetting lease holders.

Prior to commencement of injection into the proposed injection well, including injection of water extracted during the well test, you must also file Form G-104, with required attachments to the extent the information may be provided, in accordance with 19.14.55.8, and we must approve this form. Nothing in Rule 19.14.55.8 states or indicates that G-104 approval is required only for commencement of injection associated with commercial production, as opposed to injection for testing. However, once the G-104 authorizing injection is approved for the proposed injection well that well will be a permitted injection well and no further G-104 filing will be required unless ownership or operation of the well changes, or the G-112 is modified to change the terms of the injection authority. Please note that there will only be one G-104 submittal for each injection well, while two G-104 submittals are required for each production well used in the well test.

No notice to other parties is required in connection with the G-104 process.

Permitting Production Wells for Proposed Well Test

As stated above, Rule 19.14.55.8 does not distinguish between the requirements for placing a well on production or injection for testing versus commercial production. We therefore conclude that you must file and obtain our approval of Form G-104, with required attachments, for each production well which you will produce for well test purposes prior to commencing the test.

For production wells, however, the Form G-104 for the well test will not include all the data required for approval of the well for commercial production, and accordingly will be only a "Preliminary G-104". The Preliminary G-104 for the well test should specify the length of time, estimated production volume, and flow rate that the particular production well will be produced for purposes of the well test. A "Final G-104" with the required attachments and complete well information must be filed and possibly approved by the OCD for each production well prior to placing each production well on commercial production.

Please contact me if you have questions, comments or other concerns regarding these requirements, or if we can be of further assistance.

Sincerely,

Carl J. Chavez

Carl J. Chavez
Environmental Engineer

XC: OCD Online "General Correspondence" Thumbnail
OCD Artesia District Office
Los Lobos, Michelle Henrie
Mr. Michael Smith, Las Cruces BLM Office
Ms. Haddy Phillips, Deming District Office of State Engineer Office

Chavez, Carl J, EMNRD

From: Tim McCants <dunjabp@yahoo.com>
Sent: Tuesday, July 10, 2012 11:16 AM
To: Brooks, David K., EMNRD
Cc: Michelle Henrie (michelle@mhenrie.com); Chavez, Carl J, EMNRD
Subject: Re: C112 Application filed by Los Lobos Renewable Energy
Attachments: McCants Operating Agreement.pdf

Mr. Brooks,

Please see attached operating agreement that was signed by the initial Lightning Dock lease holder, Amax. This operating agreement grants the surface holder (McCants) the rights of down to 1,000 feet in depth of geothermal mineral for any use other then electrical generation within the half-mile radius of the proposed injection well. This agreement is still in place, see page 13, Successors In Interest. Mr Hayter is fully aware of this agreement and it's good standing with whoever succeeds with the Lightning Dock KGRA, which currently is Los Lobos Renewable Energy.

Also attached is transfer of ownership for an exploratory well on our surface property.

Respectfully,

Timothy McCants
361-877-3528

From: "Brooks, David K., EMNRD" <david.brooks@state.nm.us>
To: "dunjabp@yahoo.com" <dunjabp@yahoo.com>
Cc: "Michelle Henrie (michelle@mhenrie.com)" <michelle@mhenrie.com>; "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
Sent: Tuesday, July 10, 2012 9:55 AM
Subject: C112 Application filed by Los Lobos Renewable Energy

Dear Mr. McCants

Rule 19.14.93.8.B NMAC prescribes that notice of an application to permit a geothermal injection or disposal well shall be furnished to "all geothermal lessees, if any there be, within one-half mile radius of the proposed injection/disposal well."

The operator, Los Lobos Renewable Power, LLC, represented to us that you were not included in that description. If this representation was incorrect, please furnish us copies of the geothermal lease and any assignments thereof under which you hold.

Sincerely

David K. Brooks
Assistant General Counsel

McCan

OPERATING AGREEMENT AND AGREEMENT TO LEASE

THIS AGREEMENT, made and entered into this 18th day of July, 1979 by and between AMAX Exploration, Inc., a Delaware corporation, with offices at 4704 Harlan Street, Denver, Colorado 80212 (hereinafter called "AMAX") and Thomas W. McCants and Martha J. McCants, husband and wife, of Star Route, Box 265, Animas, New Mexico 88020 (hereinafter jointly called "McCants").

W I T N E S S E T H:

WHEREAS, the parties, either jointly or singularly, have an interest in and to certain real property located in Hidalgo County, New Mexico, which property, for the purposes of this Agreement, will be divided into three (3) tracts and separately identified as follows (hereinafter referred to collectively as the "Property" or individually as "Tract One", "Tract Two" or Tract Three"):

TRACT ONE:

Township 25 South, Range 20 West, NMPM
Section 1 - S1/2S1/2NE1/4; S1/2S1/2NW1/4, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4 (Containing 240 acres m/l)

TRACT TWO:

Township 25 South, Range 19 West, NMPM
Section 6 Lots 3, 4, 5, 6 and 7; SE1/4NW1/4
Section 7 - Lot 1

Exhibit "C"

Township 25 South Range 20 West, NMPM
Section 1 - W1/2SW1/4, SE1/4SW1/4, SW1/4SE1/4
Section 11 - NE1/4
Section 12 - N1/2NW1/4, N1/2NE1/4
(Containing 760 acres m/l)

TRACT THREE

Township 25 South, Range 19 West, NMPM
Section 6 - E1/2SW1/4 (From 1001 feet below the surface)
Section 7 - NE1/4NW1/4, NW1/4NE1/4 (From 1001 feet below the surface) (Containing 160 acres m/l)

WHEREAS, McCants owns the surface and minerals in and to Tract One and is desirous of leasing the Geothermal Rights therein to AMAX under the terms and conditions set forth in this Agreement, and

WHEREAS, McCants owns the surface rights only to Tracts Two and Three and the mineral rights to Tracts Two and Three are owned by the United States of America (hereinafter referred to as the "Government") which has leased the geothermal mineral rights under Tracts Two and Three (and other property) to AMAX in Geothermal Lease No. NM-34790 dated February 1, 1979 (hereinafter referred to as the "Federal Lease") and the parties are desirous of entering into an agreement for the cooperative use and development of the geothermal rights under Tracts Two and Three to the extent permitted under said Federal Lease and under the terms and conditions as set forth herein, and

WHEREAS, McCants is desirous of entering into an agreement with AMAX, under the terms and conditions as set forth herein, whereby McCants will have the right to utilize the geothermal resources in Tracts One, Two and Three for Non-Power uses (as hereinafter defined), and

WHEREAS, AMAX wishes to engage in geothermal exploration and development operations for Power-Use (as hereinafter defined) under Tracts One, Two and Three to the extent permitted by the parties rights and interests therein.

NOW, THEREFORE, in consideration of the premises, the mutual covenants and agreements herein contained and the sum of Ten Dollars ($10.00) in hand paid by each of the parties hereto and other good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, the parties hereby agree as follows:

I. Definitions

A. "Geothermal Resources" shall mean geothermal steam and associated geothermal resources including but not limited to (1) all products of geothermal processes embracing indigenous steam, hot water and hot brines and, (2) steam and other gases, hot water and hot brines resulting from the artificial introduction or injection of water, gas or other fluids into geothermal formations or the earth, and (3) heat or other associated energy found in geothermal formations.

B. "Power Use" shall mean the utilization of Geothermal Resources to generate electricity.

C. "Non-Power Use" shall mean utilizing Geothermal Resources for non-electrical generating use such as

space heating of greenhouses, kilns, drying rooms, housing, storage, washing of commercial products or bathing or similar uses.

II. Lease of Tract One

McCants agrees to lease to AMAX the Geothermal Resources in and to Tract One. Such agreement shall be executed simultaneously with this agreement and shall be in the form and with the terms and conditions of the Geothermal Resources Lease attached hereto as Exhibit "A". Said Lease shall herein be referred to as the "McCants Lease."

III. Term of this Agreement

Except for the McCants Lease described in Paragraph II above, which shall have its own terms as therein provided and except in the case of default by McCants or an election to terminate by AMAX, as hereinafter provided, the term of this Agreement shall be the same as the term of the Federal Lease.

IV. Rights and Obligations of McCant

A. In addition to those rights otherwise set forth in this Agreement, McCants shall have the right to:

1. Drill and develop Geothermal Resources for Non-Power Use on Tracts One and Two to a level not to exceed 1000 feet below the surface of the earth and on Tract Three to that level between

1001 and 1200 feet below the surface of the earth. Any attempt by McCants to drill or develop below such levels without the prior written consent of AMAX shall constitute an act of default under this Agreement.

2. Conduct on Tracts One, Two and Three any operations reasonable and necessary for any Non-Power Use of Geothermal Resources providing such operations and activities pursuant thereto do not unreasonably interfere with the activities of AMAX under this Agreement or under the McCants Lease.

B. In addition to the obligations otherwise set forth in this Agreement, McCants shall have the obligation to:

1. Satisfy and fully comply with any and all applicable local, state and federal ordinances, laws, regulations or requirements and all of the requirements and the terms and conditions of the Federal Lease.

2. Obtain at McCant's own expense all permits required to conduct the activities and operations permitted hereunder.

3. Bear all costs of McCant's activities and operations under this Agreement.

4. Timely file with the appropriate Federal and State agencies all reports that shall be required of McCants and to furnish AMAX with copies of any such reports on a timely basis.

5. Be bound in the conduct of McCant's operations by the terms and conditions of the Federal Lease and this Agreement does hereby incorporate by reference all of the terms and conditions of said Federal Lease.

6. Manage and conduct McCant's own operations. McCants shall have exclusive ownership, custody and control of all buildings, other improvements, materials and equipment used in connection with McCant's Non-Power Use operations under this Agreement. All individuals employed by McCants alone, and their working hours, rates of compensation and all other matters relating to their employment shall be determined solely by McCants AMAX shall not be responsible for or liable to any property or person for anything done or omitted to be done by McCants in the conduct of McCant's operations hereunder.

7. Defend, indemnify and hold harmless AMAX, its successors and assigns, from and against any and all claims, demands, losses, damages or

liabilities and from and against any and all costs and expenses arising out of or by reason of any activities of McCants conducted pursuant to or permitted by this Agreement.

V. Rights and Obligations of AMAX

A. In addition to those rights otherwise set forth in this Agreement and the Federal Lease, AMAX shall have the right to:

1. Conduct any and all Power-Use activities and operations on Tracts Two and Three which are permitted by the Federal Lease.

2. Conduct any and all Power-Use activities and operations on Tract One which are permitted under the terms and conditions of the McCant's Lease.

3. Full and complete use of the surface of Tract Two for all of AMAX's exploration and development activities under this Agreement for which right AMAX shall pay to McCants the amount of fifty cents ($.50) per acre per year for each year of this Agreement, subject to the right of AMAX to surrender all or any part of the Federal Lease as outlined in Paragraph XI herein, and which payments shall be in lieu of any and all damages which may result from such use by AMAX, provided, however,

that should AMAX, its agent or assignee elect to build facilities on said Tract Two for electrical power generation then McCants shall be entitled to additional compensation for the reasonable value of the surface so used.

4. Access to Tracts One, Two and Three for all purposes permitted under the Federal Lease and the McCants Lease. McCants agrees to cooperate with AMAX in the selection of any work sites and roadways necessary for such purposes.

5. Use the Geothermal Resources on the Property, or any part of it, for such Non-Power Uses as are reasonable in furtherance of its Power Use explorations and development, provided, however, that such use does not unreasonably interfere with McCant's operations permitted hereunder.

B. In addition to those obligations otherwise set forth in this Agreement, AMAX shall have the obligation to:

1. Conduct its activities and operations in a good and workmanlike manner and to refrain from interfering with McCant's activities and operations unless reasonable and necessary to its own rights permitted herein.

