GTHT - ___1___

PERMITS, RENEWALS, & MODS

OCD Geothermal Class V Injection Well Legal Determination
(7/8/2014)

Carl Chávez met with Jim Griswold on 7/8/14 to discuss UIC Class V Injection Well Jurisdiction. Jim while working with OCD General Counsel determined that these wells are handled by the OCD exclusively under the Geothermal Regulations. Also, the OCD Primacy Agreement with EPA includes these wells; therefore, EPA UIC Class V Regulations also apply.

WQCC Regulations Exempting Geothermal Wells:

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

A. Effluent or leachate which conforms to all the listed numerical standards of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less, and does not contain any toxic pollutant. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

B. Effluent which is discharged from a sewerage system used only for disposal of household and other domestic waste which is designed to receive and which receives 2,000 gallons or less of liquid waste per day;

C. Water used for irrigated agriculture, for watering of lawns, trees, gardens or shrubs, or for irrigation for a period not to exceed five years for the revegetation of any disturbed land area, unless that water is received directly from any sewerage system;

D. Discharges resulting from the transport or storage of water diverted, provided that the water diverted has not had added to it after the point of diversion any effluent received from a sewerage system, that the source of the water diverted was not mine workings, and that the secretary has not determined that a hazard to public health may result;

E. Effluent which is discharged to a watercourse which is naturally perennial; discharges to dry arroyos and ephemeral streams are not exempt from the discharge permit requirement, except as otherwise provided in this section;

F. Those constituents which are subject to effective and enforceable effluent limitations in a National Pollutant Discharge Elimination System (NPDES) permit, where discharge onto or below the surface of the ground so that water contaminants may move directly or indirectly into ground water occurs downstream from the outfall where NPDES effluent limitations are imposed, unless the secretary determines that a hazard to public health may result. For purposes of this subsection, monitoring requirements alone do not constitute effluent limitations;

G. Discharges resulting from flood control systems;

H. Leachate which results from the direct natural infiltration of precipitation through disturbed materials, unless the secretary determines that a hazard to public health may result;

I. Leachate which results entirely from the direct natural infiltration of precipitation through undisturbed materials;

J. Leachate from materials disposed of in accordance with the Solid Waste Management Regulations (20 NMAC 9.1) adopted by the New Mexico Environmental Improvement Board;

K. Natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine and without being used in any mining process; this exemption does not apply to solution mining;

L. Effluent or leachate discharges resulting from activities regulated by a mining plan approved and permit issued by the New Mexico Coal Surface Mining Commission, provided that this exemption shall not be construed as limiting the application of appropriate ground water protection requirements by the New Mexico Coal Surface Mining Commission;

M. Effluent or leachate discharges which are regulated by the Oil Conservation Commission and the regulation of which by the Water Quality Control Commission would interfere with the exclusive authority granted under Section 70-2-12 NMSA 1978, or under other laws, to the Oil Conservation Commission.
[2-18-77, 6-26-80, 7-2-81, 12-24-87, 12-1-95; 20.6.2.3105 NMAC - Rn, 20 NMAC 6.2.III.3105, 1-15-01; A, 12-1-01]

Geothermal Regulations:

In order to protect human health and environment, OCD will issue “reasonable requirements or conditions” for any OCD approvals under § 71-5-8(b)(m). For example, WQCC water quality standards and protectable ground water are considered “reasonable conditions”. Consequently, OCD is allowing the Lightning Dock Geothermal WQCC Permit to expire in August of 2014.

71-5-8. Enumeration of powers.
Included in the power given to the division is the authority to collect data; to make investigations and inspections; to examine properties, leases, papers, books and records; to examine, check, test and gauge geothermal resources wells and geothermal resources transportation, storage and utilization facilities; to limit and allocate production of geothermal resources as provided in the Geothermal Resources Conservation Act; and to require certificates of clearance for the production or transportation of geothermal resources.

Apart from any authority, express or implied, elsewhere given to or existing in the Division by virtue of the Geothermal Resources Conservation Act or the statutes of this State,, the division may make rules, regulations and orders for the purposes and with respect to the subject matter stated herein, viz.:

A. to require noncommercial or abandoned wells to be plugged in such a way as to confine all fluids in the strata in which they are found, and to prevent them from

escaping into other strata; the di vision may require a bond of not to exceed ten thousand dollars ($10,„000) conditioned for the performance of such regulations;

B. to prevent geothermal resources, water or other fluids from escaping from the strata in which they are found into other strata;

C. to require reports showing locations of all geothermal resources wells, and to require the filing of logs and drilling records or reports and production reports;

D. to prevent the premature cooling of any geothermal stratum or strata by water encroachment, or otherwise, which reduces or tends to reduce the total ultimate recovery of geothermal, resources from any geothermal reservoir;

E. to prevent "blowouts" and "caving" in the sense that such terms are generally understood in the geothermal drilling business;

F. to require wells to be drilled, operated and produced in such a manner as to prevent injury to neighboring leases or properties and to afford reasonable protection to human life and. health and to the environment;

G. to identify the ownership of geothermal producing leases, properties, plants, structures, and transportation and utilization facilities;

H. to require the operation of wells efficiently;

I. to fix the spacing of wells;

J. to classify and from time to time as is necessary reclassify geothermal reservoirs and low-temperature thermal reservoirs;

K. to define and from time to time as is necessary redefine the horizontal and vertical limits of geothermal reservoirs and low-temperature thermal reservoirs;

L. to permit and regulate the injection of fluids into geothermal reservoirs and low temperature thermal reservoirs;

M. to regulate the disposition of geothermal resources or the residue thereof, and to direct the surface or subsurface disposal of such in a manner that will afford reasonable protection against contamination of all fresh waters and waters of present or probable future value for domestic, commercial, agricultural or stock purposes, and will afford reasonable protection to .human life and health and to the environment; and

N. to define and from time to time as is necessary redefine the limits of any area containing commercial deposits of potash, and to regulate and where necessary prohibit geothermal drilling or producing operations where such operations would have the effect unduly to reduce the total quantity of such commercial deposits of potash which may reasonably be recovered in commercial quantities.

History: 19S3 Comp., § 65-11-8, enacted by (1979). Laws 1975, ch. 272, § 8; 1977, ch. 255, 3 77. Am. Jur. 2d, A.L.R. and C.J.S. references. — 2 Geothermal Resources Conservation Act, — Am. Jur. 2d Administrative Law §8 277 to 287; 38 See 71-5-1 NMSA 1978 and notes thereto. Am. Jur. 2d Gas and Oil $ 159. Law reviews. — For comment on geothermal. 58 C.J.S. Mines and Minerals § 230; 73 C J.S. Pub energy and water law, see 19 Nat Resources J. 445 lie Administrative Bodies and Procedure §8 92 to 113.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, December 12, 2013 10:34 AM
To: 'Janney, David'
Cc: Dade, Randy, EMNRD; Shapard, Craig, EMNRD; Chuck Smiley; Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD
Subject: Lightning Dock Geothermal Project Discharge Permit (GTHT-001) Modification Request for Pond Liner Waiver
Attachments: PondLinerWaiverRequest to OCD-12-10-2013_.pdf

David:

The New Mexico Oil Conservation Division (OCD) is in receipt of the attached letter (letter) dated December 10, 2013 from Lightning Dock Geothermal HI-01, LLC. (operator).

In the letter, the operator is requesting an "exemption" or modification from the Discharge Permit (GTHT-001) Section 11(B) (Pits/Ponds) requirement for double lining and leak detection for the operator's geothermal well blow-down constructed ponds.

OCD has completed a review of the modification request with attached stamped PE well pond design, in accordance with Discharge Permit Section 5 (Modifications): WQCC Regulations Subsection C of 20.6.2.3107 NMAC, 20.6.2.3109 NMAC and Subsection I of 20.6.2.51 0 I NMAC addressing possible future modifications of the permit.

OCD hereby **approves** the modification request with the following conditions of approval:

1) The operator must construct a "1:2 back slope or side slope" around the berm (attached design does not display a berm back slope) to prevent stormwater runoff and sediment from draining into a process area or blow-down pond;

2) Any breach or penetration within and through the liner containment area including freeboard area is not allowed, i.e., galvanized staples are displayed penetrating the top freeboard liner slope containment area. Another means of holding the liner down within the containment area without breaching the liner is recommended;

3) All construction, i.e., seams positioning, placement, welding, leak detection, etc. shall be in accordance with liner American Standards for Testing and Materials (ASTM) requirements. The 60-mil Polypropylene Liner material has good heat and strength properties for this application; and

4) Please be advised that OCD approval of this modification 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 applicable federal, state, or local laws and/or regulations.

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

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From: Janney, David [mailto:david.janney@amec.com]
Sent: Tuesday, December 10, 2013 1:58 PM
To: Chavez, Carl J, EMNRD
Cc: Dade, Randy, EMNRD; Shapard, Craig, EMNRD; Chuck Smiley
Subject: RE: Request for Pond Liner Waiver

Greetings Carl:

As we discussed last week, please find attached our request for a waiver for the double pond liner with leak detection system for the small blow-down ponds on each well at Lightning Dock. We think that a 60 mil polypropylene liner is sufficient as this is a thicker liner than OCD permitted for the 55-7 central pond and the reserve pits.

We have included a NM PE stamped design and ask that this be accepted.

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

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

December 10, 2013

RE: Blow-down Pond Liner Requirements for Lightning Dock Geothermal HI-01, Hidalgo County, New Mexico

Dear Mr. Chavez,

This letter was prepared in response to the telephone conversation we had on December 3, 2013. This letter requests exemption from the Discharge Permit's (GTHT-001) requirement for double lining and leak detection in our geothermal well blow-down ponds referenced in paragraph 11B of the Discharge Permit.

The rationale for requesting this exemption is the fact that Lightning Dock's geothermal fluid is nearly chemically equivalent to water derived from shallow-depth wells used for irrigation and ranching purposes throughout the Animas Valley. Additionally, the water that will discharge into the blow-down ponds is not chemically different from the water placed in the reserve pits during drilling and in the centralized pond located near well 55-7 during well testing. Finally, the blow-down ponds will be used only on rare testing or emergency occasions. The maximum volume expected to be in the blow-down ponds at any one time is 5,000 gallons with a pond design capacity of 90,000 gallons.

Requiring double containment and a leak-detection system at each blow-down pond is an excessive and costly requirement. Per the Discharge Permit, however, we contracted with a NM-licensed engineer to design the blow-down ponds with a 60 mil polypropylene liner similar to the 45 mil BTL liner used to line the centralized pond. Lightning Dock Geothermal, therefore, requests your exemption of the Permit requirement for double containment and leak detection, and simultaneous approval of the attached design by a NM-licensed professional engineer.

Thank you very much for your assistance in the development of this important energy project. Should you have questions regarding this matter, 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 Lightning Dock Geothermal HI 01, LLC

Cc: Mr. Chuck Smiley, Lightning Dock Geothermal HI 01, LLC
Michelle Henrie, Attorney for Lightning Dock Geothermal HI 01, LLC
Mr. Scott Dawson, NMOCD
Mr. Glenn Von Goten, NMOCD
Mr. Randy Dade, NMOCD

Attachments

NM PE Stamped Pond Design

AMEC Environment & Infrastructure, Inc.
8519 Jefferson, NE
Albuquerque, New Mexico 87113
(505) 821-1801
www.amec.com

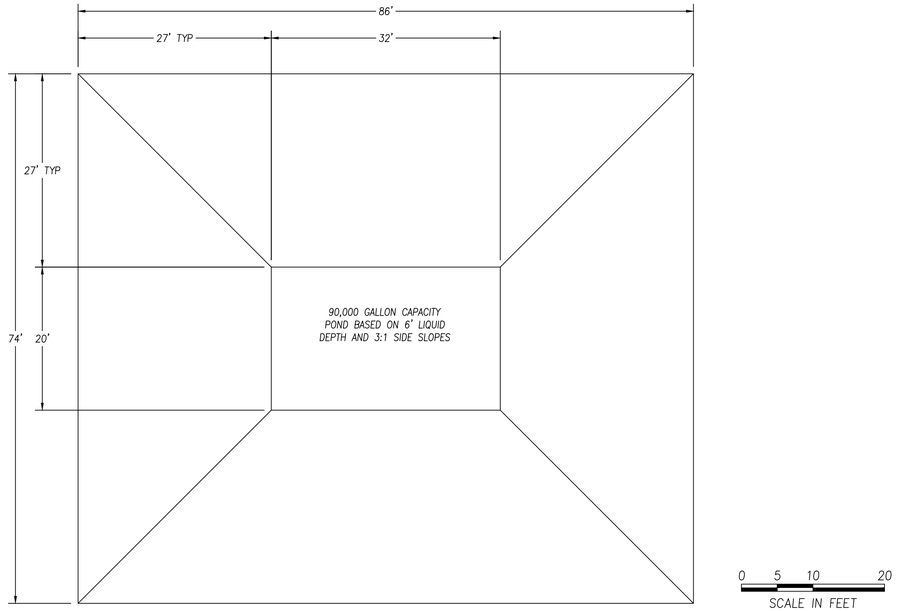
GENERAL NOTES:

1. CONTRACTOR SHALL HAVE A CURRENT SET OF CONSTRUCTION PLANS STAMPED BY THE ENGINEER AT THE WORKSITE.
2. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL, STATE, FEDERAL, AND ANY OTHER AGENCIES WHICH ARE APPLICABLE UNLESS OTHERWISE SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THESE STANDARDS.
3. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES, AND EXISTING IMPROVEMENTS FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM WORK IN CONNECTION WITH SITE CONSTRUCTION. THE CONTRACTOR, AND EACH SUBCONTRACTOR, SHALL BE RESPONSIBLE FOR THE CLEAN-UP AND REMOVAL FROM THE JOB-SITE ANY TRASH OR EXCESS MATERIAL CREATED BY THE PERFORMANCE OF THEIR WORK. SUCH MATERIAL SHALL BE PLACED IN A DUMPSTER OR SIMILAR DEVICE PROVIDED BY THE CONTRACTOR OR TRANSPORTED FROM THE JOB-SITE. DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
4. RECORDED AND/OR FILED SURVEY MONUMENTS EXIST WITHIN THE LIMITS OF THIS PROJECT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT AND/OR HAVE REPLACED ANY MONUMENTS DESTROYED DURING CONSTRUCTION.
5. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND INGRESS AND EGRESS TO SAID CONSTRUCTION.
6. CONTRACTOR SHALL REMOVE AND SORT ALL ON-SITE EXCAVATED NATIVE MATERIAL AND USE SUITABLE MATERIAL WHERE DESIGNATED ON THE CONSTRUCTION PLANS AS REQUIRING FILL MATERIAL. FILL SHALL BE PLACED AND COMPACTED BY METHODS APPROVED BY LOCAL GOVERNING AGENCIES AND APPROVED BY THE DESIGN ENGINEER. ALL STRIPPINGS NOT SUITABLE FOR FILL MATERIAL SHALL BE USED AS DIRECTED BY THE ENGINEER OR DISCARDED OFF-SITE AT THE CONTRACTOR'S EXPENSE.
7. EXISTING UTILITIES ARE NOT LOCATED ON THE PLANS. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON THE PLANS OR NOT IN THE LOCATION SHOWN ON THE PLANS. THIS INCLUDES ALL SERVICE LATERALS OF ANY KIND.
8. POWER/LIGHT POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHALL BE VERIFIED PRIOR TO COMMENCING WORK.
9. AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CALL 'DIGLINE' (UTILITY LOCATOR) 48 HOURS PRIOR TO COMMENCING WORK.
10. MODIFICATIONS OF EXISTING UTILITIES SHALL CONFORM TO ALL APPLICABLE STANDARDS AND SPECIFICATIONS. CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
11. ALL CHANGES REQUIRE APPROVAL BY THE PROJECT ENGINEER AND THE LOCAL GOVERNING AGENCIES. THE ENGINEER TAKES NO RESPONSIBILITY FOR ANY DEVIATIONS FROM THESE PLANS UNLESS AUTHORIZED, IN WRITING, BY THE ENGINEER.
12. ALL TESTING AND INSPECTION SHALL BE IN ACCORDANCE WITH STANDARDS.
13. ALL SEWER MAINS AND FITTINGS TO BE CONSTRUCTED OUT OF ASTM 3034-89, SDR 35 PVC PIPE.
14. ALL NON-POTABLE AND POTABLE MAINS SHALL HAVE A MIN. OF 10' HORIZONTAL SEPARATION. ALL NON-POTABLE AND POTABLE MAIN CROSSINGS SHALL MAINTAIN 18" MIN. VERTICAL SEPARATION OR NON-POTABLE MAINS SHALL BE INSTALLED PER THE REQUIREMENTS.
15. EPA APPROVAL PRIOR TO CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE COMPLIANCE.
16. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FILL OUT AND SUBMIT A NOTICE OF INTENT (NOI) TO EPA AND HAVE A COPY OF THE POLLUTION PREVENTION PLAN AVAILABLE AT THE JOBSITE PRIOR TO CONSTRUCTION. SEE WEBSITE http://cfpub.epa.gov/npdes/stormwater/cgp.cfm. QUESTIONS REGARDING THIS REQUIREMENT MAY BE REFERRED TO MISHA VAKOC OF EPA AT: (206) 553-6650.

QUALITY CONTROL AND TESTING

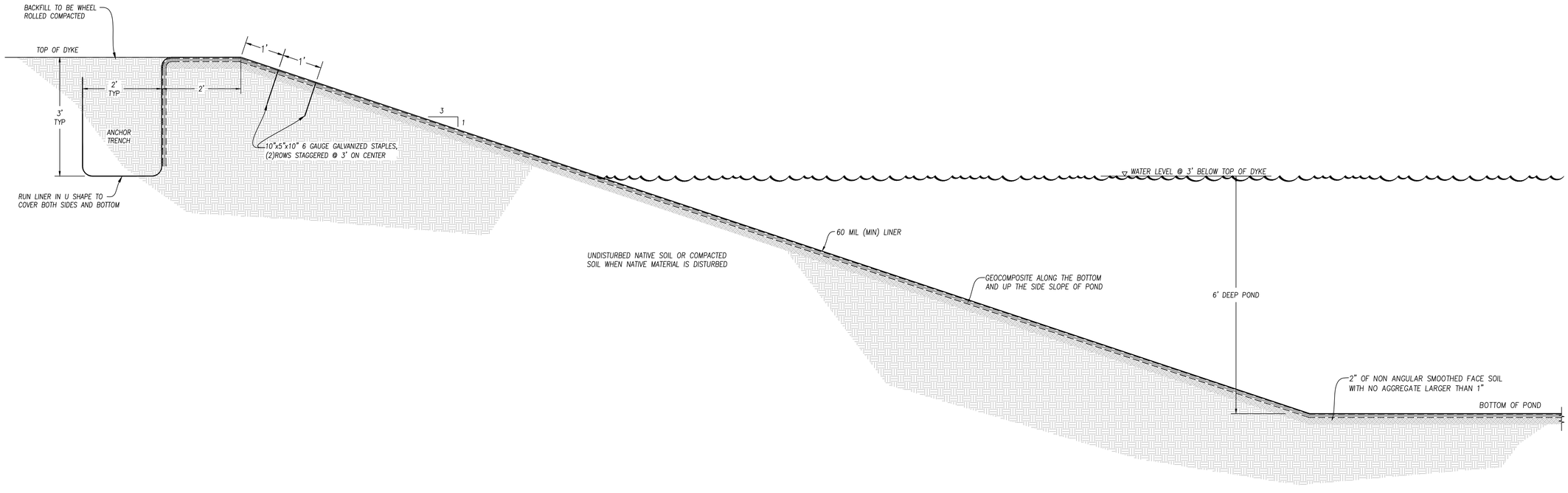
ALL MATERIAL SAMPLING AND TESTING SHALL BE ACCOMPLISHED BY A LABORATORY INDEPENDENT OF THE MATERIAL SUPPLIER AND APPROVED BY THE ENGINEER.

THE FOLLOWING APPLICABLE MATERIAL TESTING WILL BE REQUIRED:
- ASTM D 698, STANDARD PROCTOR
- ASTM D 2922, DENSITY OF SOIL AND SOIL AGGREGATE IN PLACE NUCLEAR METHODS



SITE LAYOUT

SCALE 1"=10'



WET WELL BASIN SECTION

NTS

EHM Engineers, Inc.
BUILDING THE FUTURE ON A FOUNDATION OF EXCELLENCE
Engineers / Surveyors / Planners
621 North College Road, Suite 100 Twin Falls, Idaho 83301
p (208)-734-4888 fax (208)-734-6049 web: ehminc.com

BLOW DOWN PONDS for CYRQ LIGHTNING DOCK

REVISIONS

SCOTT A. SOULE NEW MEXICO 13752 REGISTERED PROFESSIONAL ENGINEER
12-5-13

APPROVED	–
DESIGN	D. THIBAULT
DRAWN	J. SKEEN
DATE	12/4/2013
SCALE	AS SHOWN
DWG. NO.	368-13POND
SHEET	C-1

Bill Richardson
Governor

Joanna Prukop
Cabinet Secretary

Mark Fesmire
Division Director
Oil Conservation Division

July 1, 2009

Mr. Steve Brown
Los Lobos Renewable Power, L.L.C.
5152 North Edgewood Drive, Suite 375
Provo, Utah 84604

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 Mr. Brown:

Pursuant to the 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 NMAC (*Underground Injection Control*), the Oil Conservation Division (OCD) hereby approves the discharge permit for of three (3) Class V geothermal injection wells and authorizes the operation of five (5) production or development wells for the Los Lobos Renewable Power, L.L.C. (**owner/operator**) for the above referenced site, contingent upon the conditions specified in the enclosed **Attachment 1 to the Discharge Permit**. The owner/operator of the geothermal power plant is located in the NE/4 SW/4 of Section 7, Township 25 South, Range 19 West, NMPM, Hidalgo County, New Mexico. The Class V geothermal injection wells and the production or development wells are located in Township 25 South, Ranges 19 and 20 West, NMPM, Hidalgo County, New Mexico.

Class V Injection Wells

Well 42-18 is located in the NE/4, NW/4 of Section 18 (1307 FNL and 2123 FWL)
Well 51-07 is located in the NW/4, NE/4 of Section 07 (169.2 FNL and 2406.9 FEL)
Well 53-12 is located in the SW/4, NE/4 of Section 12 (1574.8 FNL and 3350 FWL)

Geothermal Production or Development Wells

Well 13-07 is located in the SW/4, NW/4 of Section 7 (3781 FSL and 530 FWL)
Well 33-07 is located in the SE/4, NW/4 of Section 7 (3721 FSL and 1789 FWL)
Well 45-07 is located in the NE/4, SW/4 of Section 7 (2360 FSL and 2278 FWL)
Well 47-07 is located in the SE/4 SW/4 of Section 7 (1219 FSL and 2266 FWL)
Well 53-07 is located in the SW/4 NE/4 of Section 7 (3775 FSL and 3052 FWL)

Enclosed are two copies of the conditions of approval. **Please sign and return one copy to the Oil Conservation Division (OCD) Santa Fe Office within 30 days of receipt of this letter.**

Please be advised that approval of this permit does not relieve the owner/operator of responsibility should operations result in pollution of surface water, ground water or the environment. Nor does approval of the permit relieve the owner/operator of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If you have any questions, please contact Carl Chavez of my staff at (505-476-3490) or E-mail carlj.chavez@state.nm.us. On behalf of the staff of OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Mark Fesmire
Oil Conservation Division Director

MF/cc
Attachments - 1
xc: OCD District Office

ATTACHMENT 1
LIGHTNING DOCK GEOTHERMAL NO. 1 (HI-01) (GTHT-001)
DISCHARGE PERMIT APPROVAL CONDITIONS

1. **Payment of Discharge Plan Fees:** All discharge permits are subject to WQCC Regulations. Every billable facility that submits a discharge permit application will be assessed a filing fee of $100.00 plus a renewal flat fee (*see* WQCC Regulation 20.6.2.3114 NMAC). The Oil Conservation Division (OCD) has received the required $100.00 filing fee and the $1700.00 Class V Geothermal Well permit fee.

2. **Permit Expiration and Renewal:** Pursuant to WQCC Regulation Paragraph 4 of Subsection H of 20.6.2.3109 NMAC, this permit is valid for a period of five years. **This permit will expire on August 4, 2014** and an application for renewal should be submitted no later than 120 days before that expiration date. Pursuant to WQCC Regulation Subsection F of 20.6.2.3106 NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved. ***Expired permits are a violation of the Water Quality Act {Chapter 74, Article 6 NMSA 1978} and civil penalties may be assessed accordingly.***

3. **Permit Terms and Conditions:** 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. In addition, all facilities shall abide by the applicable rules and regulations administered by OCD pursuant to the Geothermal Resources Conservation Act (71-5-1 through 71-5-24 NMSA) and the Geothermal Power regulations (19.14.1 through 19.14.132 NMAC).

4. **Owner/Operator Commitments:** The owner/operator shall abide by all commitments submitted in its May 12, 2008 discharge permit application, including attachments and subsequent amendments and these conditions. Permit applications that reference previously approved plans on file with OCD shall be incorporated in this permit and the owner/operator shall abide by all previous commitments of such plans and these conditions for approval.

5. **Modifications:** WQCC Regulations Subsection C of 20.6.2.3107 NMAC, 20.6.2.3109 NMAC and Subsection I of 20.6.2.5101 NMAC address possible future modifications of a permit. The owner/operator (discharger) shall notify OCD of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants. The Division Director may require a permit modification if any water quality standard specified at WQCC Regulation 20.6.2.3103 NMAC is being or will be exceeded or if a toxic pollutant as defined in WQCC Regulation 20.6.2.7 NMAC is present in ground water at any place of withdrawal for present or reasonably foreseeable future use or that the Water Quality Standards for Interstate and Intrastate streams as specified in WQCC Regulation 20.6.4 NMAC (*Water Quality Standards for Interstate and Intrastate Streams*) are being or may be violated in surface water in New Mexico.

6. **Waste Disposal and Storage:** The owner/operator shall dispose of all wastes at an OCD-approved facility. Only geothermal RCRA-exempt wastes (*i.e.*, geothermal production fluids, hydrogen sulfide abatement wastes from geothermal energy production, *etc.*) may be disposed of by injection in a Class II salt water disposal well. RCRA non-hazardous, non-exempt geothermal wastes may be disposed of at an OCD-approved facility upon proper waste determination pursuant to 40 CFR part 261. Any waste stream that is not listed in the discharge permit application must be approved by OCD on a case-by-case basis.

A. **Disposal Of Certain Non-Domestic Waste At Solid Waste Facilities:** Pursuant to 19.15.35.8 NMAC disposal of certain non-domestic waste without notification to OCD is allowed at NMED permitted solid waste facilities if the waste stream has been identified in the discharge permit and existing process knowledge of the waste stream does not change.

B. **Waste Storage:** The owner/operator shall store all waste in an impermeable bermed area, except waste generated during emergency response operations for up to 72 hours. All waste storage areas shall be identified in the discharge permit application. Any waste storage area not identified in the permit shall be approved on a case-by-case basis only. The owner/operator shall not store geothermal waste on-site for more than 180 days unless approved by OCD.

7. **Drum Storage:** The owner/operator must store drums, including empty drums, or drums containing materials other than fresh water on an impermeable pad with curbing. The owner/operator must store empty drums on their sides with the bungs in place and lined up on a horizontal plane. The owner/operator must store chemicals in other containers, such as tote tanks, sacks or buckets on an impermeable pad with curbing.

8. **Process, Maintenance and Yard Areas:** The owner/operator shall either pave and curb or have some type of spill collection device incorporated into the design at all process, maintenance and yard areas which show evidence that water contaminants from releases, leaks and spills have reached the ground surface.

9. **Above-Ground Tanks:** The owner/operator shall ensure that all aboveground tanks have impermeable secondary containment (*e.g.*, liners and berms), which will contain a volume of at least one-third greater than the total volume of the largest tank or all interconnected tanks. The owner/operator shall retrofit all existing tanks before discharge permit renewal. Tanks that contain fresh water or fluids that are gases at atmospheric temperature and pressure are exempt from this condition.

10. **Labeling:** The owner/operator shall clearly label all tanks, drums and containers to identify their contents and other emergency notification information. The owner/operator may use a tank code numbering system, which is incorporated into their emergency response plans.

11. Below-Grade Tanks/Sumps and Pits/Ponds.

A. All below-grade tanks and sumps must be approved by OCD prior to installation and must incorporate secondary containment with leak detection into the design. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal. Owner/operator must test all existing below-grade tanks and sumps without secondary containment and leak detection annually, or as specified herein. For all systems that have secondary containment with leak detection, owner/operator shall perform a monthly inspection of the leak detection system to determine if the primary containment is leaking. Small sumps or depressions in secondary containment systems used to facilitate fluid removal are exempt from these requirements if fluids are removed within 72 hours.

B. All pits and ponds, including modifications and retrofits, shall be designed by a registered professional engineer and approved by OCD prior to installation. In general, all pits or ponds shall have approved hydrologic and geologic reports, location, foundation, liners and secondary containment with leak detection, monitoring and closure plans. All pits or ponds shall be designed, constructed and operated so as to contain liquids and solids in a manner that will protect fresh water, public health, safety and the environment for the foreseeable future. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal.

C. The owner/operator shall ensure that all exposed pits, including lined pits and open top tanks (8 feet in diameter or larger) shall be fenced, screened, netted or otherwise rendered non-hazardous to wildlife, including migratory birds. Where netting is not feasible, routine witnessing and/or discovery of dead wildlife and migratory birds shall be reported by the owner/operator to the appropriate wildlife agency with notification also provided to OCD in order to assess and enact measures to prevent the above from reoccurring.

D. The owner/operator shall maintain the results of tests and inspections at the facility covered by this discharge permit and available for OCD inspection. The owner/operator shall report the discovery of any system which is found to be leaking or has lost integrity to OCD within 15 days. The owner/operator may propose various methods for testing such as pressure testing to 3 pounds per square inch greater than normal operating pressure and/or visual inspection of cleaned tanks and/or sumps or other OCD-approved methods. The owner/operator shall notify OCD at least 72 hours prior to all testing.

12. Underground Process/Wastewater Lines:

A. The owner/operator shall test all underground process/wastewater pipelines at least once every five (5) years to demonstrate their mechanical integrity, except lines containing fresh water or fluids that are gases at atmospheric temperature and pressure. The owner/operator shall submit a comprehensive listing of process/wastewater pipelines to OCD within three months of the date of the permit issuance. The owner/operator shall test pressure rated pipe by pressuring up to

one and one-half times the normal operating pressure, if possible or for atmospheric drain systems, to 3 pounds per square inch greater than normal operating pressure and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure. The owner/operator may use other methods for testing if approved by OCD.

B. The owner/operator shall maintain underground process and wastewater pipeline schematic diagrams or plans showing all drains, vents, risers, valves, underground piping, pipe type, rating, size and approximate location. All new underground piping must be approved by OCD prior to installation. The owner/operator shall report any leaks or loss of integrity to OCD within 15 days of discovery. The owner/operator shall maintain the results of all tests at the facility covered by this discharge permit and they shall be available for OCD inspection. The owner/operator shall notify OCD at least 72 hours prior to all testing.

13. Class V Wells: With the exception of Class V geothermal energy injection wells associated with the recovery of geothermal energy for heating, aquaculture, and production of electrical power, the owner/operator shall close all Class V wells (*e.g.*, septic systems, leach fields, dry wells, *etc.*) that inject non-hazardous industrial wastes or a mixture of industrial wastes and domestic sanitary effluent wastes, unless it can be demonstrated that ground water will not be impacted in the reasonably foreseeable future. Leach fields and other wastewater disposal systems at OCD-regulated facilities that inject sanitary effluent and non-hazardous fluid into or above an underground source of drinking water are considered Class V injection wells under the EPA UIC program. Class V wells that inject domestic sanitary effluent waste only must be permitted by the New Mexico Environment Department (NMED).

14. Housekeeping: The owner/operator shall inspect all systems designed for spill collection/prevention and leak detection at least monthly to ensure proper operation and to prevent over topping or system failure. All spill collection and/or secondary containment devices shall be emptied of fluids within 72 hours of discovery. The owner/operator shall maintain all records at the facility and available for OCD inspection.

15. Spill Reporting: The owner/operator shall report all unauthorized discharges, spills, leaks and releases and shall conduct corrective actions pursuant to WQCC Regulation 20.6.2.1203 NMAC and 19.15.29 NMAC. The owner/operator shall notify both OCD District Office and the Santa Fe Office within 24 hours and file a written report within 15 days. The owner/operator shall notify OCD of any fire, break, leak, spill or blowout occurring at any geothermal drilling, producing, transporting, treating, and disposal or utilization facility in the State of New Mexico by the person operating or controlling the facility pursuant to 19.14.36.8 NMAC.

16. OCD Inspections: OCD may impose additional requirements on the facility and modify the permit conditions based on OCD inspections.

17. Storm Water: The owner/operator shall implement and maintain run-on and runoff plans and controls. The owner/operator shall not discharge any water contaminant that exceeds the WQCC standards specified in WQCC Regulations 20.6.2.3103 NMAC or 20.6.4 NMAC including

any oil sheen, in any storm water run-off. The owner/operator shall notify OCD within 24 hours of discovery of any releases and shall take immediate corrective action(s) to stop the discharge.

18. Unauthorized Discharges: The owner/operator shall not allow or cause water pollution, discharge or release of any water contaminant that exceeds the WQCC standards listed in 20.6.2.3103 NMAC (*Standards for Ground Water of 10,000 mg/L TDS Concentration or Less)* or 20.6.4 NMAC (*Water Quality Standards for Interstate and Intrastate Streams*) unless specifically listed in the permit application and approved herein.

An unauthorized discharge is a violation of this permit.

19. Vadose Zone and Water Pollution: The owner/operator shall address any contamination through the discharge permit process or pursuant to WQCC 20.6.2.4000 through 20.6.2.4116 NMAC (*Prevention and Abatement of Water Pollution*). OCD may require the owner/operator to modify its permit for investigation, remediation, abatement and monitoring requirements for any vadose zone or water pollution. Failure to perform any required investigation, remediation, abatement or to submit subsequent reports will constitute a violation of the permit.

20. Additional Site Specific Conditions - Water Quality Monitoring Program: The owner/operator shall implement the following water quality monitoring programs.

A. Aquatic Toxicity Testing: Prior to the startup of geothermal operations, the owner/operator shall conduct an aquatic toxicity test (ATT) on the Tilapia fish species present at the AmeriCulture aquaculture facility located down-gradient from the owner/operators proposed Class V injection well locations with all NALCO cooling-tower chemical constituents. The chemicals used in the ATT shall consist of the high range application of all mixed Nalco chemicals proposed during the hearing on December 1, 2008, to determine the LD_{50} under a worse-case scenario. OCD will use the results of the ATT as a tool to help assess the threat to Aquaculture and wildlife near the facility.

B. Ground Water and Surface Water Sampling and Monitoring Requirements:

i. The owner/operator shall submit a ground water monitoring program work plan that includes a well installation and monitoring plan and a sampling and analysis plan for the monitor wells to the OCD Santa Fe Office for approval at least 3 months before system startup. The owner/operator shall conduct all water quality monitoring using low-flow purging and sampling methods where monitor well screens do not exceed 15 feet with 5 feet of screen placed above the water table (potential for water table draw-down addressed at subpart 20(B)(iii)). If multiple isolated fresh water aquifers are found to exist, the owner/operator shall include a provision in the work plan for the installation of additional monitor wells

to monitor for contamination in any different fresh water aquifer system(s).

ii. The owner/operator shall submit a Background and Compliance Report reflecting the first 6 months of sampling conducted to the OCD within 30 days of completion of the first 6 months of sampling that includes the results of the initial sampling conducted in accordance with Permit Conditions 20 and 21 to determine background water quality conditions at the facility and compliance with WQCC 20.6.2.3103 NMAC and Subparagraph WW of 20.6.2.7 NMAC. The report shall specify all monitoring locations, including nested wells, hydrogeology, piezometric and/or potentiometric ground water flow direction, hydraulic gradient and water quality data from all monitoring locations and down-gradient locations from potential point sources at the facility (*i.e.*, cooling tower blow-down combined with spent production water at all Class V Well injection locations). The report shall note all exceedences of the standards specified in WQCC 20.6.2.3103 NMAC or background, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, has been detected.

iii. The owner/operator shall implement the ground water monitoring program specified in the applicable Tables in Appendix 1. The owner/operator shall monitor static water levels from monitoring locations at least quarterly to assess ground water flow direction and hydraulic gradient at the facility. If draw-down of the water table below the screen level in any monitor well occurs at and/or nearby production or development well locations, the owner/operator shall deepen wells within 30 days to provide for monitoring and the OCD and Office of the State Engineer (OSE) District Supervisor shall be notified within 24 hours of having knowledge of the above. In addition, the Owner/Operator shall provide a written statement of whether the water resource in the Animas Valley is or is not adequate to sustain steady-state production of the geothermal resource within 60 days of the original notification above. The OCD and OSE may require the owner/operator to perform corrective action(s) to private water user wells that are adversely affected by geothermal operations. The OCD and/or OSE may require the owner/operator to implement corrective action(s) to private water wells depending on the situation.

iv. The owner/operator shall gauge and sample nested monitor well head elevations (accuracy to 0.01 ft.), recorded to establish the natural vertical hydrogeologic gradient(s) within the aquifer(s) or between reservoir(s) and to monitor for any potentially upwelling contamination to nearby down-gradient pumping domestic and commercial water supply wells.

v. The owner/operator shall comply with the Federal Underground Injection Control requirements for Class V Wells (40 CFR 144 subpart G) and WQCC 20.6.2 NMAC injection well construction standards to protect the Underground Source of Drinking Water (USDW). The owner/operator shall immediately shut down the system and contact the OCD for further instructions if the concentration of any water contaminants in the injection fluids exceed the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background, as established for the injection formation at the injection well location pursuant to Clause (i) of Paragraph 21.D, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is detected.

vi. The owner/operator shall construct all monitor wells with at least 15 feet of screen with 10 feet of screen positioned below the water table (~ 60 – 70 feet bgs). The screen slot size must facilitate the collection of low turbidity samples. Low-flow ground water sampling may be used with stabilization monitoring for temperature, oxygen reduction potential (ORP) and dissolved oxygen (DO) prior to and during sample collection, if wells are constructed for low-flow sampling techniques. Otherwise, the owner/operator shall purge the wells of three well volumes prior to sampling.

vii. The owner/operator shall triangulate seasonal piezometric surface flow across the facility, including surveying all well locations (TOC and ground elevations, Mean Sea Level) to the nearest 0.01 feet. The owner/operator shall measure static water levels at least quarterly for 2 years to determine ground water flow direction. The owner/operator shall submit plots of ground water flow direction with estimates of hydraulic gradients from quarterly monitoring.

viii. The owner/operator shall notify the Santa Fe OCD office immediately after having knowledge that the concentration of a monitor well sample exceeds the greater of the water quality standards specified in WQCC 20.6.2.3103 NMAC or background established at that well's location pursuant to the monitoring program described in this paragraph or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is detected. In the event of an exceedence, the owner/operator may be required to shut down the operation for such time as may be necessary to allow the owner/operator and OCD to investigate the cause of the exceedence. If the cause is associated with geothermal operations, the OCD may invoke the permit modification provision for treatment provided herein, and may require additional conditions.