2. Comply with the Federal Lease in so far as it applies to the Power-Use activities and operations of AMAX and to timely prepare and file all reports of such lease as are required by the Power-Use activities and operations under the lease.

3. If AMAX's drilling activities result in a depletion of McCant's heat source for non-power purposes, then upon the commencement of geothermal production by AMAX, AMAX shall provide McCants with effluent heat in an amount equivalent to that by which McCant's resource is depleted.

4. Defend, indemnify and hold harmless McCants, his successors and assigns, from and against any and all claims, demands, losses, damages or liabilities and from and against any and all costs and expenses arising out of or by reason of any activities of AMAX taken or permitted by this Agreement.

VI. Royalty Provision

A. The royalty, if any, to be paid by AMAX to McCants under the McCants Lease covering Tract One shall be governed by said lease.

B. It is understood and agreed by and between the parties that the Federal Lease covering Tracts Two

and Three provides for a royalty to be paid to the government under certain terms and conditions. It is acknowledged that the United States Geological Survey (hereinafter "U.S.G.S.") is in the process of preparing a royalty schedule for Non-Power use of Geothermal Resources. For the purposes of this Agreement as it concerns Tracts Two and Three, the parties shall adopt such U.S.G.S. royalty schedule as it is changed from time to time during the course of this Agreement. McCants agrees to do any and all things necessary to make such U.S.G.S. royalty calculations possible.

C. McCants shall timely pay to AMAX all royalty payments due on the Federal Lease for Non-Power use pursuant to the schedule mentioned in Article VI.B. above.

D. AMAX shall pay to the Government all minimum or production royalties, whichever may be required under the Federal Lease.

E. Failure of McCants to make any of the payments required by Articles VI.C. above shall constitute a default of McCant's obligations hereunder.

VII. Designation of Operator and Bond

AMAX shall appoint McCants operator for the purpose of conducting any Non-Power Use under the Federal Lease. A copy of the designation of operator is attached to this letter and is incorporated herein by reference.

For the purpose of this Agreement and for so long as the Federal Lease is in full force and effect McCants shall be allowed to operate under, and shall be designated a co-principal on, the bond furnished to the Government by AMAX as required under the Federal Lease. McCants shall comply in every way with the requirements of such bond and undertake no activity nor fail to do any required action or activity that would violate the requirements of such bond.

VIII. Rights to Purchase Working Interest

AMAX shall have the option to purchase up to a twenty-five percent (25%) working interest in McCant's Non-Power Use operations conducted on Tracts One, Two and/or Three or reserve a 5% Over Riding Royalty ("ORR") if and when such operations attain a level that requires use of enough BTU's of heat from the Property or any part of it to heat a green-house of 288,000 square feet or more located on the Property.

Should AMAX exercise this option it shall notify McCants in writing of such exercise. Thereafter, and within 90 days of such notice, McCants shall advise AMAX of the cost of the working interest for which exercise is made, if any, providing written documentation therefor.

Simultaneous with payment of the amount representing the percentage of working interest to be exercised (which shall not exceed 25%) McCants shall deliver to AMAX all assignments, conveyances, transfers and other documents of

title necessary to transfer such working interest. If AMAX elects to receive an ORR then documents appropriate to such election shall be executed and delivered to AMAX by McCants.

IX. Default

AMAX shall have the right to terminate the Operating Agreement upon the occurrence of any act of default by McCants. Termination shall become effective ten (10) days after receipt by McCants of written notice thereof.

X. Assignment or Sublease of Interest

McCants shall not assign or sublease McCant's interest in this Agreement without the prior written consent of AMAX, provided, however, that McCants shall have the right to assign his rights hereunder to any financial institution which intends to provide financing for McCant's operations permitted hereunder.

AMAX shall have the right to assign or sublease its rights or any part thereof, under the Federal Lease or McCants Lease provided that any such assignment or sublease be made subject to this Agreement.

XI. Surrender

The parties acknowledge that AMAX has the right under the Federal Lease to surrender all or any part of the Lease during the term thereof. In the event that AMAX so elects to surrender all or any part of the lease such acreage may instead be assigned to McCants if a request to this effect is

made in writing, provided, however, that McCants shall provide a good and sufficient bond approved by the Government, prior to any such assignment. In the event an assignment is made to McCants pursuant to this paragraph then this Agreement shall no longer apply to the land so assigned.

XII. Successors in Interest

This Agreement shall inure to the benefit of and be binding on all heirs, devisees, personal representatives, successors and assigns of the parties.

IN WITNESS WHEREOF, the parties have signed this Agreement on the date hereinbefore written.

McCant:

Thomas W. McCant

Martha J. McCant

AMAX:

AMAX Exploration, Inc.

Attest:

Assistant Secretary

By

Vice President

State of New Mexico)
ss
County of Hidalgo)

Before me, a Notary Public, personally appeared Thomas W. McCants and Martha J. McCants, known to me to be the persons who Signed the above and foregoing.

Dated at Lordsburg, New Mexico this 18th day of July 1979.

Margaret K. Fuller
Notary Public

My Commission expires:

8-17-81

2009-09-09 10:55 MCCANTS

Form 3200-21
(May 1974)

BUREAU OF LAND MANAGEMENT
N. M. S. O. - SANTA FE, N. M.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JAN 22 1979

Serial Number NM 34790

USGS – KGRA Determination:

Lightning Dock KGRA

GEOTHERMAL RESOURCES LEASE
[X] Competitive [ ] Noncompetitive

HOUR: 10:00 A.M.

In consideration of the terms and conditions contained herein, and the grant made hereby, this lease is entered into by the UNITED STATES OF AMERICA (hereinafter called the "Lessor"), acting through the Bureau of Land Management (hereinafter called the "Bureau") of the Department of the Interior (hereinafter called the "Department"), and

Amax Exploration, Inc., 4704 Harlan Street, Denver, Colorado 80212 (hereinafter called the "Lessee").

This lease is made pursuant to the Geothermal Steam Act of 1970 (84 Stat. 1566; 30 U.S.C. 1001–1025) (hereinafter called "the Act") to be effective on FEB 1 - 1979 (hereinafter called the "effective date"). It is subject to all the provisions of the Act and to all the terms, conditions, and requirements of (a) all regulations promulgated by the Secretary of the Interior (hereinafter called "the Secretary") in existence upon the effective date, specifically including, but not limited to, 43 CFR Parts 3000 and 3200 and 30 CFR Parts 270 and 271, (b) all geothermal resources operational orders (hereinafter called "GRO orders") issued pursuant thereto, all of which are incorporated herein and by reference made a part hereof, and (c) any regulations hereafter issued by the Secretary (except those inconsistent with any specific provisions of this lease other than regulations incorporated herein by reference) all of which shall be, upon their effective date, incorporated herein and, by reference, made a part hereof.

Sec. 1. GRANT – The Lessor hereby grants and leases to the Lessee the exclusive right and privilege to drill for, extract, produce, remove, utilize, sell, and dispose of geothermal steam and associated geothermal resources, (hereinafter called "geothermal resources"), in or under the following described lands situated within the County of Hidalgo State of New Mexico :

National Resource Lands

T. 25 S., ; R. 19 W., ; NMP Meridian
Sec. 6: Lots 3,4,5,6,7, SE¼NW¼
Sec. 6: E½SW¼ (From 1001 ft. below the surface)
Sec. 7: Lots 1,2,3,4, S½NE¼, SE¼NW¼, E½SW¼, SE¼
Sec. 7: NW¼NE¼, NE¼NW¼ (From 1001 ft. below the surface)
Sec. 18: Lot 1, N½NE¼, NE¼NW¼

T. 25 S., R. 20 W., NMPM
Sec. 1: NW¼SW¼, S½SW¼, SW¼SE¼
Sec. 11: NE¼, S½
Sec. 12: All
Sec. 13: N½N½

Total Area 2,500.96

NOTED
S/R 3-7-79
HI 2/5/79
MTP
OG
USE
COAL
POT
GEO 2/3/79

Geothermal rights in the E½SW¼ Sec. 6, NW¼NE¼, NE¼NW¼ Sec. 7, T. 25 S., R. 19 W., NMPM, in Leasing Unit No. 2, are reserved to the United States from the surface of the ground down to 1,000 feet. This reservation is made in order for the United States to offer in the future the resource so that it may be utilized for nonelectrical purposes.

Total Area

Containing 2,500.96 acres (hereinafter called the "leased area" or "leased lands"), together with:

(a) The nonexclusive right to conduct within the leased area geological and geophysical exploration in accordance with applicable regulations; and

(b) The right to construct or erect and to use, operate, and maintain within the leased area, together with ingress and egress thereupon all wells, pumps, pipes, pipelines, buildings, plants, sumps, brine pits, reservoirs, tanks, waterworks, pumping stations, roads, electric power generating plants, transmission lines, industrial facilities, electric, telegraph or telephone lines, and such other works and structures and to use so much of the surface of the land as may be necessary or reasonably convenient for the production, utilization, and processing of geothermal resources or to the full enjoyment of the rights granted by this lease, subject to compliance with applicable laws and regulations; *Provided that*, although the use of the leased area for an electric power generating plant or transmission facilities or a commercial or industrial facility is authorized hereunder, the location of such facilities and the terms of occupancy therefor shall be under separate instruments issued under any applicable laws and regulations; and

(c) The nonexclusive right to drill potable water wells in accordance with state water laws within the leased area and to use the water produced therefrom for operations on the leased lands free of cost, provided that such drilling and development are conducted in accordance with procedures approved by the Supervisor of the Geological Survey (hereinafter called "Supervisor"); and

(d) The right to convert this lease to a mineral lease under the Mineral Leasing Act of February 25, 1920, as amended, and supplemented (30 U.S.C. 181–287) or under the Mineral Leasing Act for Acquired Lands (30 U.S.C. 351–359), whichever is appropriate, if the leasehold is primarily valuable for the production of one or more valuable by-products which are leasable under those statutes, and the lease is incapable of commercial production or utilization of geothermal steam; *Provided that*, an application is made therefor prior to the expiration of the lease extension by reason of by-product production as hereinafter provided, and subject to all the terms and conditions of said appropriate Acts. The Lessee is also granted the right to locate mineral deposits under the mining laws (30 U.S.C. 21–54) which would constitute by-products if commercial production or utilization of

geothermal steam continued, but such a location to be valid must be completed within ninety (90) days after the termination of this lease. Any conversion of this lease to a mineral lease or a mining claim is contingent on the availability of such lands for this purpose at the time of the conversion. If the lands are withdrawn or acquired in aid of a function of any Federal Department or agency, the mineral lease or mining claim shall be subject to such additional terms and conditions as may be prescribed by such Department or agency for the purpose of making operations thereon consistent with the purposes for which these lands are administered; and

(e) The right, without the payment of royalties hereunder, to reinject into the leased lands geothermal resources and condensates to the extent that such resources and condensates are not utilized, but their reinjection is necessary for operations under this lease in the recovering or processing of geothermal resources. If the Lessee, pursuant to any approved plan, disposes of the unusable brine and produced waste products into underlying formations, he may do so without the payment of royalties.

Sec. 2. [redacted] of the primary term. However, if at the end of that forty-year period geothermal steam is being produced or utilized in commercial quantities, and the leased lands are not needed for other purposes, the Lessee shall [illegible] a preferential right to a renewal of this lease for a [illegible] and for [illegible] Lessor deems [illegible] accordance with such terms and [illegible] drilling [illegible] appropriate.

[illegible] under an [illegible] operations are commenced on the [illegible] leased lands [illegible] approved plan or agreement [illegible] half of the [illegible] prior to the end of the primary term, and are being diligently prosecuted at the end of the primary term, this lease shall be extended for five (5) years and so long thereafter, but not more than thirty-five (35) years, as geothermal steam is produced or utilized in commercial quantities. If at the end of such extended term geothermal steam is being produced or utilized in commercial quantities, the Lessee shall have a preferential right to a renewal for a second term as in (a) above.