C. Water Supply Wells Monitoring Program:

i. The owner/operator shall sample all water supply wells in accordance with Table 3 of Appendix 1 prior to owner/operator startup to establish background water quality conditions and thereafter at least annually to demonstrate that the water quality of the water supply wells does not exceed the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background, and that no toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is present.

ii. The owner/operator shall determine the depth to water, ground elevation, and well elevation to an accuracy of 0.01 foot.

iii. The owner/operator shall notify the OCD Santa Fe office within 72 hours of its determination that the concentration of the ground water sample exceeds the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is detected.

D. Holding Ponds, Drainage Ditches, Pits and Ponds Monitoring Program: The owner/operator shall sample the holding ponds, drainage ditches, pits and ponds in accordance with Table 4 of Appendix 1. The owner/operator shall notify the OCD Santa Fe office within 72 hours of its determination that the concentration of a water sample taken at an unlined ditch or location listed above exceeds the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background. *Note: Table 4 analytes consist of metals and general chemistry only. They do not monitor for "toxic pollutants" as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC.*

E. Spent Produced Water and Cooling-Tower Blow-Down Water Monitoring Program:

i. The owner/operator shall submit a flow diagram to the OCD Santa Fe Office that depicts where the comingled spent produced water and cooling-tower blow-down water will be sampled in-line before injection, as well as specification of injection well sample port locations used for the in-line sampling at least 30 days before system startup.

ii. The owner/operator shall sample and analyze the comingled spent produced water and cooling-tower blow-down water daily for 10 business days at system startup, weekly for two months, and thereafter the sampling frequency shall be based on correlation that the owner/operator established with the 3D Tresar Control Monitoring System in accordance with Table 5 of Appendix 1 to this discharge permit. Injection wells shall be sampled

monthly for 6 months in accordance with the analytical suite in Table 2 of Appendix 1.

iii. The owner/operator shall inject comingled spent produced water and cooling-tower blow-down water only if it meets either the standards for ground water specified at Subparagraph WW of 20.6.2.7 NMAC and 20.6.2.3103 NMAC or the background concentration as established from the first sampling event. In-line sample ports or devices shall be installed at each injection well to enable owner/operator to perform the in-line sampling required herein, to ensure that the specified requirements for spent produced water and cooling-tower blow-down water are met.

iv. The owner/operator shall not discharge untreated chemicals to storm water and/or "Waters of the State." Any discharge to a rip-rap area(s) is an illegal discharge. The owner/operator shall inform the OCD Santa Fe office within 72 hours of discovery of a discharge to a rip-rap basin. Discharges shall be routed to lined pits or evaporation pond areas whenever possible.

v. The owner/operator may only discharge into "Waters of the State" in accordance with a National Pollutant Discharge Elimination System (NPDES) Permit issued by EPA Region 6. The OCD must approve the discharge concurrently with EPA. The applicant must comply with all of the Federal NPDES monitoring, treatment, and reporting requirements specified in its NPDES permit.

F. **Annual Water Quality Monitoring Program Report:** The owner/operator shall submit an Annual Water Quality Monitoring Program Report by January 31 of each year. The report shall include the following information:

i. Cover sheet marked as "Annual Water Quality Monitoring Program Report, name of owner/operator, Discharge Permit Number, API number(s) of well(s), date of report and the name of the person submitting report.

ii. Comprehensive summary of all water quality monitoring data.

iii. Summary charts and tables depicting the constituents that have ever exceeded the standards specified in WQCC 20.6.2.3103 NMAC or background, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, has been detected.

iv. Description and reason for any remedial or work on well(s), ponds, ditches, *etc.*

v. Copies of the chemical analyses in accordance with Permit Condition 20.

vi. A copy of any leaks and spills reports submitted in accordance with Permit Condition 15 above.

vii. A "Miscellaneous" section to include any other issues that should be brought to OCD's attention.

viii. Discharge Permit Signatory Requirements pursuant to WQCC Regulation Subsection G of 20.6.2.5101 NMAC.

21. Class V Geothermal Injection Wells and Geothermal Production or Development Wells:

A. Well Identification:

i. **Class V Geothermal Injection Wells:**

Well No. 42-18 (API No. 30-023-20018)
Well No. 51-07 (API No. 30-023-20020)
Well No. 53-12 (API No. 30-023-20019)

ii. **Geothermal Production or Development Wells:**

Well No. 13-07 (API No. 30-023-20013)
Well No. 33-07 (API No. 30-023-20014)
Well No. 45-07 (API No. 30-023-20015)
Well No. 47-07 (API No. 30-023-20016)
Well No. 53-07 (API No. 30-023-20017)

B. Well Casing and Cementing Requirements:

i. The owner/operator shall ensure that all casing and cementing meets or exceeds the requirements of 19.14.27.8 NMAC (*Casing and Cementing Requirements*). Conductor pipe shall be run to a minimum depth of 100 feet.

ii. Surface casing shall be to a depth of at least 100 feet greater than the deepest fresh water well within one-half mile from the well location.

iii. Intermediate strings shall be cemented solid to surface.

iv. Production casing shall either be cemented solid to the surface or lapped into intermediate casing, if run. If 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 integrity.

v. The owner/operator shall submit a logging program to OCD for review with the owner/operator depth setting recommendations for its casing program based on the logging program. The owner/operator prior to setting intermediate or production casing in each of the production and injection wells shall run open-hole logs, pursuant to the logging program, approved by the OCD. Logs must be submitted to the OCD for review with the applicant's recommendations for casing setting depths, and in case of injection wells, for precise definition of the injection interval. The type of tubing installed shall be conducive to the characteristics of the injected fluids determined after initial testing of the injected fluids. The owner/operator shall ensure that the tubing is installed with a packer set within 100 feet of the uppermost injection perforations. The casing-tubing annulus shall be filled with an inert fluid, and a gauge or approved leak-detection device shall be connected to the annulus to detect for leakage in the casing, tubing or packer.

C. **Formation Fracturing Fluids:** The owner/operator shall ensure that all fluids used in the fracturing of formations shall not harm human health, wildlife or the environment. The owner/operator shall ensure that all fluids used to fracture shall be swabbed back, collected and properly disposed.

D. **Class V Geothermal Injection Wells and Geothermal Production/ Development Wells Monitoring Program:**

i. The owner/operator shall sample the groundwater at all injection and production/development wells prior to owner/operator startup in accordance with Table 2 of Appendix 1 to establish background water quality conditions.

ii. The owner/operator shall sample cooling tower effluent (and not the groundwater) at all injection wells monthly for the first six months with dynamic water level (DWL) recordings in accordance with Table 2 of Appendix 1 to demonstrate that the injection fluid meets the standards specified in WQCC 20.6.2.3103 NMAC or background, and that no toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, has been detected.

iii. If after the first six months the owner/operator demonstrates that the in-line injection well samples meet the standards specified in WQCC 20.6.2.3103 NMAC or background, and that no toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, has been detected, then the owner/operator shall then sample ground water annually in accordance with the other annual monitoring events.

iv. The owner/operator shall determine the depth to water, ground elevation, and well elevation to an accuracy of 0.01 foot. The owner/operator shall notify the OCD Santa Fe office within 72 hours of its determination that the concentration of the ground water sample exceeds the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is detected.

E. Well Workover Operations: The owner/operator shall obtain OCD's approval prior to performing remedial work, pressure test or any non-routine work. The owner/ operator shall request approval on form G-103 *"Sundry Notice"* pursuant to 19.14.52 NMAC, with copies provided to both the OCD Artesia District II Office and the Santa Fe Office.

F. Production/Injection Method: 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.

G. Well Pressure Limits: The owner/operator shall ensure that the operating surface injection and/or test pressure for each injection well measured at the wellhead shall be at a flow rate and pressure (psi) that will not exceed 0.2 psi per foot of depth from the surface to the top of injection interval, unless the owner/operator secures OCD approval for an increase based on demonstration that the increase will not involve a hazard of formation fracture and/or adversely affect public health, the environment and the correlative rights of any geothermal operators in the high temperature geothermal reservoir. The Owner/Operator shall report the intended maximum injection pressure to the Division for approval after testing the injection formation and prior to the commencement of injection in accordance with Form G-112. Re-injected fluids shall be confined to the aquifer where production is occurring and shall not adversely impact another aquifer(s). The owner/operator shall have working pressure limiting devices or controls to prevent overpressure. The owner/operator shall report any pressure that causes damage to the system to OCD within 24 hours of discovery.

H. Mechanical Integrity Testing: At least once every five years and after any well work over, the geothermal reservoir will be isolated from the casing or tubing annuals and the casing pressure tested at a minimum of 600 psig for 30 minutes.

A passing test shall be within +/- 10% of the starting test pressure. All pressure tests must be performed in accordance with the testing schedule shown below and witnessed by OCD staff unless otherwise approved.

Testing Schedule:

2009: Prior to system start-up, a 30 minute casing pressure test at a minimum of 600 psig (set packer above casing shoe to isolate formation from casing), and

2013: A 30 minute casing pressure test at a minimum of 600 psig (set packer above casing shoe to isolate formation from casing)

I. **Capacity/Reservoir Configuration and Subsidence Survey:** The owner/operator shall provide information on the size and extent of the geothermal reservoir and geologic/engineering data demonstrating that continued geothermal extraction will not cause surface subsidence, collapse or damage to property or become a threat to public health and the environment. This information shall be supplied to OCD in each annual report. OCD may require the owner/operator to perform additional well surveys, tests, etc. A subsidence monitoring section is required in the annual report and shall include well top-of-casing and ground elevation surveying (Accuracy: 0.01 ft.) before start-up and on an annual basis in order to demonstrate that there are no subsidence issues. If the owner/operator cannot demonstrate the stability of the system to the satisfaction of OCD, then OCD may require the owner/operator to shut-down, close the site and properly plug and abandoned the wells. ***The owner/operator shall report any subsidence to the OCD Santa Fe office within 24 hours of discovery.***

J. **Production/Injection Volumes:** After placing a geothermal well on production, the owner/operator shall file in duplicate a monthly production report form G-108, with the OCD Santa Fe office by the 20th day of each month and also with the annual reports. The owner/operator shall also document the production from each well and each lease during the preceding calendar month.

K. **Analysis of Injection and Geothermal Reservoir Fluids:** After placing any well on injection in a geothermal resources field or area, the owner/operator shall file in duplicate a monthly injection report, form G-110, with the OCD Santa Fe office by the 20th day of each month and also with the annual report. The owner/operator shall specify the zone or formation into which injection is being made, the volume injected, the average temperature of the injected fluid and the average injection pressure at the wellhead.

L. **Area of Review (AOR):** The owner/operator shall report within 24 hours of discovery of any new wells, conduits or any other device that penetrates or may

penetrate the injection zone within one-quarter mile from a Class V Geothermal Injection Well. *Note: AOR applies specifically to Class V Injection Wells.*

M. **Annual Geothermal Temperature and Pressure Tests:** The owner/operator shall test its production or development wells at least annually and submit the results to the OCD Santa Fe office on form G-111 within 30 days of the completion of the test. The owner/operator shall record the flowing temperatures and flowing pressure tests at the wellhead for a minimum of 72 hours of continuous flow at normal producing rates. The owner/operator shall then shut in the well for 24 hours and record the shut-in pressures at the wellhead. The owner/operator shall submit the results of these tests in duplicate to the OCD Santa Fe office.

N. **Loss of Mechanical Integrity:** The owner/operator shall report to the OCD Santa Fe Office within 24 hours of its discovery of any failure of the casing, tubing or packer or movement of fluids outside of the injection zone. The owner/operator shall cease operations until proper repairs are made and the owner/operator receives OCD approval to re-start injection operations.

O. **Bonding or Financial Assurance:**

i. Class V Geothermal Injection Wells. The owner/operator shall maintain at a minimum a cash bond (*i.e.*, Assignment of Cash Collateral Deposit or Multi-Well Cash Financial Assurance Bond Geothermal Injection) in the amount of $50,000.00 to restore the site and/or plug and abandon wells, pursuant to OCD rules and regulations.

ii. Geothermal Production or Development Wells. The owner/operator shall maintain at a minimum a cash bond (*i.e.*, $10,000.00 Multi-Well (4 wells) and/or $5,000.00 (1 well) Geothermal Plugging Bonds). If warranted, OCD may require additional financial assurance for closure of the power plant or facility (see Permit Condition 34 below).

P. **Annual Geothermal Well Report:** The owner/operator shall submit an Annual Geothermal Well Report by January 31 of each year. The report shall include the following information:

i. Cover sheet marked as "Annual Geothermal Well Report, name of owner/operator, Discharge Permit Number, API number(s) of well(s), date of report and the name of the person submitting report.

ii. Comprehensive summary of all geothermal well operations, including description and reason for any remedial or work on the well(s). The

owner/operator shall include copies of the form G-103s that it submitted to the OCD Santa Fe office.

iii. Production and injection volumes in accordance with Permit Condition 21.J, including a running total to be carried over each year. The owner/operator shall report the total mass produced, dry steam produced, flow rates, temperatures and pressures, average injection pressures, temperatures, *etc.*

iv. A copy of the chemical analyses in accordance with Permit Condition 21.K.

v. A copy of any mechanical integrity test chart, including the type of test, (*i.e.*, EPA 5-Year casing test), date, time, *etc.*, in accordance with Permit Conditions 21.H.

vi. A copy of the annual subsidence survey data results in accordance with Permit Condition 21.I.

vii. Brief explanation describing deviations from normal production methods.

viii. A copy of any leaks and spills reports submitted in accordance with Permit Condition 15 above.

ix. A copy of analytical data results from annual groundwater monitoring including the QA/QC Laboratory Summary.

x. An updated Area of Review (AOR) summary (WQCC Regulation 20.6.2 NMAC) when any new wells are drilled within 1/4 mile of any UIC Class V Geothermal Injection Well.

xi. A "Miscellaneous" section to include any other issues that should be brought to the OCD's attention.

xii. Discharge Permit Signatory Requirements pursuant to WQCC Regulation Subsection G of 20.6.2.5101 NMAC.

22. Transfer of Discharge Permit: Pursuant to WQCC Regulation Subsection H of 20.6.2.5101 NMAC, the owner/operator and new owner/operator shall provide written notice of any transfer of the permit. Both parties shall sign the notice 30 days prior to any transfer of ownership, control or possession of a facility with an approved discharge permit. In addition, the purchaser shall include a written commitment to comply with the terms and conditions of the previously approved discharge permit. OCD will not transfer brine well operations until proper

bonding or financial assurance is in place and approved by the OCD. OCD reserves the right to require a modification of the permit during transfer.

23. Closure: The owner/operator shall notify OCD when operations of the facility are to be discontinued for a period in excess of six months. Prior to closure of the facility, the owner/operator shall submit for OCD approval, a closure plan including a completed C-103 form for plugging and abandonment of the well(s). Closure and waste disposal shall be in accordance with the statutes, rules and regulations in effect at the time of closure. OCD may require additional financial assurance if surface water and/or ground water is impacted pursuant to WQCC Regulation Paragraph (11) of Subsection A of 20.6.2.3107 NMAC.

24. Certification: Los Lobos Renewable Power, L.L.C. (Owner/Operator), by the officer whose signature appears below, accepts this permit and agrees to comply with all submitted commitments, including these terms and conditions contained here. **Owner/Operator** further acknowledges that OCD may, for good cause shown, as necessary to protect fresh water, public health, safety and the environment, change the conditions and requirements of this permit administratively.

Conditions accepted by: *"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment."*

Los Lobos Renewable Power LLC
Company Name - print name above

Steven Brown, Manager
Company Representative - print name

Company Representative - signature

Title MANAGER

APPENDIX 1

WATER QUALITY MONITORING PROGRAM

Table 1
Ground Water Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Well location
MW-1	Annual	GW	Analyze for dissolved fraction of all 20.6.2.3103 NMAC Constituents	Shallow MW (water table) located ~100' downgradient (North) of Class V IW 42-18 and associated pits (OCD)
MW-3	Annual	GW	VOCs (8260B) SVOCs (8270C)	Shallow MW (water table) located ~100' downgradient (North) of Class V IW 51-07 and associated pits (OCD)
MW-2	Annual	GW	PAHs (8310)	Shallow MW (water table) located ~100' downgradient (North) of Class V IW 53-12 and associated pits (OCD)
MW-4	Annual	GW	TPH (418.1)	Shallow MW located ~1500' (Northwest) of DW 45-07 directly downgradient from facility (OCD)
MW-5	Annual	GW	Metals - dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) Mercury (7470A/7471A)	Shallow MW (water table) located ~1000' upgradient (South) of the nursery greenhouses 3 & 4 to monitor background (OCD)
MW-6	Annual	GW	General Chemistry (Methods specified at 40 CFR 136.3)	Shallow MW (water table) located ~100' downgradient (North) of DW 53-07 and associated pits (OCD)
MW-7	Annual	GW	Uranium (6010B/6020), Radioactivity (E903/E904) Radon (by EPA Method or method approved by OCD)	Shallow MW (water table) located ~100' downgradient (North) of DW 13-07 and associated pits (OCD)

ID*	Frequency	Media	Analytical Suite/Method	Approximate Well location
MW-8 [1]	Annual	GW		Shallow MW (water table) located ~100' downgradient (North) of DW 33-07 and associated pits (OCD)
NW-1 [1]	Annual	GW		Similar to monitoring & sampling plan from Los Lobos.
NW-2 [1]	Annual	GW		Similar to monitoring & sampling plan from Los Lobos.
NW-3 [1]	Annual	GW		Similar to monitoring & sampling plan from Los Lobos.

Table 2
Geothermal Injection Wells and
Production/Development Wells Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Well Location
DW 13-07[1,3]	Annual	GW	Analyze for dissolved fraction of all 20.6.2.3103 NMAC Constituents: VOCs (8260B) SVOCs (8270C) PAHs (8310) TPH (418.1) Metals - dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) Mercury (7470A/7471A) General Chemistry (Methods specified at 40 CFR 136.3) Uranium (6010B/6020); Radioactivity (E903/E904) Radon (by EPA Method or method approved by OCD)	As Proposed in Application
DW 33-07[1,3]	Annual	GW		
DW 45-07[1,3]	Annual	GW		
DW 47-07[1,3]	Annual	GW		
DW 53-07[1,3]	Annual	GW		
IW 42-18[1,3]	Annual	GW		
IW 51-07[1,3]	Annual	GW		
IW 53-12[1,3]	Annual	GW		

Table 3
Water Supply Wells Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Location
TG 52-07	Annual	GW	Analyze for dissolved fraction of all 20.6.2.3103 NMAC Constituents VOCs (8260B) SVOCs (8270C) PAHs (8310) TPH (418.1) Metals - dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) Mercury (7470A/7471A) General Chemistry (Methods specified at 40 CFR 136.3) Uranium (6010B/6020), Radioactivity (E903/E904) Radon (by EPA Method or method approved by OCD)	Similar to monitoring & sampling plan from Los Lobos.
AmeriCulture No. 1 Federal	Annual	GW		
AmeriCulture State Well No. 2	Annual	GW		
McCants No. 1 State	Annual	GW		
Burgett No. 1 State	Annual	GW		
Burgett Greenhouse No. 2	Annual	GW		

Table 4
Holding Ponds, Drainage Ditches, Pits and Ponds Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Location
GH Holding Pond No. 1	Quarterly[4]	SW	Metals- dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) General Chemistry (Methods specified at 40 CFR 136.3	Similar to monitoring & sampling plan from Los Lobos.
GW Holding Pond No. 2	Quarterly[4]	SW		
Drainage Ditch No. 1 (East)	Quarterly[4]	SW		
Retention Pond No. 1	Quarterly[4]	SW		
Bermed Canal No. 1	Quarterly[4]	SW		
Pit Associated with Well 13-07	Within 30 days of use	SW		
Pit Associated with DW 33-07	Within 30 days of use	SW		
Pit Associated with DW 45-07	Within 30 days of use	SW		
Pit Associated with DW 47-07	Within 30 days of use	SW		
Pit Associated with DW 53-07	Within 30 days of use	SW		
Pit Associated with IW 42-18	Within 30 days of use	SW		
Pit Associated with IW 51-07	Within 30 days of use	SW		

ID*	Frequency	Media	Analytical Suite/Method	Approximate Location
Pit Associated with IW 53-12	Within 30 days of use	SW		

Table 5
Cooling Tower Effluent Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Location
Cooling Tower Effluent	Daily [5]	Effluent	Metals - dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) BOD_5 (405.1/5210B) COD (410.2) General Chemistry (Methods specified at 40 CFR 136.3)	Similar to monitoring & sampling plan from Los Lobos.

BOD_5: Biochemical Oxygen Demand
COD: Chemical Oxygen Demand
DW: Development/Production Well
DWL: Dynamic Water Level
GH: Greenhouse
GW: Ground Water
IW: Injection Well
MSL: Mean Sea-Level
MW: Monitor Well
NW: Nested Well
SW: Surface Water
SWL: Static Water Level
* Quarterly Static Water Level (SWL): MSL to nearest 0.01 feet prior to sampling event

1. Wells must be installed in advance of system startup and sampled.
2 Semi-Annual groundwater monitoring event must be completed no more than 30 days prior to the start of the irrigation season but no later than April 30 of each year. Monitoring must be conducted no later than 30 days after the conclusion of the irrigation season but no later than November 15 of each year.
3 One time sampling event with static water level (SWL) mean sea-level (0.01 ft. accuracy) measurements in advance of system start-up. Thereafter, monthly sampling for the first six months with dynamic water level (DWL) recording is required. After six months of monthly monitoring, the sampling shall be conducted at least annually.
4 Sample quarterly while in use. If organics are evident, sampling with analytical methods similar to MWs shall be implemented during the sampling event.
5. Daily for 10 business days at system startup; thereafter weekly for two months; thereafter based on establishing correlation with the 3D Tresar Control Monitoring System.

Note: All wells with phase-separated hydrocarbons (PSHs) must be checked at a minimum of once per month and recorded on a spreadsheet. The data must be presented in table form listing all of the impacted wells, date inspected, product thickness measured to 0.01 of a foot, and amount of product/water recovered. If PSHs are observed in a monitoring well, then appropriate steps must be taken to recover the PSHs using the best available technology.

Chavez, Carl J, EMNRD

From: Jay Hamilton [hamiltonenviro@yahoo.com]
Sent: Thursday, October 08, 2009 1:25 PM
To: Chavez, Carl J, EMNRD
Subject: Fw: Scanned Signed Letter RE: lighting Dock
Attachments: New Mexico Energy and NR Dept.- Lighting Dock.pdf

Carl,

Finally!! See attachment.

Hard copy is in the mail - sent by FedEx.

Thanks,

Jay

----- Forwarded Message ----
From: JC Lloyd <JC.Lloyd@rasertech.com>
To: Steve Brown <Steve.Brown@rasertech.com>; hamiltonenviro@yahoo.com; Sean McBride <Sean.McBride@rasertech.com>; Michael Hayter <Michael.Hayter@rasertech.com>
Sent: Thu, October 8, 2009 12:51:49 PM
Subject: Scanned Signed Letter RE: lighting Dock

Attached information was requested by Steve Brown to be sent to you.

JC Lloyd
Raser Technologies

Bill Richardson
Governor

Joanna Prukop
Cabinet Secretary

Mark Fesmire
Division Director
Oil Conservation Division

July 1, 2009

Mr. Steve Brown
Los Lobos Renewable Power, L.L.C.
5152 North Edgewood Drive, Suite 375
Provo, Utah 84604

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 Mr. Brown:

Pursuant to the 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 NMAC (*Underground Injection Control*), the Oil Conservation Division (OCD) hereby approves the discharge permit for of three (3) Class V geothermal injection wells and authorizes the operation of five (5) production or development wells for the Los Lobos Renewable Power, L.L.C. **(owner/operator)** for the above referenced site, contingent upon the conditions specified in the enclosed **Attachment 1 to the Discharge Permit**. The owner/operator of the geothermal power plant is located in the NE/4 SW/4 of Section 7, Township 25 South, Range 19 West, NMPM, Hidalgo County, New Mexico. The Class V geothermal injection wells and the production or development wells are located in Township 25 South, Ranges 19 and 20 West, NMPM, Hidalgo County, New Mexico.

Class V Injection Wells

Well 42-18 is located in the NE/4, NW/4 of Section 18 (1307 FNL and 2123 FWL)
Well 51-07 is located in the NW/4, NE/4 of Section 07 (169.2 FNL and 2406.9 FEL)
Well 53-12 is located in the SW/4, NE/4 of Section 12 (1574.8 FNL and 3350 FWL)

Geothermal Production or Development Wells

Well 13-07 is located in the SW/4, NW/4 of Section 7 (3781 FSL and 530 FWL)
Well 33-07 is located in the SE/4, NW/4 of Section 7 (3721 FSL and 1789 FWL)
Well 45-07 is located in the NE/4, SW/4 of Section 7 (2360 FSL and 2278 FWL)
Well 47-07 is located in the SE/4 SW/4 of Section 7 (1219 FSL and 2266 FWL)
Well 53-07 is located in the SW/4 NE/4 of Section 7 (3775 FSL and 3052 FWL)

Enclosed are two copies of the conditions of approval. **Please sign and return one copy to the Oil Conservation Division (OCD) Santa Fe Office within 30 days of receipt of this letter.**

Please be advised that approval of this permit does not relieve the owner/operator of responsibility should operations result in pollution of surface water, ground water or the environment. Nor does approval of the permit relieve the owner/operator of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If you have any questions, please contact Carl Chavez of my staff at (505-476-3490) or E-mail carlj.chavez@state.nm.us. On behalf of the staff of OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Mark Fesmire
Oil Conservation Division Director

MF/cc
Attachments - 1
xc: OCD District Office

ATTACHMENT 1
LIGHTNING DOCK GEOTHERMAL NO. 1 (HI-01) (GTHT-001)
DISCHARGE PERMIT APPROVAL CONDITIONS

1. **Payment of Discharge Plan Fees:** All discharge permits are subject to WQCC Regulations. Every billable facility that submits a discharge permit application will be assessed a filing fee of $100.00 plus a renewal flat fee (*see* WQCC Regulation 20.6.2.3114 NMAC). The Oil Conservation Division (OCD) has received the required $100.00 filing fee and the $1700.00 Class V Geothermal Well permit fee.