(c) If the Lessor determines at any time after the primary term that this lease is incapable of commercial production and utilization of geothermal steam, but one or more valuable by-products are or can be produced in commercial quantities, this lease shall be extended for so long as such by-products are produced in commercial quantities but not [illegible] five (5) years from the date of such determina[illegible]

EXHIBIT "B"

Sec. 3. RENTALS AND ROYALTIES

(a) *Annual Rental* – For each lease year prior to the commencement of production of geothermal resources in commercial quantities on the leased lands, the Lessee shall pay the Lessor on or before the anniversary date of the lease a rental of $ 2.00 (Two Dollars) for each acre or fraction thereof.

(b) *Escalating Rental* – Beginning with the sixth lease year and for each year thereafter until the lease year beginning on or after the commencement of production of geothermal resources in commercial quantities, the Lessee shall pay on or before the anniversary date of the lease an escalated rental in an amount per acre or fraction thereof equal to the rental per acre for the preceding year and an additional sum of one (1) dollar per acre or fraction thereof. If the lease is extended beyond ten (10) years for reasons other than the commencement of production of geothermal resources in commercial quantities, the rental for the eleventh year and for each lease year thereafter until the lease year beginning on or after the commencement of such production will be the amount of rental for the tenth lease year. If any expenditures are made in any lease year for diligent exploration on the leased lands in excess of the minimum required expenditures for that year, the excess may be credited against any rentals in excess of $ 2.00 (Two Dollars) per acre or fraction thereof due the Lessor for that or any future year.

(c) *Royalty* – On or before the last day of the calendar month after the month of commencement of production in commercial quantities of geothermal resources and thereafter on a monthly basis, the Lessee shall pay to the Lessor:

(1) A royalty of 10 percent on the amount or value of steam, or any other form of heat or other associated energy produced, processed, removed, sold, or utilized from this lease or reasonably susceptible to sale or utilization by the Lessee.

(2) A royalty of 5 percent of the value of any by-product derived from production under this lease, produced, processed, removed, sold, or utilized from this lease or reasonably susceptible of sale or utilization by the Lessee, except that as to any by-product which is a mineral named in Sec. 1 of the Mineral Leasing Act of February 25, 1920, as amended, (30 U.S.C. 181), the rate of royalty for such mineral shall be the same as that provided in that statute and the maximum rate of royalty for such mineral shall not exceed the maximum royalty applicable under that statute.

(3) A royalty of 5 percent of the value of commercially demineralized water which has been produced from the leased lands, and has been sold or utilized by the Lessee or is reasonably susceptible of sale or utilization by the Lessee. In no event shall the Lessee pay to the Lessor, for the lease year beginning on or after the commencement of production in commercial quantities on the leased lands or any subsequent lease year, a royalty of less than two (2) dollars per acre or fraction thereof. If royalty paid on production during the lease year has not satisfied this requirement, the Lessee shall pay the difference on or before the expiration date of the lease year for which it is paid.

(d) *Waiver and Suspension of Rental and Royalties* – Rentals or royalties may be waived, suspended, or reduced pursuant to the applicable regulations on the entire leasehold or any portion thereof in the interest of conservation or for the purpose of encouraging the greatest ultimate recovery of geothermal resources if the Lessor determines that it is necessary to do so to promote such development, or because the lease cannot be successfully operated under the terms fixed herein.

(e) *Undivided Fractional Interests* – Where the interest of the Lessor in the geothermal resources underlying any tract or tracts described in Sec. 1 is an undivided fractional interest, the rentals and royalties payable on account of each such tract shall be in the same proportion to the rentals and royalties provided in this lease as the individual fractional interest of the Lessor in the geothermal resources underlying such tract is to the full fee interest.

(f) *Readjustments* – Rentals and royalties hereunder may be readjusted in accordance with the Act and regulations to rates not in excess of the rates provided therein, and at not less than twenty (20) year intervals beginning thirty-five (35) years after the date geothermal steam is produced from the lease as determined by the Supervisor.

Sec. 4. PAYMENTS – It is expressly understood that the Secretary may establish the values and minimum values of geothermal resources to compute royalties in accordance with the applicable regulations. Unless otherwise directed by the Secretary, all payments to the Lessor will be made ... into which royalties under this lease are paid. However, in lieu of any part of such drilling and production, with the consent of the Supervisor, the Lessee may compensate the Lessor in full each month for the estimated loss of royalty through drainage in the amount determined by said Supervisor.

(b) At the Lessee's election, and with the approval of the Supervisor, the Lessee shall drill and produce other wells in conformity with any system of well spacing or production allotments affecting the field or area in which the leased lands are situated, which is authorized by applicable law.

(c) After due notice in writing, the Lessee shall diligently drill and produce such wells as the Supervisor shall require so that the leased lands may be properly and timely developed and for the production of geothermal steam and its by-products, including commercially demineralized water for beneficial uses in accordance with applicable state laws. However, the Supervisor may waive or modify the requirements of this subparagraph (c) in the interest of conservation of natural resources or for economic feasibility or other reasons satisfactory to him. If the products or by-products of geothermal production from wells drilled on this lease are susceptible of producing commercially demineralized water for beneficial uses, and a program therefor is not initiated with due diligence, the Lessor may at its option elect to take such products or by-products and the Lessee shall deliver all or any portion thereof to the Lessor at any point in the Lessee's geothermal gathering or disposal system without cost to the Lessee, if the Lessee's activities, under the lease, would not be impaired and such delivery would otherwise be consistent with field and operational requirements. The retention of this option by the Lessor shall in no way relieve the Lessee from the duty of producing commercially demineralized water where required to do so by the Lessor, except when the option is being exercised and then only with respect to wells where it is being exercised, or limit the Lessor's right to take any action under Sec. 25 to enforce that requirement.

Sec. 7. INSPECTION – The Lessee shall keep open at all reasonable times for the inspection of any duly authorized representative of the Lessor the leased lands and all wells, improvements, machinery, and fixtures thereon and all production reports, maps, records, books, and accounts relative to operations under the lease, and well logs, surveys, or investigations of the leased lands.

Sec. 8. CONDUCT OF OPERATIONS – The Lessee shall conduct all operations under this lease in a workmanlike manner and in accordance with all applicable statutes, regulations, and GRO orders, and all other appropriate directives of the Lessor to prevent bodily injury, danger to life or health, or property damage, and to avoid the waste of resources, and shall comply with all requirements which are set forth in 43 CFR Group 3200, including, but not limited to, Subpart 3204, or which may be prescribed by the Lessor pursuant to the regulations, and with the special stipulations which are attached to the lease, all of which are specifically incorporated into this lease. A breach of any term of this lease, including the stipulations attached hereto, will be subject to all the provisions of this lease with respect to remedies in case of default. Where any stipulation is inconsistent with a regular provision of this lease, the stipulation shall govern.

Sec. 9. INDEMNIFICATION

(a) The Lessee shall be liable to the Lessor for any damage suffered by the Lessor in any way arising from or connected with the Lessee's activities and operations conducted pursuant to this lease, except where damage is caused by employees of the Lessor acting within the scope of their authority.

(b) The Lessee shall indemnify and hold harmless the Lessor from all claims arising from or connected with the Lessee's activities and operations under this lease.

(c) In any case where liability without fault is imposed on the Lessee pursuant to this section, and the damages involved were caused by the action of a third party, the rules of subrogation shall apply in accordance with the law of the jurisdiction where the damage occurred.

Sec. 10. CONTRACTS FOR SALE OR DISPOSAL OF PRODUCTS – The Lessee shall file with the Supervisor not later than thirty (30) days after the effective date thereof any contract, or evidence of other arrangement for the sale or disposal of geothermal resources.

Sec. 11. ASSIGNMENT OF LEASE OR INTEREST THEREIN – Within ninety (90) days ...

quired by the regulations. If there is no well on the leased lands capable of producing geothermal resources in commercial quantities, the failure to pay rental on or before the anniversary date shall cause the lease to terminate by operation of law except as provided by Sec. 3244.2 of the regulations. If the time for payment falls on a day on which the proper office to receive payment is closed, payment shall be deemed to be made on time if made on the next official working day.

Sec. 5. BONDS – The Lessee shall file with the Authorized Officer of the Bureau (hereinafter called the "Authorized Officer") shall maintain at all times the bonds required under the regulations to be furnished as a condition to the issuance of this lease or prior to entry on the leased lands in the amounts established by the Lessor and to furnish such additional bonds or security as may be required by the Lessor upon entry on the lands or after operations or production have begun.

Sec. 6. WELLS

(a) The Lessee shall drill and produce all wells necessary to protect the leased land from drainage by operations on lands not the property of the Lessor, or other lands of the Lessor leased at a lower royalty rate, or on lands as to which royalties and rentals are paid into different funds from those

[illegible] of execution thereof, the Lessee shall file for approval by the Authorized Officer any instruments of transfer made of this lease or of any interest therein, including assignments of record title and working or other interests.

Sec. 12. REPORTS AND OTHER INFORMATION – At such times and in such form as the Lessor may prescribe, the Lessee shall comply with all reporting requirements of the geothermal resources leasing, operating, and unit regulations and shall submit quarterly reports containing the data which it has collected through the monitoring of air, land, and water quality and all other data pertaining to the effect on the environment by operations under the lease. The Lessee shall also comply with such other reporting requirements as may be imposed by the Authorized Officer or the Supervisor. The Lessor may release to the general public any reports, maps, or other information submitted by the Lessee except geologic and geophysical interpretations, maps, or data subject to 30 CFR 270.79 or unless the Lessee shall designate that information as proprietary and the Supervisor or the Authorized Officer shall approve that designation.

Sec. 13. DILIGENT EXPLORATION – In the manner required by the regulations, the Lessee shall diligently explore the leased lands for geothermal resources until there is production in commercial quantities applicable to this lease. After the fifth year of the primary term the Lessee shall make at least

the minimum expenditures required to qualify the operations on the leased lands as diligent exploration under the regulations.

Sec. 14. PROTECTION OF THE ENVIRONMENT (LAND, AIR AND WATER) AND IMPROVEMENTS – The Lessee shall take all mitigating actions required by the Lessor to prevent: (a) soil erosion or damage to crops or other vegetative cover on Federal or non-Federal lands in the vicinity; (b) the pollution of land, air, or water; (c) land subsidence, seismic activity, or noise emissions; (d) damage to aesthetic and recreational values; (e) damage to fish or wildlife or their habitats; (f) damage to or removal of improvements owned by the United States or other parties; or (g) damage to or destruction or loss of fossils, historic or prehistoric ruins, or artifacts. Prior to the termination of bond liability or at any other time when required and to the extent deemed necessary by the Lessor, the Lessee shall reclaim all surface disturbances as required, remove or cover all debris or solid waste, and, so far as possible, repair the offsite and onsite damage caused by his activity or activities incidental thereto, and return access roads or trails and the leased lands to an acceptable condition including the removal of structures, if required. The Supervisor or the Authorized Officer shall prescribe the steps to be taken by Lessee to protect the surface and the environment and for the restoration of the leased lands and other lands affected by operations on the leased lands and improvements thereon, whether or not the improvements are owned by the United States. Timber or mineral materials may be obtained only on terms and conditions imposed by the Authorized Officer.

Sec. 15. WASTE – The Lessee shall use all reasonable precautions to prevent waste of natural resources and energy, including geothermal resources, or of any minerals, and to prevent the communication of water or brine zones with any oil, gas, fresh water, or other gas or water bearing formations or zones which would threaten destruction or damage to such deposits. The Lessee shall monitor noise, air, and water quality conditions in accordance with any orders of the Supervisor.

Sec. 16. MEASUREMENTS – The Lessee shall gauge or otherwise measure all production, sales, or utilization of geothermal resources and shall record the same accurately in records as required by the Supervisor. Reports on production, sales, or utilization of geothermal resources shall be submitted in accordance with the terms of this lease and the regulations.

Sec. 17. RESERVATIONS TO LESSOR – All rights in the leased area not granted to the Lessee by this lease are hereby reserved to the Lessor. Without limiting the generality of the foregoing such reserved rights include:

(a) *Disposal* – The right to sell or otherwise dispose of the surface of the leased lands or any resource in the leased lands under existing laws, or laws hereafter enacted, subject to the rights of the Lessee under this lease;

(b) *Rights-of-way* – The right to authorize geological and geophysical explorations on the leased lands which do not interfere with or endanger actual operations under this lease, and the right to grant such easements or rights-of-way for joint or several use upon, through or in the leased area for steam lines and other public or private purposes which do not interfere with or endanger actual operations or facilities constructed under this lease;

(c) *Mineral Rights* – The ownership of and the right to extract oil, hydrocarbon gas, and helium from all geothermal steam and associated geothermal resources produced from the leased lands;

(d) *Casing* – The right to acquire the well and casing at the fair market value of the casing where the Lessee finds only potable water, and such water is not required in lease operations; and

(e) *Measurements* – The right to measure geothermal resources and to sample any production thereof.

Sec. 18. ANTIQUITIES AND OBJECTS OF HISTORIC VALUE – The Lessee shall immediately bring to the attention of the Authorized Officer any antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric ruins, fossils, or artifacts discovered as a result of operations under this lease, and shall leave such discoveries intact. Failure to comply with any of the terms and conditions imposed by the Authorized Officer with regard to the preservation of antiquities may constitute a violation of the Antiquities Act (16 U.S.C. 431-433). Prior to operations, the Lessee shall furnish to the Authorized Officer a certified statement that either no archaeological values exist or that they may exist on the leased lands to the best of the

granting to the Lessee any right in any land outside the leased area.

Sec. 20. OVERRIDING ROYALTIES – The Lessee shall not create overriding royalties of less than one-quarter (1/4) of one percent of the value of output nor in excess of 50 percent of the rate of royalty due to the Lessor specified in Sec. 3 of this lease except as otherwise authorized by the regulations. The Lessee expressly agrees that the creation of any overriding royalty which does not provide for a prorated reduction of all overriding royalties so that the aggregate rate of royalties does not exceed the maximum rate permissible under this section, or the failure to suspend an overriding royalty during any period when the royalties due to the Lessor have been suspended pursuant to the terms of this lease, shall constitute a violation of the lease terms.

Sec. 21. READJUSTMENT OF TERMS AND CONDITIONS – The terms and conditions of this lease other than those related to rentals and royalties may be readjusted in accordance with the Act at not less than ten-year intervals beginning ten (10) years after the date geothermal steam is produced from the leased premises as determined by the Supervisor.

Sec. 22. COOPERATIVE OR UNIT PLAN – The Lessee agrees that it will on its own, or at the request of the Lessor where it is determined to be necessary for the conservation of the resource or to prevent the waste of the resource, subscribe to and operate under any reasonable cooperative or unit plan for the development and operation of the area, field, or pool, or part thereof embracing the lands subject to this lease as the Secretary may determine to be practicable and necessary or advisable in the interest of conservation. In the event the leased lands are included within a unit, the terms of this lease shall be deemed to be modified to conform to such unit agreement. Where any provision of a cooperative or unit plan of development which has been approved by the Secretary, and which by its terms affects the leased area or any part thereof, is inconsistent with a provision of this lease, the provisions of such cooperative or unit plan shall govern.

Sec. 23. RELINQUISHMENT OF LEASE – The Lessee may relinquish this entire lease or any officially designated subdivision of the leased area in accordance with the regulations by filing in the proper BLM office a written relinquishment, in triplicate, which shall be effective as of the date of filing. No relinquishment of this lease or any portion of the leased area shall relieve the Lessee or its surety from any liability for breach of any obligation of this lease, including the obligation to make payment of all accrued rentals and royalties and to place all wells in the leased lands to be relinquished in condition for suspension or abandonment, and to protect or restore substantially the surface or subsurface resources in a manner satisfactory to the Lessor.

Sec. 24. REMOVAL OF PROPERTY ON TERMINATION OR EXPIRATION OF LEASE

(a) Upon the termination or expiration of this lease in whole or in part, or the relinquishment of the lease in whole or in part, as herein provided, the Lessee shall within a period of ninety (90) days (or such longer period as the Supervisor may authorize because of adverse climatic conditions) thereafter remove from the leased lands, no longer subject to the lease all structures, machinery, equipment, tools, and materials in accordance with applicable regulations and orders of the Supervisor. However, the Lessee shall, for a period of not more than six (6) months, continue to maintain any such property needed in the relinquished area, as determined by the Supervisor, for producing wells or for drilling or producing geothermal resources on other leases.

(b) Any structures, machinery, equipment, tools, appliances, and materials, subject to removal by the Lessee, as provided above, which are allowed to remain on the leased lands shall become the property of the Lessor on expiration of the 90-day period or any extension of that period which may be granted by the Supervisor. If the Supervisor directs the Lessee to remove such property, the Lessee shall do so at its own expense, or if it fails to do so within a reasonable period, the Lessor may do so at the Lessee's expense.

Sec. 25. REMEDIES IN CASE OF DEFAULT

(a) Whenever the Lessee fails to comply with any of the provisions of the Act, or the terms and stipulations of this lease, or of the regulations issued under the Act, or of any order issued pursuant to those regulations, and that default shall continue for a period of thirty (30) days after service of notice by the Lessor, the Lessor may (1) suspend operations until the requested action is taken to correct the noncom-

of the Lessee's knowledge and belief and that they might be impaired by geothermal operations. If the Lessee furnishes a statement that archaeological values may exist where the land is to be disturbed or occupied, the Lessee will engage a qualified archaeologist, acceptable to the Authorized Officer, to survey and salvage, in advance of any operations, such archaeological values on the lands involved. The responsibility for the cost for the certificate, survey, and salvage will be borne by the Lessee, and such salvaged property shall remain the property of the Lessor or the surface owner.

Sec. 19. DIRECTIONAL DRILLING – A directional well drilled under the leased area from a surface location on nearby land not covered by the lease shall be deemed to have the same effect for all purposes of this lease as a well drilled from a surface location on the leased area. In such circumstances, drilling shall be considered to have been commenced on the nearby land for the purposes of this lease, and production of geothermal resources from the leased area through any directional well located on nearby land, or drilling or reworking of any such directional well shall be considered production or drilling or reworking operations (as the case may be) on the leased area for all purposes of this lease. Nothing contained in this section shall be construed as

[illegible] of (2) cancel the lease in accordance with Sec. 12 of the Act (30 U.S.C. 1011). However, the 30-day notice provision applicable to this lease under Sec. 12 of the Act shall also apply as a prerequisite to the institution of any legal proceedings by the Lessor to cancel this lease while it is in a producing status. Nothing in this subsection shall be construed to apply to, or require any notice with respect to any legal action instituted by the Lessor other than an action to cancel the lease pursuant to Sec. 12 of the Act.

(b) Whenever the Lessee fails to comply with any of the provisions of the Act, or of this lease, or the regulations, or of any GRO Orders, or other orders, and immediate action is required, the Lessor without waiting for action by the Lessee may enter on the leased lands and take such measures as it may deem necessary to correct the failure, including a suspension of operations or production, all at the expense of the Lessee.

(c) A waiver of any particular violation of the provisions of the Act, or of this lease, or of any regulations promulgated by the Secretary under the Act, shall not prevent the cancellation of this lease or the exercise of any other remedy or remedies under paragraphs (a) and (b) of this section by reason of any other such violation, or for the same violation occuring at any other time.

(d) Nothing herein shall limit or affect the Lessee's right to a hearing and appeal as provided in Sec. 12 of the

Act and in the regulations promulgated thereunder.

(e) Upon cancellation, the Lessee shall remove all property in accordance with Sec. 24 hereof, and shall restore the leased lands in a manner acceptable to the Lessor or as may be otherwise required by the Lessor.

Sec. 26. HEIRS AND SUCCESSORS IN INTEREST – Each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns, of the respective parties hereto.

Sec. 27. UNLAWFUL INTEREST – No Member of, or Delegate to Congress, or Resident Commissioner, after his election or appointment, either before or after he has qualified, and during his continuance in office, and no officer, agent, or employee of the Department shall be admitted to any share or part in this lease or derive any benefit that may arise therefrom; and the provisions of Sec. 3741 of the Revised Statutes (41 U.S.C. Sec. 22), as amended, and Sections 431, 432, and 433 of Title 18 of the United States Code, relating to contracts made or entered into, or accepted by or on behalf of the United States, form a part of this lease so far as the same may be applicable.

Sec. 28. MONOPOLY AND FAIR PRICES – The Lessor reserves full power and authority to protect the public interest by promulgating and enforcing all orders necessary to insure the sale of the production from the leased lands at reasonable prices, to prevent monopoly, and to safeguard the public interest.

Sec. 29. EQUAL OPPORTUNITY CLAUSE – The Lessee agrees that, during the performance of this contract:

(1) The Lessee will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Lessee will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Lessee agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Lessor setting forth the provisions of this Equal Opportunity clause.

(2) The Lessee will, in all solicitations or advertisements for employees placed by or on behalf of the Lessee, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The Lessee will send to each labor union or representative of workers with which Lessee has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Lessor, advising the labor union or workers' representative of the Lessee's commitments under this Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Lessee will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Secretary of the Interior and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Lessee's noncompliance with the Equal Opportunity clause of this lease or with any of said rules, regulations, or orders, this lease may be canceled, terminated or suspended in whole or in part and the Lessee may be declared ineligible for further Federal Government contracts or leases in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, as amended, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Lessee will include the provisions of Paragraphs (1) through (7) of this Section (29) in every contract, subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, as amended, so that such provisions will be binding upon each contractor, subcontractor, or subcontract, or purchase order as the Secretary may direct as a means of enforcing such provisions including sanctions for noncompliance; *provided, however,* that in the event the Lessee becomes involved in, or is threatened with, litigation with a contractor, subcontractor, or vendor as a result of such direction by the Secretary, the Lessee may request the Lessor to enter into such litigation to protect the interests of the Lessor.

Sec. 30. CERTIFICATION OF NONSEGREGATED FACILITIES – By entering into this lease, the Lessee certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Lessee agrees that a breach of this certification is a violation of the Equal Opportunity clause of this lease. As used in this certification, the term "segregated facilities" means, but is not limited to, any waiting rooms, work areas, rest rooms and wash rooms, or restaurants or other eating areas, time clocks, or locker rooms, and other storage or dressing rooms, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise. Lessee further agrees that (except where it has obtained identical certifications from proposed contractors and subcontractors for specific time periods) it will obtain identical certifications from proposed contractors and subcontractors prior to the award of contracts or subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that it will retain such certifications in its files; and that it will forward the following certification to such proposed contractors and subcontractors (except where the proposed contractor or subcontractor has submitted identical certifications for specific time periods); it will notify prospective contractors and subcontractors of requirement for certification of nonsegregated facilities. A Certification of Nonsegregated Facilities, as required by the May 9, 1967 Order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a contract or subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each contract and subcontract or for all contracts and subcontracts during a period (i.e., quarterly, semiannually, or annually).

Sec. 31. SPECIAL STIPULATIONS – *(stipulations, if any, are attached hereto and made a part hereof)*

The lessee shall comply with the attached stipulations unless they are modified by mutual consent of the Lessee, Supervisor and Authorized Officer.