2. **Permit Expiration and Renewal:** Pursuant to WQCC Regulation Paragraph 4 of Subsection H of 20.6.2.3109 NMAC, this permit is valid for a period of five years. **This permit will expire on August 4, 2014** and an application for renewal should be submitted no later than 120 days before that expiration date. Pursuant to WQCC Regulation Subsection F of 20.6.2.3106 NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved. ***Expired permits are a violation of the Water Quality Act (Chapter 74, Article 6 NMSA 1978) and civil penalties may be assessed accordingly.***

3. **Permit Terms and Conditions:** 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. In addition, all facilities shall abide by the applicable rules and regulations administered by OCD pursuant to the Geothermal Resources Conservation Act (71-5-1 through 71-5-24 NMSA) and the Geothermal Power regulations (19.14.1 through 19.14.132 NMAC).

4. **Owner/Operator Commitments:** The owner/operator shall abide by all commitments submitted in its May 12, 2008 discharge permit application, including attachments and subsequent amendments and these conditions. Permit applications that reference previously approved plans on file with OCD shall be incorporated in this permit and the owner/operator shall abide by all previous commitments of such plans and these conditions for approval.

5. **Modifications:** WQCC Regulations Subsection C of 20.6.2.3107 NMAC, 20.6.2.3109 NMAC and Subsection I of 20.6.2.5101 NMAC address possible future modifications of a permit. The owner/operator (discharger) shall notify OCD of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants. The Division Director may require a permit modification if any water quality standard specified at WQCC Regulation 20.6.2.3103 NMAC is being or will be exceeded or if a toxic pollutant as defined in WQCC Regulation 20.6.2.7 NMAC is present in ground water at any place of withdrawal for present or reasonably foreseeable future use or that the Water Quality Standards for Interstate and Intrastate streams as specified in WQCC Regulation 20.6.4 NMAC (*Water Quality Standards for Interstate and Intrastate Streams*) are being or may be violated in surface water in New Mexico.

6. **Waste Disposal and Storage:** The owner/operator shall dispose of all wastes at an OCD-approved facility. Only geothermal RCRA-exempt wastes (*i.e.*, geothermal production fluids, hydrogen sulfide abatement wastes from geothermal energy production, *etc.*) may be disposed of by injection in a Class II salt water disposal well. RCRA non-hazardous, non-exempt geothermal wastes may be disposed of at an OCD-approved facility upon proper waste determination pursuant to 40 CFR part 261. Any waste stream that is not listed in the discharge permit application must be approved by OCD on a case-by-case basis.

A. **Disposal Of Certain Non-Domestic Waste At Solid Waste Facilities:** Pursuant to 19.15.35.8 NMAC disposal of certain non-domestic waste without notification to OCD is allowed at NMED permitted solid waste facilities if the waste stream has been identified in the discharge permit and existing process knowledge of the waste stream does not change.

B. **Waste Storage:** The owner/operator shall store all waste in an impermeable bermed area, except waste generated during emergency response operations for up to 72 hours. All waste storage areas shall be identified in the discharge permit application. Any waste storage area not identified in the permit shall be approved on a case-by-case basis only. The owner/operator shall not store geothermal waste on-site for more than 180 days unless approved by OCD.

7. **Drum Storage:** The owner/operator must store drums, including empty drums, or drums containing materials other than fresh water on an impermeable pad with curbing. The owner/operator must store empty drums on their sides with the bungs in place and lined up on a horizontal plane. The owner/operator must store chemicals in other containers, such as tote tanks, sacks or buckets on an impermeable pad with curbing.

8. **Process, Maintenance and Yard Areas:** The owner/operator shall either pave and curb or have some type of spill collection device incorporated into the design at all process, maintenance and yard areas which show evidence that water contaminants from releases, leaks and spills have reached the ground surface.

9. **Above-Ground Tanks:** The owner/operator shall ensure that all aboveground tanks have impermeable secondary containment (*e.g.*, liners and berms), which will contain a volume of at least one-third greater than the total volume of the largest tank or all interconnected tanks. The owner/operator shall retrofit all existing tanks before discharge permit renewal. Tanks that contain fresh water or fluids that are gases at atmospheric temperature and pressure are exempt from this condition.

10. **Labeling:** The owner/operator shall clearly label all tanks, drums and containers to identify their contents and other emergency notification information. The owner/operator may use a tank code numbering system, which is incorporated into their emergency response plans.

11. Below-Grade Tanks/Sumps and Pits/Ponds.

A. All below-grade tanks and sumps must be approved by OCD prior to installation and must incorporate secondary containment with leak detection into the design. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal. Owner/operator must test all existing below-grade tanks and sumps without secondary containment and leak detection annually, or as specified herein. For all systems that have secondary containment with leak detection, owner/operator shall perform a monthly inspection of the leak detection system to determine if the primary containment is leaking. Small sumps or depressions in secondary containment systems used to facilitate fluid removal are exempt from these requirements if fluids are removed within 72 hours.

B. All pits and ponds, including modifications and retrofits, shall be designed by a registered professional engineer and approved by OCD prior to installation. In general, all pits or ponds shall have approved hydrologic and geologic reports, location, foundation, liners and secondary containment with leak detection, monitoring and closure plans. All pits or ponds shall be designed, constructed and operated so as to contain liquids and solids in a manner that will protect fresh water, public health, safety and the environment for the foreseeable future. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal.

C. The owner/operator shall ensure that all exposed pits, including lined pits and open top tanks (8 feet in diameter or larger) shall be fenced, screened, netted or otherwise rendered non-hazardous to wildlife, including migratory birds. Where netting is not feasible, routine witnessing and/or discovery of dead wildlife and migratory birds shall be reported by the owner/operator to the appropriate wildlife agency with notification also provided to OCD in order to assess and enact measures to prevent the above from reoccurring.

D. The owner/operator shall maintain the results of tests and inspections at the facility covered by this discharge permit and available for OCD inspection. The owner/operator shall report the discovery of any system which is found to be leaking or has lost integrity to OCD within 15 days. The owner/operator may propose various methods for testing such as pressure testing to 3 pounds per square inch greater than normal operating pressure and/or visual inspection of cleaned tanks and/or sumps or other OCD-approved methods. The owner/operator shall notify OCD at least 72 hours prior to all testing.

12. Underground Process/Wastewater Lines:

A. The owner/operator shall test all underground process/wastewater pipelines at least once every five (5) years to demonstrate their mechanical integrity, except lines containing fresh water or fluids that are gases at atmospheric temperature and pressure. The owner/operator shall submit a comprehensive listing of process/wastewater pipelines to OCD within three months of the date of the permit issuance. The owner/operator shall test pressure rated pipe by pressuring up to

one and one-half times the normal operating pressure, if possible or for atmospheric drain systems, to 3 pounds per square inch greater than normal operating pressure and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure. The owner/operator may use other methods for testing if approved by OCD.

B. The owner/operator shall maintain underground process and wastewater pipeline schematic diagrams or plans showing all drains, vents, risers, valves, underground piping, pipe type, rating, size and approximate location. All new underground piping must be approved by OCD prior to installation. The owner/operator shall report any leaks or loss of integrity to OCD within 15 days of discovery. The owner/operator shall maintain the results of all tests at the facility covered by this discharge permit and they shall be available for OCD inspection. The owner/operator shall notify OCD at least 72 hours prior to all testing.

13. Class V Wells: With the exception of Class V geothermal energy injection wells associated with the recovery of geothermal energy for heating, aquaculture, and production of electrical power, the owner/operator shall close all Class V wells (*e.g.*, septic systems, leach fields, dry wells, *etc.*) that inject non-hazardous industrial wastes or a mixture of industrial wastes and domestic sanitary effluent wastes, unless it can be demonstrated that ground water will not be impacted in the reasonably foreseeable future. Leach fields and other wastewater disposal systems at OCD-regulated facilities that inject sanitary effluent and non-hazardous fluid into or above an underground source of drinking water are considered Class V injection wells under the EPA UIC program. Class V wells that inject domestic sanitary effluent waste only must be permitted by the New Mexico Environment Department (NMED).

14. Housekeeping: The owner/operator shall inspect all systems designed for spill collection/prevention and leak detection at least monthly to ensure proper operation and to prevent over topping or system failure. All spill collection and/or secondary containment devices shall be emptied of fluids within 72 hours of discovery. The owner/operator shall maintain all records at the facility and available for OCD inspection.

15. Spill Reporting: The owner/operator shall report all unauthorized discharges, spills, leaks and releases and shall conduct corrective actions pursuant to WQCC Regulation 20.6.2.1203 NMAC and 19.15.29 NMAC. The owner/operator shall notify both OCD District Office and the Santa Fe Office within 24 hours and file a written report within 15 days. The owner/operator shall notify OCD of any fire, break, leak, spill or blowout occurring at any geothermal drilling, producing, transporting, treating, and disposal or utilization facility in the State of New Mexico by the person operating or controlling the facility pursuant to 19.14.36.8 NMAC.

16. OCD Inspections: OCD may impose additional requirements on the facility and modify the permit conditions based on OCD inspections.

17. Storm Water: The owner/operator shall implement and maintain run-on and runoff plans and controls. The owner/operator shall not discharge any water contaminant that exceeds the WQCC standards specified in WQCC Regulations 20.6.2.3103 NMAC or 20.6.4 NMAC including

any oil sheen, in any storm water run-off. The owner/operator shall notify OCD within 24 hours of discovery of any releases and shall take immediate corrective action(s) to stop the discharge.

18. Unauthorized Discharges: The owner/operator shall not allow or cause water pollution, discharge or release of any water contaminant that exceeds the WQCC standards listed in 20.6.2.3103 NMAC (*Standards for Ground Water of 10,000 mg/L TDS Concentration or Less)* or 20.6.4 NMAC (*Water Quality Standards for Interstate and Intrastate Streams*) unless specifically listed in the permit application and approved herein.

An unauthorized discharge is a violation of this permit.

19. Vadose Zone and Water Pollution: The owner/operator shall address any contamination through the discharge permit process or pursuant to WQCC 20.6.2.4000 through 20.6.2.4116 NMAC (*Prevention and Abatement of Water Pollution*). OCD may require the owner/operator to modify its permit for investigation, remediation, abatement and monitoring requirements for any vadose zone or water pollution. Failure to perform any required investigation, remediation, abatement or to submit subsequent reports will constitute a violation of the permit.

20. Additional Site Specific Conditions - Water Quality Monitoring Program: The owner/operator shall implement the following water quality monitoring programs.

A. Aquatic Toxicity Testing: Prior to the startup of geothermal operations, the owner/operator shall conduct an aquatic toxicity test (ATT) on the Tilapia fish species present at the AmeriCulture aquaculture facility located down-gradient from the owner/operators proposed Class V injection well locations with all NALCO cooling-tower chemical constituents. The chemicals used in the ATT shall consist of the high range application of all mixed Nalco chemicals proposed during the hearing on December 1, 2008, to determine the LD_{50} under a worse-case scenario. OCD will use the results of the ATT as a tool to help assess the threat to Aquaculture and wildlife near the facility.

B. Ground Water and Surface Water Sampling and Monitoring Requirements:

i. The owner/operator shall submit a ground water monitoring program work plan that includes a well installation and monitoring plan and a sampling and analysis plan for the monitor wells to the OCD Santa Fe Office for approval at least 3 months before system startup. The owner/operator shall conduct all water quality monitoring using low-flow purging and sampling methods where monitor well screens do not exceed 15 feet with 5 feet of screen placed above the water table (potential for water table draw-down addressed at subpart 20(B)(iii)). If multiple isolated fresh water aquifers are found to exist, the owner/operator shall include a provision in the work plan for the installation of additional monitor wells

to monitor for contamination in any different fresh water aquifer system(s).

ii. The owner/operator shall submit a Background and Compliance Report reflecting the first 6 months of sampling conducted to the OCD within 30 days of completion of the first 6 months of sampling that includes the results of the initial sampling conducted in accordance with Permit Conditions 20 and 21 to determine background water quality conditions at the facility and compliance with WQCC 20.6.2.3103 NMAC and Subparagraph WW of 20.6.2.7 NMAC. The report shall specify all monitoring locations, including nested wells, hydrogeology, piezometric and/or potentiometric ground water flow direction, hydraulic gradient and water quality data from all monitoring locations and down-gradient locations from potential point sources at the facility (*i.e.*, cooling tower blow-down combined with spent production water at all Class V Well injection locations). The report shall note all exceedences of the standards specified in WQCC 20.6.2.3103 NMAC or background, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, has been detected.

iii. The owner/operator shall implement the ground water monitoring program specified in the applicable Tables in Appendix 1. The owner/operator shall monitor static water levels from monitoring locations at least quarterly to assess ground water flow direction and hydraulic gradient at the facility. If draw-down of the water table below the screen level in any monitor well occurs at and/or nearby production or development well locations, the owner/operator shall deepen wells within 30 days to provide for monitoring and the OCD and Office of the State Engineer (OSE) District Supervisor shall be notified within 24 hours of having knowledge of the above. In addition, the Owner/Operator shall provide a written statement of whether the water resource in the Animas Valley is or is not adequate to sustain steady-state production of the geothermal resource within 60 days of the original notification above. The OCD and OSE may require the owner/operator to perform corrective action(s) to private water user wells that are adversely affected by geothermal operations. The OCD and/or OSE may require the owner/operator to implement corrective action(s) to private water wells depending on the situation.

iv. The owner/operator shall gauge and sample nested monitor well head elevations (accuracy to 0.01 ft.), recorded to establish the natural vertical hydrogeologic gradient(s) within the aquifer(s) or between reservoir(s) and to monitor for any potentially upwelling contamination to nearby down-gradient pumping domestic and commercial water supply wells.

v. The owner/operator shall comply with the Federal Underground Injection Control requirements for Class V Wells (40 CFR 144 subpart G) and WQCC 20.6.2 NMAC injection well construction standards to protect the Underground Source of Drinking Water (USDW). The owner/operator shall immediately shut down the system and contact the OCD for further instructions if the concentration of any water contaminants in the injection fluids exceed the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background, as established for the injection formation at the injection well location pursuant to Clause (i) of Paragraph 21.D, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is detected.

vi. The owner/operator shall construct all monitor wells with at least 15 feet of screen with 10 feet of screen positioned below the water table (~ 60 – 70 feet bgs). The screen slot size must facilitate the collection of low turbidity samples. Low-flow ground water sampling may be used with stabilization monitoring for temperature, oxygen reduction potential (ORP) and dissolved oxygen (DO) prior to and during sample collection, if wells are constructed for low-flow sampling techniques. Otherwise, the owner/operator shall purge the wells of three well volumes prior to sampling.

vii. The owner/operator shall triangulate seasonal piezometric surface flow across the facility, including surveying all well locations (TOC and ground elevations, Mean Sea Level) to the nearest 0.01 feet. The owner/operator shall measure static water levels at least quarterly for 2 years to determine ground water flow direction. The owner/operator shall submit plots of ground water flow direction with estimates of hydraulic gradients from quarterly monitoring.

viii. The owner/operator shall notify the Santa Fe OCD office immediately after having knowledge that the concentration of a monitor well sample exceeds the greater of the water quality standards specified in WQCC 20.6.2.3103 NMAC or background established at that well's location pursuant to the monitoring program described in this paragraph or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is detected. In the event of an exceedence, the owner/operator may be required to shut down the operation for such time as may be necessary to allow the owner/operator and OCD to investigate the cause of the exceedence. If the cause is associated with geothermal operations, the OCD may invoke the permit modification provision for treatment provided herein, and may require additional conditions.

C. **Water Supply Wells Monitoring Program:**

i. The owner/operator shall sample all water supply wells in accordance with Table 3 of Appendix 1 prior to owner/operator startup to establish background water quality conditions and thereafter at least annually to demonstrate that the water quality of the water supply wells does not exceed the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background, and that no toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is present.

ii. The owner/operator shall determine the depth to water, ground elevation, and well elevation to an accuracy of 0.01 foot.

iii. The owner/operator shall notify the OCD Santa Fe office within 72 hours of its determination that the concentration of the ground water sample exceeds the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is detected.

D. **Holding Ponds, Drainage Ditches, Pits and Ponds Monitoring Program:** The owner/operator shall sample the holding ponds, drainage ditches, pits and ponds in accordance with Table 4 of Appendix 1. The owner/operator shall notify the OCD Santa Fe office within 72 hours of its determination that the concentration of a water sample taken at an unlined ditch or location listed above exceeds the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background. *Note: Table 4 analytes consist of metals and general chemistry only. They do not monitor for "toxic pollutants" as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC.*

E. **Spent Produced Water and Cooling-Tower Blow-Down Water Monitoring Program:**

i. The owner/operator shall submit a flow diagram to the OCD Santa Fe Office that depicts where the comingled spent produced water and cooling-tower blow-down water will be sampled in-line before injection, as well as specification of injection well sample port locations used for the in-line sampling at least 30 days before system startup.

ii. The owner/operator shall sample and analyze the comingled spent produced water and cooling-tower blow-down water daily for 10 business days at system startup, weekly for two months; and thereafter the sampling frequency shall be based on correlation that the owner/operator established with the 3D Tresar Control Monitoring System in accordance with Table 5 of Appendix 1 to this discharge permit. Injection wells shall be sampled

monthly for 6 months in accordance with the analytical suite in Table 2 of Appendix 1.

iii. The owner/operator shall inject comingled spent produced water and cooling-tower blow-down water only if it meets either the standards for ground water specified at Subparagraph WW of 20.6.2.7 NMAC and 20.6.2.3103 NMAC or the background concentration as established from the first sampling event. In-line sample ports or devices shall be installed at each injection well to enable owner/operator to perform the in-line sampling required herein, to ensure that the specified requirements for spent produced water and cooling-tower blow-down water are met.

iv. The owner/operator shall not discharge untreated chemicals to storm water and/or "Waters of the State." Any discharge to a rip-rap area(s) is an illegal discharge. The owner/operator shall inform the OCD Santa Fe office within 72 hours of discovery of a discharge to a rip-rap basin. Discharges shall be routed to lined pits or evaporation pond areas whenever possible.

v. The owner/operator may only discharge into "Waters of the State" in accordance with a National Pollutant Discharge Elimination System (NPDES) Permit issued by EPA Region 6. The OCD must approve the discharge concurrently with EPA. The applicant must comply with all of the Federal NPDES monitoring, treatment, and reporting requirements specified in its NPDES permit.

F. **Annual Water Quality Monitoring Program Report:** The owner/operator shall submit an Annual Water Quality Monitoring Program Report by January 31 of each year. The report shall include the following information:

i. Cover sheet marked as "Annual Water Quality Monitoring Program Report, name of owner/operator, Discharge Permit Number, API number(s) of well(s), date of report and the name of the person submitting report.

ii. Comprehensive summary of all water quality monitoring data.

iii. Summary charts and tables depicting the constituents that have ever exceeded the standards specified in WQCC 20.6.2.3103 NMAC or background, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, has been detected.

iv. Description and reason for any remedial or work on well(s), ponds, ditches, *etc.*

v. Copies of the chemical analyses in accordance with Permit Condition 20.

vi. A copy of any leaks and spills reports submitted in accordance with Permit Condition 15 above.

vii. A "Miscellaneous" section to include any other issues that should be brought to OCD's attention.

viii. Discharge Permit Signatory Requirements pursuant to WQCC Regulation Subsection G of 20.6.2.5101 NMAC.

21. Class V Geothermal Injection Wells and Geothermal Production or Development Wells:

A. Well Identification:

i. **Class V Geothermal Injection Wells:**

Well No. 42-18 (API No. 30-023-20018)
Well No. 51-07 (API No. 30-023-20020)
Well No. 53-12 (API No. 30-023-20019)

ii. **Geothermal Production or Development Wells:**

Well No. 13-07 (API No. 30-023-20013)
Well No. 33-07 (API No. 30-023-20014)
Well No. 45-07 (API No. 30-023-20015)
Well No. 47-07 (API No. 30-023-20016)
Well No. 53-07 (API No. 30-023-20017)

B. Well Casing and Cementing Requirements:

i. The owner/operator shall ensure that all casing and cementing meets or exceeds the requirements of 19.14.27.8 NMAC (*Casing and Cementing Requirements*). Conductor pipe shall be run to a minimum depth of 100 feet.

ii. Surface casing shall be to a depth of at least 100 feet greater than the deepest fresh water well within one-half mile from the well location.

iii. Intermediate strings shall be cemented solid to surface.

iv. Production casing shall either be cemented solid to the surface or lapped into intermediate casing, if run. If 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 integrity.

v. The owner/operator shall submit a logging program to OCD for review with the owner/operator depth setting recommendations for its casing program based on the logging program. The owner/operator prior to setting intermediate or production casing in each of the production and injection wells shall run open-hole logs, pursuant to the logging program, approved by the OCD. Logs must be submitted to the OCD for review with the applicant's recommendations for casing setting depths, and in case of injection wells, for precise definition of the injection interval. The type of tubing installed shall be conducive to the characteristics of the injected fluids determined after initial testing of the injected fluids. The owner/operator shall ensure that the tubing is installed with a packer set within 100 feet of the uppermost injection perforations. The casing-tubing annulus shall be filled with an inert fluid, and a gauge or approved leak-detection device shall be connected to the annulus to detect for leakage in the casing, tubing or packer.

C. **Formation Fracturing Fluids:** The owner/operator shall ensure that all fluids used in the fracturing of formations shall not harm human health, wildlife or the environment. The owner/operator shall ensure that all fluids used to fracture shall be swabbed back, collected and properly disposed.

D. **Class V Geothermal Injection Wells and Geothermal Production/ Development Wells Monitoring Program:**

i. The owner/operator shall sample the groundwater at all injection and production/development wells prior to owner/operator startup in accordance with Table 2 of Appendix 1 to establish background water quality conditions.

ii. The owner/operator shall sample cooling tower effluent (and not the groundwater) at all injection wells monthly for the first six months with dynamic water level (DWL) recordings in accordance with Table 2 of Appendix 1 to demonstrate that the injection fluid meets the standards specified in WQCC 20.6.2.3103 NMAC or background, and that no toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, has been detected.

iii. If after the first six months the owner/operator demonstrates that the in-line injection well samples meet the standards specified in WQCC 20.6.2.3103 NMAC or background, and that no toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, has been detected, then the owner/operator shall then sample ground water annually in accordance with the other annual monitoring events.

iv. The owner/operator shall determine the depth to water, ground elevation, and well elevation to an accuracy of 0.01 foot. The owner/operator shall notify the OCD Santa Fe office within 72 hours of its determination that the concentration of the ground water sample exceeds the greater of the standards specified in WQCC 20.6.2.3103 NMAC or background, or if any toxic pollutant, as defined in WQCC Subparagraph WW of 20.6.2.7 NMAC, is detected.

E. **Well Workover Operations:** The owner/operator shall obtain OCD's approval prior to performing remedial work, pressure test or any non-routine work. The owner/ operator shall request approval on form G-103 *"Sundry Notice"* pursuant to 19.14.52 NMAC, with copies provided to both the OCD Artesia District II Office and the Santa Fe Office.

F. **Production/Injection Method:** 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.

G. **Well Pressure Limits:** The owner/operator shall ensure that the operating surface injection and/or test pressure for each injection well measured at the wellhead shall be at a flow rate and pressure (psi) that will not exceed 0.2 psi per foot of depth from the surface to the top of injection interval, unless the owner/operator secures OCD approval for an increase based on demonstration that the increase will not involve a hazard of formation fracture and/or adversely affect public health, the environment and the correlative rights of any geothermal operators in the high temperature geothermal reservoir. The Owner/Operator shall report the intended maximum injection pressure to the Division for approval after testing the injection formation and prior to the commencement of injection in accordance with Form G-112. Re-injected fluids shall be confined to the aquifer where production is occurring and shall not adversely impact another aquifer(s). The owner/operator shall have working pressure limiting devices or controls to prevent overpressure. The owner/operator shall report any pressure that causes damage to the system to OCD within 24 hours of discovery.

H. **Mechanical Integrity Testing:** At least once every five years and after any well work over, the geothermal reservoir will be isolated from the casing or tubing annuals and the casing pressure tested at a minimum of 600 psig for 30 minutes.

A passing test shall be within +/- 10% of the starting test pressure. All pressure tests must be performed in accordance with the testing schedule shown below and witnessed by OCD staff unless otherwise approved.

Testing Schedule:

2009: Prior to system start-up, a 30 minute casing pressure test at a minimum of 600 psig (set packer above casing shoe to isolate formation from casing), and

2013: A 30 minute casing pressure test at a minimum of 600 psig (set packer above casing shoe to isolate formation from casing)

I. **Capacity/Reservoir Configuration and Subsidence Survey:** The owner/operator shall provide information on the size and extent of the geothermal reservoir and geologic/engineering data demonstrating that continued geothermal extraction will not cause surface subsidence, collapse or damage to property or become a threat to public health and the environment. This information shall be supplied to OCD in each annual report. OCD may require the owner/operator to perform additional well surveys, tests, etc. A subsidence monitoring section is required in the annual report and shall include well top-of-casing and ground elevation surveying (Accuracy: 0.01 ft.) before start-up and on an annual basis in order to demonstrate that there are no subsidence issues. If the owner/operator cannot demonstrate the stability of the system to the satisfaction of OCD, then OCD may require the owner/operator to shut-down, close the site and properly plug and abandoned the wells. ***The owner/operator shall report any subsidence to the OCD Santa Fe office within 24 hours of discovery.***

J. **Production/Injection Volumes:** After placing a geothermal well on production, the owner/operator shall file in duplicate a monthly production report form G-108, with the OCD Santa Fe office by the 20th day of each month and also with the annual reports. The owner/operator shall also document the production from each well and each lease during the preceding calendar month.

K. **Analysis of Injection and Geothermal Reservoir Fluids:** After placing any well on injection in a geothermal resources field or area, the owner/operator shall file in duplicate a monthly injection report, form G-110, with the OCD Santa Fe office by the 20th day of each month and also with the annual report. The owner/operator shall specify the zone or formation into which injection is being made, the volume injected, the average temperature of the injected fluid and the average injection pressure at the wellhead.

L. **Area of Review (AOR):** The owner/operator shall report within 24 hours of discovery of any new wells, conduits or any other device that penetrates or may

penetrate the injection zone within one-quarter mile from a Class V Geothermal Injection Well. *Note: AOR applies specifically to Class V Injection Wells.*

M. **Annual Geothermal Temperature and Pressure Tests:** The owner/operator shall test its production or development wells at least annually and submit the results to the OCD Santa Fe office on form G-111 within 30 days of the completion of the test. The owner/operator shall record the flowing temperatures and flowing pressure tests at the wellhead for a minimum of 72 hours of continuous flow at normal producing rates. The owner/operator shall then shut in the well for 24 hours and record the shut-in pressures at the wellhead. The owner/operator shall submit the results of these tests in duplicate to the OCD Santa Fe office.