In witness whereof the parties have executed this lease.

Lessee:
Amax Exploration, Inc.

By: [signature]

Title: Gerald J. Kitchen, Vice President

Attest: [signature]

E. Dale Trower, Assistant Secretary

January 19, 1979

[SEAL] (Date)

THE UNITED STATES OF AMERICA, Lessor:

By [signature]
(Authorized Officer)

Chief, Oil & Gas Section
(Title)

JAN 29 1979

(Date)

GPO 853 • 471

NM 34790
3220(943b-4)

SPECIAL STIPULATION

(Attached to and made a part of Geothermal Lease NM 34790)

The Lessee shall comply with the following conditions and stipulations unless they are modified by mutual agreement of the Lessee, the BLM Authorized Officer and the USGS Area Geothermal Supervisor:

1. A qualified archaeologist acceptable to the Authorized Officer (Las Cruces District Manager, P. O. Box 1420, Las Cruces, NM 88001) must prepare the certified statement on archaeological values described in Section 18 of the Geothermal Resources Lease Form 3200-21.

2. The Authorized Officer (Las Cruces District Manager) and the USGS Area Geothermal Supervisor (345 Middlefield, MS 92, Menlo Park, CA 94025) retain the prerogative to require relocation of the operations to protect all archaeological values located on the leased lands, or they may require the Lessee to have the archaeological site(s) excavated by a qualified archaeologist(s) prior to proceeding with operations.

AMAX EXPLORATION, INC.

January 19, 1979
Date

Gerald J. Kitchen, Vice President

Attest: E. Dale Trower, Assistant Secretary

AMENDMENT OF OPERATING AGREEMENT
AND AGREEMENT TO LEASE

This AMENDMENT OF OPERATING AGREEMENT AND AGREEMENT TO LEASE is made and entered into effective as of the 10 day of August, 1981 by and between AMAX Exploration, Inc., a Delaware Corporation with offices at 1707 Cole Boulevard, Golden, Colorado 80401 ("AMAX") and Thomas W. McCants and Martha J. McCants, husband and wife, of Star Route, Box 265, Animas, New Mexico 88020 ("McCants"). AMAX and McCants are hereinafter referred to collectively as "The Parties".

WITNESSETH

WHEREAS, The Parties entered into an Operating Agreement and Agreement to Lease as of the 18th day of July, 1979, (the "Agreement") under which McCants and AMAX independently granted to each other certain rights to utilize, explore for and develop Geothermal Resources, all under the terms and conditions set forth therein, on certain properties consisting of three (3) tracts (hereinafter referred to collectively as the "Property" and individually as "Tract 1", "Tract 2", or "Tract 3"), located in Hidalgo County, New Mexico as described therein; and

WHEREAS, AMAX has subsequently acquired additional Geothermal rights on a portion of The Property pursuant to Federal Geothermal Lease Number NM-47184, which lease by Bureau of Land Management decision dated November 20, 1981 has been consolidated into Federal Geothermal Lease Number NM 34790; and

WHEREAS, The Parties now wish to amend and modify the Agreement to permit McCants to drill to 1000 feet on the Property for certain purposes as set forth hereinbelow and to eliminate all drilling rights previously held by McCants below 1000 feet;

NOW, THEREFORE, in consideration of the premises and the mutual obligations and promises set forth below, The Parties agree to so amend and modify the Agreement as follows:

1. The description of Tract 3 on page 2 of the Agreement is deleted and the following substituted therefor:

Tract 3 Township 25 South, Range 19 West N.M.P.M.
Section 6: E/2SW/4
Section 7: NE/4NW/4, NW/4NE/4
(Containing 160.00 acres m/l)

2. The reference to the "Federal Lease" on Line 7 of the second Paragraph on Page 2 of the Agreement is amended to include those lands described in Federal Geothermal Lease Number NM-47184 which lands are now part of Federal Geothermal Lease Number NM 34790.

3. Subsection A.1. of Paragraph IV. on Page 4 of the Agreement is deleted in its entirety and the following is substituted therefor:

"Drill and develop Geothermal Resources for Non-Power Use on Tracts 1, 2, and 3 to a level not to exceed 1,000 vertical feet below the surface of the earth. Any attempt by McCants to drill or develop below such level without the prior written consent of AMAX shall constitute an act of default under this Agreement."

4. Subsection A.2. of Paragraph IV. on Page 5 of the Agreement is modified by adding the following sentence:

"The rights granted in this subsection are specifically subject to the provisions of Subsection B.3. of Paragraph V. herein."

5. Subsection A.5. of Paragraph V. on Page 8 is modified by adding the following sentence:

"The rights granted in this subsection are specifically subject to the provisions of Subsection B.3. of Paragraph V. herein."

6. Subsection B.3. of Paragraph V. on Page 9 is deleted in its entirety and the following is substituted therefore:

"If AMAX's drilling activities or subsequent Power Use activities are a direct cause of demonstrable depletion of McCants' heat source for Non-Power Use purposes, then AMAX, at its option either shall, (1) provide McCants with effluent heat (or other thermal energy) sufficient to compensate for that depleted by AMAX's activities or, (2) shall compensate McCants for any decrease in the then current production level of any commercial Non-Power Use activities which McCants is conducting on the Property at the time such depletion occurs. McCants specifically acknowledges and agrees that AMAX's rights to the Property for Power Use activities are superior to McCants' Non-Power Use activities, and that AMAX shall have the legal right to develop and produce geothermal resources for Power Use activities subject only to the foregoing right of McCants to receive compensation or the provision of equivalent heat as set forth hereinabove if AMAX' Power Use activities causes any depletion or interruption of McCants Non Power Use activities."

Except as specifically amended hereby, the terms and conditions of the Agreement shall remain in full force and effect as therein stated.

IN WITNESS WHEREOF this AMENDMENT OF OPERATING AGREEMENT AND AGREEMENT TO LEASE is executed as of the date first written above.

Attest:

AMAX Exploration, Inc.

BY: _____
Vice President

_____
Thomas W. McCants

_____
Martha J. McCants

LEASE AND AGREEMENT

THIS LEASE AND AGREEMENT, made and entered into as of this ..... day of ....., 19..., by and between THOMAS K. McCANT AND MARTHA JACQUETTE McCANT A/K/A MARTHA J. McCANT, husband and wife of Star Route, Box 265, Artesia, New Mexico 88210 (hereinafter referred to as "Lessor," whether one or more), and AMAX EXPLORATION, INC., a Delaware corporation of 4704 Harlan Street, Denver, CO 80212 (hereinafter referred to as "Lessee"),

WITNESSETH:

That for and in consideration of TEN DOLLARS ($10.00) paid to Lessor by Lessee, the receipt and sufficiency of which is hereby acknowledged, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by Lessor, and in consideration of the covenants and agreements by the Lessee to be kept and performed, Lessor has granted, leased, and by these presents does grant, lease, let and demise to Lessee, its grantees, successors and assigns, upon and subject to the terms and conditions hereinafter set forth, all that certain land (hereinafter referred to as the "Leased Premises") situated in the County of Eddy, State of New Mexico, and more particularly described as follows:

Township 25 South, Range 20 West, New Mexico Principal Meridian

Section 1 - S½S½NE¼, S½S½NW¼, N½SE¼, SE¼SE¼, NE¼SW¼

and containing 260.00 acres more or less.

TO HAVE AND TO HOLD the Leased Premises for a Primary Term of twenty (20) years (hereinafter referred to as the "Primary Term") unless sooner surrendered, cancelled, forfeited or otherwise terminated, for all purposes [illegible] to the exploration for, drilling for, production, extraction, taking, removal, utilization, storage, processing, conservation, and disposal of Geothermal Resources and/or Extractable Minerals from, upon, or in or under the Leased Premises, [illegible] the right to inject into the Leased Premises fresh water, or effluent from wells located on the Leased Premises or [illegible] thereto. Without in any way limiting the generality of the preceding grant, Lessee shall have the right in [illegible] to construct, maintain or remove any and all facilities thereon and thereto as may be necessary or convenient for Lessee's [illegible] on the Leased Premises or other land pooled therewith, including but not limited to, well sites, pipelines, tanks, [illegible] jection of waste water, gases and other residual products, roads, and other structures and installations; and Lessor [illegible] granted the rights and rights-of-way and easements across the Leased Premises necessary or convenient for such purposes [illegible] the exploration, operation, and development of Leased Substances on the Leased Premises or land pooled therewith.

1. For the purposes of this Lease the following terms and meanings shall apply: (a) "Geothermal Resources" shall mean geothermal steam and associated geothermal resources including but not limited to, (1) all products of geothermal processes, including indigenous steam, hot water and hot brines and, (2) steam and other gases, hot waters and hot brines resulting from artificial introduction or injection of water, gas or other fluids into geothermal formations or the earth, and (3) heat or associated energy found in geothermal formations; (b) "Extractable Minerals" shall mean any minerals in solution [illegible] and all minerals and gases produced from or by means of any wells on the Leased Premises or by means of [illegible] processing water produced from the effluence of any such wells; provided, that the term "Minerals and Gases" as [illegible] paragraph shall not include coal, uranium, oil or hydrocarbon gases that can be produced separately from the Geothermal [illegible] (c) "Leased Substances" shall mean Geothermal Resources and/or Extractable Minerals; (d) "Commercial Quantities" shall [illegible] those quantities of Leased Substances produced, sold, used, or capable of production, the value of which are sufficient [illegible] opinion of Lessee to justify continued production thereof or further development or exploratory operations on the Leased [illegible]

2. The term of this Lease shall be for the Primary Term, as previously provided, and for so long thereafter as Leased Substances are produced in Commercial Quantities from the Leased Premises, or lands pooled therewith, and so long as Lessee is prevented from producing the same, or the obligations of Lessee are suspended, for the causes hereinafter [illegible]

If at the expiration of the Primary Term, Lessee has not completed one or more wells on the Leased Premises, or land pooled therewith, producing or capable of producing Leased Substances in Commercial Quantities, but Lessee is then engaged in operations for drilling or reworking any well on the Leased Premises or land pooled therewith, this Lease shall automatically be extended for an additional five (5) years and if such operations result in production of Leased Substances in Commercial Quantities, any well will be deemed to have been completed and producing Leased Substances in Commercial Quantities during the Primary Term of this Lease.

3. If on or before one (1) year after the date of execution of this Lease, Lessee has not commenced drilling a well on the Leased Premises or land pooled therewith then, subject to Lessee's right of surrender or termination, on or before the said first anniversary date Lessee shall pay or tender to Lessor as a rental for the next ensuing year the amount of TWO HUNDRED SIXTY AND NO/100 Dollars ($260.00) per acre for each acre covered by this Lease, which rental shall be consideration for the privilege of deferring the commencement of drilling operations for a period of one (1) year, provided, that such rental shall be deemed advance royalty and shall apply or be credited to royalty payable or to become payable on production for the year in which such advance royalty is paid. Thereafter, subject to Lessee's right of surrender or termination, Lessee shall, on or before each succeeding anniversary date during the Primary Term of this Agreement, pay or tender to Lessor a rental in the previously specified amount which shall likewise be consideration for the deferring of drilling operations for like periods until such time as from the drilling of a well or wells on the Leased Premises or land pooled therewith there has been established to the satisfaction of Lessee the existence of Leased Substances in Commercial Quantities. Upon such establishment Lessee may nevertheless continue to pay or to tender the advance royalty (rental) on or before each anniversary date and, provided Lessee has not commenced actual sale of one or more of the Leased Substances in Commercial Quantities and, so long as such advance royalty is paid or tendered to the Lessor this Lease shall remain in force and effect even though extended past the Primary Term and, so long as the advance royalty is paid, the well or wells shall be deemed to be actually producing one or more Leased Substances in Commercial Quantities under the terms of this Agreement; provided, however, that if within five (5) years from the date of the expiration of the Primary Term the Lessee shall have failed to make, or make arrangements for by executed contract or contracts, a bona fide commercial sale of one or more Leased Substances then Lessor, at its option, may consider Lessee in default under this Lease.

4. Lessee shall pay to Lessor as royalty ten percent (10%) of the gross proceeds received by Lessee from the sale of Leased Substances produced from the Leased Premises and used by the purchaser for the generation of electric power. Lessee shall pay to Lessor as a royalty five percent (5%) of the net proceeds received by Lessee from the sale of any Leased Substances produced

delivered for sale from any well or wells on the Leased Premises and used by the purchaser for any purpose other than for the generation of electric power. Lessee shall pay to Lessor on or before the 25th day of each month the royalties accrued and payable for the preceding calendar month, or on or before the 25th day of the month next following that in which the Lessee receives payment therefor from the purchaser thereof, whichever method shall apply, and in making such royalty payments Lessee shall deliver to Lessor statements setting forth the basis for computation and determination of such royalty.

Lessee shall not be required to account to Lessor for, or to pay any royalty on, Leased Substances produced by Lessee in or from the Leased Premises which are not utilized, saved and sold, or which are used by Lessee in its operations on or with respect to the Leased Premises or in connection therewith, including operation of facilities for the generation of electric power, or which are lost or wasted, except as a result of the gross negligence of Lessee.

Lessee shall have the right at any time to commingle, for purposes of storing, transporting, utilizing, selling or processing, Leased Substances produced from the Leased Premises, or lands pooled therewith, with like Leased Substances produced from other lands or units in the vicinity of the Leased Premises. In the event of such commingling Lessee shall meter, gauge, or measure the production from the Leased Premises or lands pooled therewith or other units or lands and compute and pay Lessor's royalty on the basis of such production, determined or allocated in accordance with the provisions of this Lease.

5. If Lessor owns a lesser interest in the Leased Substances than the entire and undivided fee estate therein, then the rental and royalty provided for by this Lease shall be paid to the Lessor only in the proportion which his ownership interest bears to the whole and undivided ownership in the Leased Substances. The parties acknowledge and agree that title to the Leased Substances may be at this time uncertain as a matter of law, and agree that if it is eventually determined that Lessor has no title or interest in or to the Leased Substances, then from and after such time Lessor shall receive no further rental or royalty payments by virtue of this Lease. The Lessor also acknowledges that, if the mineral estate or any portion thereof in the Leased Premises has been severed or reserved from the surface ownership, Lessee contemplates entering into lease agreements with the owners of all the surface and mineral estates and interests. Lessor expressly agrees that in no event, by virtue of leases with mineral and surface interest owners or otherwise, shall Lessee be liable to pay to any or all such owners any royalty payments which total or aggregate more than provided for in paragraph 4 of this Lease. In the event that Lessor owns an interest in the Leased Substances but does own an interest in the surface of the Leased Premises, then nevertheless Lessee shall have all the rights and

EXHIBIT "A"

surface estate of the land actually used by Lessee for purposes incident to this Lease.

Notwithstanding any of the foregoing, should Lessor hereafter acquire any additional right, title or interest in or to the Leased Substances and/or the Leased Premises, it shall be subject to the provisions of this Lease and any increase in rentals or royalties by reason thereof shall commence with the payment next following receipt by Lessee of satisfactory evidence of Lessor's acquisition of such additional right, title or interest.

6. Lessee may at any time either before or after production, for drilling or development or operating purposes, pool, unitize combine all or any part of the Leased Premises into a unit with any other land or lands or lease or leases, whether held by Lessee or others and whether adjacent, adjoining or in the immediate vicinity of the Leased Premises, which Lessee desires to develop operate as a unit provided that the total acreage within any such unit shall not exceed 10,000 acres. Lessee shall promptly notify Lessor of such action. Any well, whether or not drilled by Lessee which is commenced, drilled, in the process of being drilled, producing or capable of producing in any part of such unit, shall be for all purposes of this Lease deemed to be a well commenced drilled, being drilled or producing on the Leased Premises and Lessee shall have the same rights and obligations with respect thereto including drilling and producing operations upon any lands from time to time added to any such unit, as Lessee would have if such lands constituted the Leased Premises, provided, however, that notwithstanding this or any other provision of this Lease to the contrary; (a) Production on to which royalty is payable from any well or wells drilled on any such unit, whether located the Leased Premises or other lands, shall be allocated to the Leased Premises in the proportion that the surface acreage of the Leased Premises in such unit bears to the total surface acreage of such unit and such allocated portion thereof shall for all purposes this Lease be considered as having been produced from the Leased Premises and, (b) If any taxes of any kind are levied assessed (other than taxes on the land and on Lessee's improvements), any portion of which is chargeable to Lessor under paragraph 12 hereof, the share of such taxes to be borne by the Lessor as provided in this Lease shall be in proportion to the share of the production from such unit allocated to the Leased Premises. Lessee may, at its sole option, at any time modify, expand, contract or terminate such unit by a written declaration or otherwise as provided by law.

7. At such time as the Lessee shall have drilled or completed a well or wells on the Leased Premises or lands pooled therewith which shall indicate the existence of Leased Substances in Commercial Quantities, Lessee, or any purchaser of Leased Substances may at any time thereafter construct or install on the Leased Premises facilities for the commercial sale, extraction, processing utilization of Leased Substances produced from the Leased Premises or land pooled therewith, including facilities for the development, generation and transmission of electric power and as consideration for such surface rights an annual rental of ten percent of the then current value of the surface estate of the land actually used by Lessee shall be paid to Lessor.

8. Lessee shall have the right to drill such well or wells on the Leased Premises as Lessee in its sole discretion may deem necessary or desirable for the purposes of this Lease including wells for injection purposes, provided however, that in drilling such wells Lessee shall use only so much of the Leased Premises as shall be reasonably necessary for such purposes. No well shall be drilled within 200 feet of any existing structure or improvement upon the Leased Premises without the prior written consent of Lessor. Lessee shall have free use of water from the Leased Premises, but not from Lessor's ponds or wells, for all activities and operations pursuant to this Lease on the Leased Premises or lands pooled therewith, provided that such free use shall not interfere with Lessor's own use of such water for any domestic, farming, ranching, or agricultural purposes, nor interfere with any existing contractual commitment of Lessor. Lessee agrees to fence all sump holes or other excavations, and upon abandonment of any well on the Leased Premises, or the termination of this Lease, Lessee shall level and fill all sump holes and excavations and shall leave such well sites in a clean and sanitary condition.

Lessee shall protect the Leased Premises against liens of every character arising from its operations thereon. Lessee, at its own expense, shall maintain adequate liability insurance. Lessee shall protect Lessor against damages of every kind and character arising out of its operations or workings, or those under Lessee's control, upon the Leased Premises. In the event any buildings, improvements or personal property, grazing or agricultural lands, or growing crops, including grasslands, are damaged or destroyed by Lessee's operations then Lessee shall be liable for, and to the extent of, the reasonable value thereof.

Lessee shall have the right at any time to remove from the Leased Premises any and all casing, machinery, equipment, structures, installations and property of every kind and character placed upon the Leased Premises by or pursuant to the permission of Lessee, provided that if such removal should occur after termination of this Lease, said removal shall be completed within a reasonable time after such termination.

9. Lessor or its agents, at Lessor's sole risk, may at all reasonable times examine the Leased Premises and the workings, installations, structures and operations of Lessee thereon, provided that such inspections do not interfere with the operations of Lessee, and may at all reasonable times inspect the books and records of Lessee with respect to matters pertaining to the payment of royalties to Lessor.

10. Notwithstanding any other provisions of this Lease, Lessee shall have the right, at any time prior to the expiration or after default of this lease, to quit-claim and surrender to Lessor all right, title and interest of Lessee to the Leased Premises or any part thereof and thereupon all rights and obligations of the parties hereto shall cease and terminate as to the lands so quit-claimed and surrendered, save and except as to any rental or royalty or other obligations existing and accrued as of the date of such quit-claim or surrender for which Lessee shall remain liable to Lessor and save and except as to the rights, rights-of-way and easements which shall be retained by Lessee by virtue of the granting clause of this Lease and the rights granted Lessee in paragraph 7 hereof. In the event of a partial quit-claim or surrender any future rentals or royalties will be reduced proportionately by the number of acres in the lease so quit-claimed and surrendered.

11. Lessor hereby warrants and agrees to defend title to the Leased Premises and agrees that Lessee, at its option, may pay and discharge any taxes, mortgages, deeds of trust or other liens or encumbrances existing, levied, or assessed on or against the Leased Premises and in the event Lessee exercises such option Lessee shall be subrogated to the rights of any holder or holders thereof and shall have among other rights, the right of applying to the discharge of any such tax, mortgage or other lien or encumbrance, any royalties or rentals accruing to Lessor pursuant to this Lease.

12. Lessee shall pay all taxes levied on Lessee's structures and improvements placed upon the Leased Premises by Lessee. Lessee shall also pay its proportionate share and Lessor shall pay its proportionate share of any taxes assessed against any Leased Substances stored on the Leased Premises. In the event any taxes are levied or assessed against the right to produce Leased Substances from the Leased Premises, or in the event any increase in the taxes levied against the Leased Premises shall be based upon the production of Leased Substances from the Leased Premises, then in either such event Lessee shall pay its proportionate share of any such taxes or increase and the Lessor shall pay its proportionate share thereof.

13. The rights of either party hereunder may be assigned in whole or in part and the right and privilege to do so is hereby reserved by each party, provided that no change or division in ownership of the Leased Premises, rentals or royalties, however accomplished, shall operate to enlarge the obligations or to diminish the rights of Lessee and Lessee may continue to operate upon the Leased Premises and to pay and settle rentals or royalties as an entirety. No such change in ownership shall be binding upon Lessee until the expiration of thirty (30) days after Lessee shall receive satisfactory written evidence thereof.

14. The obligations of Lessee hereunder shall be suspended and the term of this Lease shall be extended, as the case may be, while Lessee is prevented from complying herewith, in whole or in part, by strikes, lockouts, riots, actions of the elements, accidents, delays in transportation, inability to secure labor or materials in the open market, laws, rules or regulations of any Federal, state, municipal or other governmental agency, authority or representative, or other matters or conditions beyond the reasonable control of Lessee, whether or not similar to the conditions or matters specifically enumerated in this paragraph.

If at any time after the expiration of the Primary Term plus five (5) years the production of all Leased Substances ceases for any cause other than one or more of the causes previously enumerated in this paragraph, this Lease shall nevertheless remain in full force and effect for so long as Lessee continues diligently and in good faith, steps, operations, actions, or procedures to cause a resumption of such production, either through existing wells or through the drilling of new wells and thereafter as hereinbefore provided; provided that not more than six months shall

for the reworking of an existing well or commencement of the drilling of a new well.

15. All statements of production and royalty and all notices required or permitted to be given by either party to the other shall be in writing and shall be sent to the party at the address specified above for that party by depositing same in the United States mail duly certified and addressed. Either party may by written notice to the other change its address for notices, provided however, that only one address in case of one addressee shall be specified for Lessee and for each party Lessor.

The First National ..... Bank at Lordsburg, New Mexico ....., or its successor, is hereby designated as Lessor's agent to receive from Lessee all payments of rentals, advance royalties or royalties on actual production due or payable to Lessor under the terms of this Lease and all such payments may be made by mailing or delivering the same to Lessor, or for Lessor's credit, to said bank.

16. This Lease and Agreement and all of its terms, covenants and conditions shall extend to the benefit of, and be binding upon, the respective heirs, successors, assigns, representatives and administrators of the parties hereto.

IN WITNESS WHEREOF, the parties have caused this Lease and Agreement to be executed as of the date first above written.

LESSOR

BILL OF SALE

Lightning Dock Geothermal, Inc. (the "Seller"), of 224 W. Greening Ave., Las Cruces, New Mexico 88005, does hereby sell, assign and transfer to Thomas W. McCants (the "Buyer"), of HC 65 Box 265, Animas, New Mexico 88020, the following property.

PROPERTY: Exploratory Well A-603-EXPL
IDENTIFICATION NUMBER: TG 12-7
AMOUNT: $10.00

for a TOTAL AMOUNT OF $10.00 plus other financial considerations.

The Seller warrants that the property is being transferred to the Buyer free and clear of any liens and encumbrances.

The above property is sold on an "AS IS" basis. The Seller makes no warranties, express or implied (except as specifically stated in this document).

This transfer is effective as of March 21, 2004.

The property is now located at Lot 1, SW 1/4, NW 1/4, NW 1/4, Section 7, TS 25S, R 19W, Hidalgo County, New Mexico 88020, and all of such property is in the possession of Lightning Dock Geothermal, Inc..

SELLER:

Lightning Dock Geothermal, Inc.

By: _____
Roy A. Cunniff

BUYER:

_____
Thomas W. McCants

ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) SS
COUNTY OF HIDALGO)

The foregoing instrument was duly acknowledged before me by Thomas W. McCants, on this 25th day of March, 2004

Notary Public

My Commission expires:

2/16/07

Chavez, Carl J, EMNRD

From: Sanchez, Daniel J., EMNRD
Sent: Tuesday, July 03, 2012 4:43 PM
To: VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD
Subject: FW: Los Lobos / Lightning Dock Well 63-7- additional data
Attachments: Cross Secs of Well Logs.pdf; Cross Sec Seismic.pdf; Water Quality Comparision.pdf; Well Logs.pdf

FYI

From: Michelle Henrie [mailto:michelle@mhenrie.com]
Sent: Tuesday, July 03, 2012 4:36 PM
To: Sanchez, Daniel J., EMNRD; Bailey, Jami, EMNRD
Cc: Brooks, David K., EMNRD; Nick Goodman
Subject: Los Lobos / Lightning Dock Well 63-7- additional data

Director Bailey, Mr. Sanchez:

Attached please find the following items.

(1) Geologic cross sections for three wells based on the well logs. The three wells are 53-7, 63-7, and AmeriCulture SW #2. Well 63-7 (the proposed injection well) is between the other two wells, which are its nearest neighbors. I am also scanning the OSE well information on record for the all LDG wells and for AmeriCulture SW #2.

(2) A cross section showing data from the seismic survey. Wells 45-7, 55-7, 53-7, 63-7 and AmeriCulture SW #2 are overlaid to show the drilling and casing depth. This cross section shows the zone of permeability where we believe there is communication between wells. I note the upward trend as this zone moves north. I did not realize this until we put together the cross section, but it looks like the AmeriCulture State #2 Well was hitting this zone at its original depth of 910'.

(3) A table comparing water quality data that we have for wells (producing or temperature gradient wells) accessing the zone of permeability. The dates of these samples range from 2000 to 2012. While the depths at which the samples were taken vary, I asked the team to limit the data to samples drawn from the zone of permeability. I note small differences between the 2000 Americulture sample and the other samples, e.g., sodium and potassium concentrations as well as silica, but these differences are not objectionable and I believe the overall data shows that the waters are substantially the same.

If you have any questions right away, please talk with Nick Goodman (whom you met at the meeting: 801-875-4200) if I don't answer (cell: 505-440-4948). I will be away from my desk until July 9th, but I hope to have cell coverage.

Please do keep this information confidential upon receipt.

Have a great holiday tomorrow!

Michelle

mH **Michelle Henrie** | **Attorney** · LEED AP

MHenrie | Land · Water · Law

P.O. Box 7035 . Albuquerque, New Mexico . 87194-7035
225 E. DeVargas . Santa Fe, New Mexico . 87501
505-842-1800 | fax 505-842-0033
michelle@mhenrie.com

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER): 45-07	OSE FILE NUMBER(S): A-758-POD5
WELL OWNER NAME(S): Lightning Dock Geothermal HI-01, LLC	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: Kearns Building, Suite 600, 136 South Main Street	CITY: Salt Lake City; STATE: UT; ZIP: 84101

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	8	39.93	N
LONGITUDE	108	50	16.19	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS:

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
NW ¼	NE ¼	NE ¼	SW ¼	7	25 ☐ NORTH ☑ SOUTH	19 ☐ EAST ☑ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1681 B	Dennis Chapman	Barbour Drilling

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
12/10/2010	2/02/2011	2900	2900	NA: Mud rotary from collar

COMPLETED WELL IS: ☑ ARTESIAN ☐ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 0 ft: Water at surface in casing

DRILLING FLUID: ☐ AIR ☑ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	61	36	Line	Weld	29.625	0.375	None
61	411	26	J55	BT&C	19.124	0.438	None
411	1680	17.5	J55	BT&C	12.615/12.515	0.380/0.430	None
1680	2900	12.25	None, Open Hole	None			None

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	ESTIMATED YIELD (GPM)
2088	2093	5	Fracture in volcanic tuff	
2136	2138	2	Fracture in volcanic tuff	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
None	No Datum

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER A-758	POD NUMBER 5	TRN NUMBER 472640
LOCATION 25.19.07.322		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☐ NO PUMP – WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☑ OTHER – SPECIFY: Vertical Shaft Pump

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BOREHOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	0	48	36	Portland Type I II Ready Mix Cement	324	Dropped
	0	411	26	Class G Cement	1044	Pressure grout
	0	1080	17.5	Class G Cement	1959	Pressure grout

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	200	200	Red to brown sand	☐ YES ☑ NO
200	360	160	Orange to brown sandstone	☐ YES ☑ NO
360	410	50	Gray clay	☐ YES ☑ NO
410	540	130	Brown to gray sandy clay	☐ YES ☑ NO
540	630	90	Red-brown cherty sandstone	☐ YES ☑ NO
630	1650	1020	Red to dark brown sandy conglomerate	☐ YES ☑ NO
1650	2088	438	Brown to gray volcanic tuff	☐ YES ☑ NO
2088	2093	5	Fracture: lost circulation, no samples	☑ YES ☐ NO
2093	2136	43	Brown to gray volcanic tuff	☐ YES ☑ NO
2136	2138	2	Fracture: lost circulation, no samples	☑ YES ☐ NO
2138	2900	762	Unknown - total lost circulation, no samples to TD	☐ YES ☑ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☑ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

0 – 1510 feet BGS = 12.615 ID casing at 0.380 inch wall thickness
1510 – 1680 feet BGS = 12.515 ID casing at 0.430 inch wall thickness

2012 FEB 13 PM 3:50
OFFICE OF THE STATE ENGINEER

8. SIGNATURE

THIS UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

SIGNATURE OF DRILLER — DATE: 1-16-12

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	A-258	POD NUMBER	5	TRN NUMBER	472040
LOCATION	25.19.07.322			PAGE 2 OF 2	

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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2012 MAR -8 PM 3:07

OFFICE OF THE STATE ENGINEER ROSWELL, NM

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER): LOG 47-7	OSE FILE NUMBER(S): A-156-POD1
WELL OWNER NAME(S): Lightning Dock Geothermal HI-01, LLC	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: Kearns Building, Suite 600, 136 South Main Street	CITY: Salt Lake City / STATE: UT / ZIP: 84101

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	8	26.02	N
LONGITUDE	108	50	14.61	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS:

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SE ¼	NE ¼	SE ¼	SW ¼	7	25 ☐ NORTH ☑ SOUTH	19 ☐ EAST ☑ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1687	Trinity Exploration, LLP Dennis Geiss	Trinity Exploration, LLP

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
01/01/2012	02/03/2012	3623	3623	unknown, drilled with mud

COMPLETED WELL IS: ☑ ARTESIAN ☐ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 50 feet

DRILLING FLUID: ☐ AIR ☑ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	48	36	Line	Weld	29.625	0.375	
0	1589	17.5	K-55	BT&C	12.615	0.380	
1589	2430	12.25	none-open hole				
2430	3623	8.5	none-open hole				

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
			Unknown	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER A-758	POD NUMBER 6	TRN NUMBER 492535
LOCATION 25.19.7.34		PAGE 1 OF 2

47-7

2012 MAR -8 PM 3:07

OFFICE OF THE STATE ENGINEER DEMING, NM

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	0	48	36	Portland Type I/II	104	Dropped
	0	1589	17.5	Class G cement	1768	Pressure grout
	1589	1695	12.25	Class G cement	87	Pressure grout

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	290	290	Light to dark brown sand and silt	☐ YES ☑ NO
290	365	75	Reddish brown conglomerate	☐ YES ☑ NO
365	425	60	Gray clay	☐ YES ☑ NO
425	550	125	Brown conglomerate	☐ YES ☑ NO
550	640	90	Red-orange sandy conglomerate	☐ YES ☑ NO
640	810	170	Reddish brown conglomerate	☐ YES ☑ NO
810	1210	400	Red-orange sandy conglomerate	☐ YES ☑ NO
1210	1380	170	Tan-pink clayey sandstone	☐ YES ☑ NO
1380	1835	455	Gray-brown volcanic tuffs	☐ YES ☑ NO
1835	2040	205	Gray limestone	☐ YES ☑ NO
2040	2085	45	Dark brown siltstone	☐ YES ☑ NO
2085	2170	85	Brown sandy siltstone	☐ YES ☑ NO
2170	2600	430	Gray-brown sandstone	☐ YES ☑ NO
2600	3623	1023	Gray to dark brown silty limestone	☐ YES ☑ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☑ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

Airlifting done during completions with flow rates ranging between 10 gallons per minute (gpm) and 34 gpm.
Rig release date was 2/16/2012.

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Dennis E. Geiss — Digitally signed by Dennis E. Geiss DN: cn=Dennis E. Geiss, o=Trinity Exploration, LLP, ou, email=dgeiss@trinityx.net, c=US Date: 2012.03.02 11:11:57 -07'00'

SIGNATURE OF DRILLER

March 2, 2012

DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	A-758	POD NUMBER	6	TRN NUMBER	492535
LOCATION	25.19.7.34				PAGE 2 OF 2

WELL RECORD & LOG

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1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
53-07 sidetrack	A-758-POD4
WELL OWNER NAME(S)	PHONE (OPTIONAL)
Lightning Dock Geothermal HI-01, LLC	
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
Kearns Building, Suite 800, 136 South Main Street	Salt Lake City / UT / 84101

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	8	51.39	N
LONGITUDE	108	50	8.06	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SW ¼	NW ¼	SW ¼	NE ¼	7	25 ☐ NORTH ☑ SOUTH	19 ☐ EAST ☑ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1687	Trinity Exploration, LLP Dennis Geiss	Trinity Exploration, LLP

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
12/06/2011	12/10/2011	2618	2618	Unknown; drilled with mud

STATIC WATER LEVEL IN COMPLETED WELL (FT): 50 feet

COMPLETED WELL IS: ☑ ARTESIAN ☐ DRY HOLE ☐ SHALLOW (UNCONFINED)

DRILLING FLUID: ☐ AIR ☑ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	395	26	J-55	BT&C	19.124	0.438	None
0	1737	17.5	K-55	BT&C	12.615	0.380	None
1695	2618	12.25	(open hole)				
0	46	36	3/8 inch	Weld	29.625	0.375	None

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
			Unknown	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: None

TOTAL ESTIMATED WELL YIELD (GPM): No Datum

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2012 DEC 31 P 3:55

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
A-758	4	501178
LOCATION 25.19.07.231		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
ANNULAR SEAL AND GRAVEL PACK	0	58	36	Portland Type I/II cement	324	Dropped
	0	405	26	Class G	769	Pressure grout
	0	1750	17.5	Class G	1864	Pressure grout

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	200	200	Red to orange sand	☐ YES ☑ NO
200	220	20	Pink to light brown sticky clay	☐ YES ☑ NO
220	330	110	Light to dark brown clayey sand	☐ YES ☑ NO
330	380	50	Greenish to gray clay	☐ YES ☑ NO
380	1620	1240	Brown to reddish brown sandy conglomerate	☐ YES ☑ NO
1620	2090	470	Red to brown volcanic agglomerate	☐ YES ☑ NO
2090	2320	230	Brown to dark gray volcanic tuff	☐ YES ☑ NO
2320	2390	70	Dark brown sandstone	☐ YES ☑ NO
2390	2485	95	Brown to orange andesite	☐ YES ☑ NO
2485	2618	133	Gray sandy limestone	☐ YES ☑ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL.

7. TEST & ADDITIONAL INFO

WELL TEST: METHOD: ☐ BAILER ☐ PUMP ☑ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

Window was milled in casing from 1684 to 1695 to drill sidetrack. Sidetrack was drilled to 2618 with 12.25 bit, completed open hole.

OFFICE OF THE STATE ENGINEER DENVER, CO. 2012 FEB 13 PM 3:30

8. SIGNATURES

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING.

D E Geis — SIGNATURE OF DRILLER

2/7/12 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/2008)

FILE NUMBER A-758	POD NUMBER 4	TRN NUMBER 501178	
LOCATION 25.19.07.231			PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER): 53-07	OSE FILE NUMBER(S): A-758-POD4
WELL OWNER NAME(S): Lightning Dock Geothermal HI-01, LLC	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: Kearns Building, Suite 600, 136 South Main Street	CITY: Salt Lake City STATE: UT ZIP: 84101

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	8	51.39 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND
	LONGITUDE	108	50	8.06 W	* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS:

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SW ¼	NW ¼	SW ¼	NE ¼	7	25 ☐ NORTH ☑ SOUTH	19 ☐ EAST ☑ WEST

SUBDIVISION NAME:	LOT NUMBER:	BLOCK NUMBER:	UNIT/TRACT:
HYDROGRAPHIC SURVEY:		MAP NUMBER:	TRACT NUMBER:

3. DRILLING INFORMATION

LICENSE NUMBER: 1687	NAME OF LICENSED DRILLER: Trinity Exploration, LLP Dennis Geiss			NAME OF WELL DRILLING COMPANY: Trinity Exploration, LLP
DRILLING STARTED: 10/08/2011	DRILLING ENDED: 11/20/2011	DEPTH OF COMPLETED WELL (FT): 4431	BORE HOLE DEPTH (FT): 4441	DEPTH WATER FIRST ENCOUNTERED (FT): Unknown; drilled with mud

COMPLETED WELL IS: ☑ ARTESIAN ☐ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 50 feet

DRILLING FLUID: ☐ AIR ☑ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	395	26	J-55	BT&C	19.124	0.438	None
395	1737	17.5	K-55	BT&C	12.615	0.380	None
1736	4431	12.25	K-55	BT&C	8.7	0.395	None
0	46	36	3/8 inch	Weld	29.625	0.375	None

4. WATER BEARING STRATA

DEPTH (FT) FROM	TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
			Unknown	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: 6 hour flow test	TOTAL ESTIMATED WELL YIELD (GPM): 144

STATE ENGINEER OFFICE ... 2012 ... 05

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER: A-758	POD NUMBER: 4	TRN NUMBER: 472633
LOCATION: 25.19.07.231		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ TURBINE ☐ JET ☐ CYLINDER ☑ NO PUMP – WELL NOT EQUIPPED ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	0	58	36	Portland Type I/II cement	324	Dropped
	0	405	28	Class G	769	Pressure Grout
	0	1750	17.5	Class G	1864	Pressure Grout

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	200	200	Red to orange sand	☐ YES ☑ NO
200	220	20	Pink to light brown sticky clay	☐ YES ☑ NO
220	330	110	Light to dark brown clayey sand	☐ YES ☑ NO
330	380	50	Greenish to gray clay	☐ YES ☑ NO
380	1620	1240	Brown to reddish brown sandy conglomerate	☐ YES ☑ NO
1620	2840	1220	Red to brown volcanic agglomerate	☐ YES ☑ NO
2840	2930	90	Gray limestone	☐ YES ☑ NO
2930	3030	100	Gray latite	☐ YES ☑ NO
3030	3190	160	Gray limestone	☐ YES ☑ NO
3190	3365	175	Light brown to gray latite	☐ YES ☑ NO
3365	3575	210	Dark brown limestone	☐ YES ☑ NO
3575	3680	105	Gray latite	☐ YES ☑ NO
3680	3990	310	Gray to brown limestone	☐ YES ☑ NO
3990	4010	20	Dark gray to black siltstone	☐ YES ☑ NO
4010	4441	431	Light gray to brown latite	☐ YES ☑ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST

METHOD: ☐ BAILER ☐ PUMP ☑ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

A K55 grade liner with BT&C couplings extends from 1709 – to 4431 feet. It is perforated from 1827- to 4236 feet. The annular space between the liner and the borehole from 1737 ft to 4431 is un-cemented

Well 53-07 Sidetrack was drilled through a hole milled into the 53-07 casing between 1684 and 1695 feet. The 53-07 Sidetrack is described on a separate Well Record & Log.

OFFICE OF THE STATE ENGINEER DEMING NM 2012 FEB 15 PM 3:50

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

[signature] — SIGNATURE OF DRILLER 2/7/12 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER A-758	POD NUMBER 4	TRN NUMBER 472633
LOCATION 25.19.07.231		PAGE 2 OF 2

File Number: A-45-S-2

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: AmeriCulture — Work Phone: 505-548-2328
Contact: Damon Seawright — Home Phone: _____
Address: HC 65 Box 260C
City: Animas — State: NM Zip: 88020

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. ~~NW~~ 1/4 NE 1/4 NE 1/4 Section: 7 Township: 25S Range: 19W N.M.P.M.
in Hidalgo County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map SWALLOW FORK PEAK 7.5 MIN.

C. Latitude: 32 d 9 m 4.6 s Longitude: 108 d 49 m 48.4 s

D. East 704650 (m), North 3559080 (m), UTM Zone 12, NAD 27 (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: approximately 420 ft NSL and 825 ft ESL and 4217 ft elevation

H. Give State Engineer File Number if existing well: A-45-S-2

I. On land owned by(required): AmeriCulture

3. DRILLING CONTRACTOR

License Number: WD-1161
Name: LANG EXPLORATORY DRILLING — Work Phone: 801-973-6667
Agent: Alan F. Lang — Home Phone: _____
Mailing Address: 2745 W. California Ave
City: Salt Lake City State: UT Zip: 84104

4. DRILLING RECORD

Drilling began: 10/20/2001; Completed: 9/30/2003; Type tools: rotary
Size of hole: 7 7/8 in.; Total depth of well: 2,100 ft.;
Completed well is: geothermal exploration (shallow, artesian);
Depth to water upon completion of well: 54 ft.

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File Number: A-45-S-2 — Trn Number: 25S,19W
Form: wr-20 — page 1 of 4

25S. 19W. 07. 22

File Number: A-45-S-2

NEW MEXICO OFFICE OF THE STATE ENGINEER

WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
280	420	140	fractured conglomerate	>1000 gpm airlift

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
16	42	welded	0	280	280	casing	N/A	
12 3/4	36	welded	0	580	580	casing	N/A	
8 5/8	29	welded	470	1455	985	cement float	N/A	

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	280	20 in	N/A	192	through casing, cement head
520	580	14 3/4 in	N/A	33	through casing, Haliburton
1355	1355	10 5/8 in	N/A	40	through casing, tremie stab
492	753	10 5/8 in	N/A	134	annulus, tremie cement basket

8. PLUGGING RECORD

Plugging Contractor: _____

Address: _____

Plugging Method: _____

Date Well Plugged: _____

Plugging approved by: _____

State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feet of Cement
1			
2			
3			
4			
5			

File Number: A-45-8-2

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	270	270	Basin fill alluvium
270	645	375	Indurated conglomerate
645	1105	460	Rhyolite
1105	1326	221	Volcaniclastic sediments
1326	1334	8	Andesite
1334	1653	319	Sandstone, shale, and conglomerate
1653	1850	197	Limestone
1850	1990	140	Dacite
1990	2030	40	Limestone
2030	2100	70	Sandstone and siltstone

File Number: A-45-S-2

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

OCD NAME - AmeriCulture State #2 Well
NM State Geothermal Lease GTR-304-1

Under NMSEO permit A-601-EXPL this hole was drilled from 0-910 ft by
Ken McBee, McBee Drilling
P.O Box 1153
Willcox, AZ 85644
520-384-4570
NMSEO License WD-3

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller _____ 5/28/04 (mm/dd/year)

FOR STATE ENGINEER USE ONLY

Quad _____; FWL _____; FSL _____; Use _____; Location No. _____

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

2011 JAN 25 AM 10: 38

OFFICE OF THE STATE ENGINEER DEMING, NM

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
A-758-POD1 (55.7)	A-758-EXPL
WELL OWNER NAME(S)	PHONE (OPTIONAL)
Lightning Dock Geothermal HI-01, LLC	801-765-1200
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
5152 North Edgewood Drive, Suite 200	Provo / Utah / 84604

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	8	39.60	N
LONGITUDE	108	50	9.50	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS
Adjacent to mechanical shop building on west side of Rosette, Inc. compound, 29 Rose Lane, Animas, NM 88021

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	¼	¼	¼		☐ NORTH ☐ SOUTH	☐ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1681	Dennis McGrew	Barbour Well, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
May 28, 2010	June 8, 2010	2349	2349	60

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 60

DRILLING FLUID: ☐ AIR ☑ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	30	36	steel	none	29.25	0.375	N/A
0	360	26	steel	BT&C	18.936	0.438	N/A
0	1050	17.5	steel	BT&C	12.359	0.430	N/A
1050	2349	12.25	none				

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
1050	1378	328	tuff	300
1378	2349	971	volcanic alluvium/rhyolite	0

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
weir box and totalizing turbine meter	300

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	A-758	POD NUMBER	1	TRN NUMBER	
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(H)

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☐ NO PUMP – WELL NOT EQUIPPED
☑ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

2011 JAN 25 AM 10 08
OSE ROSWELL, NM
STATE ENGINEER
DEMING, NM

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	none					

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
1378	1490	112	20% magnetite/alluvium/ryholite orange, white, dark grey	☐ YES ☑ NO
1490	1530	40	volcanic alluvium/rhyolite orange, white, dark grey	☐ YES ☑ NO
1530	1543	13	70% cement/30% formation	☐ YES ☑ NO
1543	1548	5	20% cement/70% alluvium/rhyolite/10%calcite/5%magnetite	☐ YES ☑ NO
1548	1578	30	volcanic alluvium/rhyolite orange, white, dark grey	☐ YES ☑ NO
1578	1589	11	LCM, No cement	☐ YES ☑ NO
1589	1765	76	volcanic alluvium/rhyolite orange, white, dark grey	☐ YES ☑ NO
1765	1769	4	1% pyrite/10% orange tuff/40% solution deposit	☐ YES ☑ NO
1769	1789	20	5% limestone/5-15%orange tuff/50% solution deposits/30% qtz	☐ YES ☑ NO
1789	2349	560	volcanic alluvium/rhyolite orange, white, dark grey	☐ YES ☑ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☑ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

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D A. Grew — SIGNATURE OF DRILLER

24January2011 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

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