N. **Loss of Mechanical Integrity:** The owner/operator shall report to the OCD Santa Fe Office within 24 hours of its discovery of any failure of the casing, tubing or packer or movement of fluids outside of the injection zone. The owner/operator shall cease operations until proper repairs are made and the owner/operator receives OCD approval to re-start injection operations.

O. **Bonding or Financial Assurance:**

i. Class V Geothermal Injection Wells: The owner/operator shall maintain at a minimum a cash bond (*i.e.*, Assignment of Cash Collateral Deposit or Multi-Well Cash Financial Assurance Bond Geothermal Injection) in the amount of $50,000.00 to restore the site and/or plug and abandon wells, pursuant to OCD rules and regulations.

ii. Geothermal Production or Development Wells: The owner/operator shall maintain at a minimum a cash bond (*i.e.*, $10,000.00 Multi-Well (4 wells) and/or $5,000.00 (1 well) Geothermal Plugging Bonds). If warranted, OCD may require additional financial assurance for closure of the power plant or facility (see Permit Condition 34 below).

P. **Annual Geothermal Well Report:** The owner/operator shall submit an Annual Geothermal Well Report by January 31 of each year. The report shall include the following information:

i. Cover sheet marked as "Annual Geothermal Well Report, name of owner/operator, Discharge Permit Number, API number(s) of well(s), date of report and the name of the person submitting report.

ii. Comprehensive summary of all geothermal well operations, including description and reason for any remedial or work on the well(s). The

owner/operator shall include copies of the form G-103s that it submitted to the OCD Santa Fe office.

iii. Production and injection volumes in accordance with Permit Condition 21.J, including a running total to be carried over each year. The owner/operator shall report the total mass produced, dry steam produced, flow rates, temperatures and pressures, average injection pressures, temperatures, *etc.*

iv. A copy of the chemical analyses in accordance with Permit Condition 21.K.

v. A copy of any mechanical integrity test chart, including the type of test, (*i.e.*, EPA 5-Year casing test), date, time, *etc.*, in accordance with Permit Conditions 21.H.

vi. A copy of the annual subsidence survey data results in accordance with Permit Condition 21.I.

vii. Brief explanation describing deviations from normal production methods.

viii. A copy of any leaks and spills reports submitted in accordance with Permit Condition 15 above.

ix. A copy of analytical data results from annual groundwater monitoring including the QA/QC Laboratory Summary.

x. An updated Area of Review (AOR) summary (WQCC Regulation 20.6.2 NMAC) when any new wells are drilled within 1/4 mile of any UIC Class V Geothermal Injection Well.

xi. A "Miscellaneous" section to include any other issues that should be brought to the OCD's attention.

xii. Discharge Permit Signatory Requirements pursuant to WQCC Regulation Subsection G of 20.6.2.5101 NMAC.

22. Transfer of Discharge Permit: Pursuant to WQCC Regulation Subsection H of 20.6.2.5101 NMAC, the owner/operator and new owner/operator shall provide written notice of any transfer of the permit. Both parties shall sign the notice 30 days prior to any transfer of ownership, control or possession of a facility with an approved discharge permit. In addition, the purchaser shall include a written commitment to comply with the terms and conditions of the previously approved discharge permit. OCD will not transfer brine well operations until proper

bonding or financial assurance is in place and approved by the OCD. OCD reserves the right to require a modification of the permit during transfer.

23. Closure: The owner/operator shall notify OCD when operations of the facility are to be discontinued for a period in excess of six months. Prior to closure of the facility, the owner/operator shall submit for OCD approval, a closure plan including a completed C-103 form for plugging and abandonment of the well(s). Closure and waste disposal shall be in accordance with the statutes, rules and regulations in effect at the time of closure. OCD may require additional financial assurance if surface water and/or ground water is impacted pursuant to WQCC Regulation Paragraph (11) of Subsection A of 20.6.2.3107 NMAC.

24. Certification: Los Lobos Renewable Power, L.L.C. (Owner/Operator), by the officer whose signature appears below, accepts this permit and agrees to comply with all submitted commitments, including these terms and conditions contained here. **Owner/Operator** further acknowledges that OCD may, for good cause shown, as necessary to protect fresh water, public health, safety and the environment, change the conditions and requirements of this permit administratively.

Conditions accepted by: *"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment."*

[redacted]

Los Lobos Renewable Power LLC
Company Name - print name above

Steven Brown, Manager
Company Representative - print name

Company Representative - signature

Title Manager

APPENDIX 1

WATER QUALITY MONITORING PROGRAM

Table 1
Ground Water Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Well location
MW-1 [1]	Annual	GW	Analyze for dissolved fraction of all 20.6.2.3103 NMAC Constituents	Shallow MW (water table) located ~100' downgradient (North) of Class V IW 42-18 and associated pits (OCD)
MW-3 [1]	Annual	GW	VOCs (8260B)	Shallow MW (water table) located ~100' downgradient (North) of Class V IW 51-07 and associated pits (OCD)
MW-2 [1]	Annual	GW	SVOCs (8270C)	Shallow MW (water table) located ~100' downgradient (North) of Class V IW 53-12 and associated pits (OCD)
MW-4 [1]	Annual	GW	PAHs (8310)	Shallow MW located ~1500' (Northwest) of DW 45-07 directly downgradient from facility (OCD)
MW-5 [1]	Annual	GW	TPH (418.1)	Shallow MW (water table) located ~1000' upgradient (South) of the nursery greenhouses 3 & 4 to monitor background (OCD)
MW-6 [1]	Annual	GW	Metals - dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods)	Shallow MW (water table) located ~100' downgradient (North) of DW 53-07 and associated pits (OCD)
MW-7 [1]	Annual	GW	Mercury (7470A/7471A)	Shallow MW (water table) located ~100' downgradient (North) of DW 13-07 and associated pits (OCD)
			General Chemistry (Methods specified at 40 CFR 136.3)	
			Uranium (6010B/6020), Radioactivity (E903/E904)	
			Radon (by EPA Method or method approved by OCD)	

ID*	Frequency	Media	Analytical Suite/Method	Approximate Well location
MW-8 [J]	Annual	GW		Shallow MW (water table) located ~100' downgradient (North) of DW 33-07 and associated pits (OCD)
NW-1 [I]	Annual	GW		Similar to monitoring & sampling plan from Los Lobos.
NW-2 [I]	Annual	GW		Similar to monitoring & sampling plan from Los Lobos.
NW-3 [I]	Annual	GW		Similar to monitoring & sampling plan from Los Lobos.

Table 2
Geothermal Injection Wells and
Production/Development Wells Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Well Location
DW 13-07[1,3]	Annual	GW	Analyze for dissolved fraction of all 20.6.2.3103 NMAC Constituents VOCs (8260B) SVOCs (8270C) PAHs (8310) TPH (418.1) Metals - dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) Mercury (7470A/7471A) General Chemistry (Methods specified at 40 CFR 136.3) Uranium (6010B/6020), Radioactivity (E903/E904) Radon (by EPA Method or method approved by OCD)	As Proposed in Application
DW 33-07[1,3]	Annual	GW		
DW 45-07[1,3]	Annual	GW		
DW 47-07[1,3]	Annual	GW		
DW 53-07[1,3]	Annual	GW		
IW 42-18[1,3]	Annual	GW		
IW 51-07[1,3]	Annual	GW		
IW 53-12[1,3]	Annual	GW		

Table 3
Water Supply Wells Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Location
TG 52-07	Annual	GW	Analyze for dissolved fraction of all 20.6.2.3103 NMAC Constituents VOCs (8260B) SVOCs (8270C) PAHs (8310) TPH (418.1) Metals - dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) Mercury (7470A/7471A) General Chemistry (Methods specified at 40 CFR 136.3) Uranium (6010B/6020), Radioactivity (E903/E904) Radon (by EPA Method or method approved by OCD)	Similar to monitoring & sampling plan from Los Lobos.
AmeriCulture No. 1 Federal	Annual	GW		
AmeriCulture State Well No. 2	Annual	GW		
McCants No. 1 State	Annual	GW		
Burgett No. 1 State	Annual	GW		
Burgett Greenhouse No. 2	Annual	GW		

Table 4
Holding Ponds, Drainage Ditches, Pits and Ponds Monitoring Program

ID[3]	Frequency	Media	Analytical Suite/Method	Approximate Location
GH Holding Pond No. 1	Quarterly[4]	SW	Metals- dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) General Chemistry (Methods specified at 40 CFR 136.3	Similar to monitoring & sampling plan from Los Lobos.
GW Holding Pond No. 2	Quarterly[4]	SW		
Drainage Ditch No. 1 (East)	Quarterly[4]	SW		
Retention Pond No. 1	Quarterly[4]	SW		
Bermed Canal No. 1	Quarterly[4]	SW		
Pit Associated with Well 13-07	Within 30 days of use	SW		
Pit Associated with DW 33-07	Within 30 days of use	SW		
Pit Associated with DW 45-07	Within 30 days of use	SW		
Pit Associated with DW 47-07	Within 30 days of use	SW		
Pit Associated with DW 53-07	Within 30 days of use	SW		
Pit Associated with IW 42-18	Within 30 days of use	SW		
Pit Associated with IW 51-07	Within 30 days of use	SW		

ID*	Frequency	Media	Analytical Suite/Method	Approximate Location
Pit Associated with IW 53-12	Within 30 days of use	SW		

Table 5
Cooling Tower Effluent Monitoring Program

ID*	Frequency	Media	Analytical Suite/Method	Approximate Location
Cooling Tower Effluent	Daily [5]	Effluent	Metals - dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods) BOD_5 (405.1/5210B) COD (410.2) General Chemistry (Methods specified at 40 CFR 136.3	Similar to monitoring & sampling plan from Los Lobos.

BOD_5: Biochemical Oxygen Demand
COD: Chemical Oxygen Demand
DW: Development/Production Well
DWL: Dynamic Water Level
GH: Greenhouse
GW: Ground Water
IW: Injection Well
MSL: Mean Sea-Level
MW: Monitor Well
NW: Nested Well
SW: Surface Water
SWL: Static Water Level
* Quarterly Static Water Level (SWL): MSL to nearest 0.01 feet prior to sampling event

1. Wells must be installed in advance of system startup and sampled.
2. Semi-Annual groundwater monitoring event must be completed no more than 30 days prior to the start of the irrigation season but no later than April 30 of each year. Monitoring must be conducted no later than 30 days after the conclusion of the irrigation season but no later than November 15 of each year.
3. One time sampling event with static water level (SWL) mean sea-level (0.01 ft. accuracy) measurements in advance of system start-up. Thereafter, monthly sampling for the first six months with dynamic water level (DWL) recording is required. After six months of monthly monitoring, the sampling shall be conducted at least annually.
4. Sample quarterly while in use. If organics are evident, sampling with analytical methods similar to MWs shall be implemented during the sampling event.
5. Daily for 10 business days at system startup; thereafter weekly for two months; thereafter based on establishing correlation with the 3D Tresar Control Monitoring System.

Note: All wells with phase-separated hydrocarbons (PSHs) must be checked at a minimum of once per month and recorded on a spreadsheet. The data must be presented in table form listing all of the impacted wells, date inspected, product thickness measured to 0.01 of a foot, and amount of product/water recovered. If PSHs are observed in a monitoring well, then appropriate steps must be taken to recover the PSHs using the best available technology.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, September 30, 2009 12:53 PM
To: 'Jay Hamilton'
Cc: Steve Brown; Michael Hayter; Brooks, David K., EMNRD; Fesmire, Mark, EMNRD; VonGonten, Glenn, EMNRD
Subject: Request for Status of Final Signed OCD Discharge Permit (GTHT-1)

Mr. Hanilton, et al.:

The New Mexico Oil Conservation Division (OCD) is writing to request a status update on the applicant's plans to sign the OCD's document by COB this Friday, October 2, 2009. A signed discharge permit means that you have a discharge permit and an unsigned discharge permit cannot be called a discharge permit until signed.

The OCD is currently considering rescinding the document that was issued on July 1, 2009.

Please contact me if you have questions or need to discuss the above. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Jay Hamilton [mailto:hamiltonenviro@yahoo.com]
Sent: Wednesday, September 23, 2009 12:20 PM
To: Chavez, Carl J, EMNRD
Cc: Steve Brown; Michael Hayter
Subject: Re: Lightning Dock Geothermal Project (GTHT-1) Final Signed Permit

Carl,

I will look into it and get back to you shortly.

Thanks,

Jay

From: "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
To: Jay Hamilton <hamiltonenviro@yahoo.com>
Cc: Steve Brown <steve.brown@rasertech.com>; Michael Hayter <Michael.Hayter@rasertech.com>
Sent: Wednesday, September 23, 2009 11:07:26 AM
Subject: RE: Lightning Dock Geothermal Project (GTHT-1) Final Signed Permit

Jay, et al.:

Do you know the status of the bonding and when the OCD will receive a signed discharge permit from Los Lobos or Raser? Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Jay Hamilton [mailto:hamiltonenviro@yahoo.com]
Sent: Thursday, August 06, 2009 12:51 PM
To: Chavez, Carl J, EMNRD
Cc: Steve Brown; Michael Hayter
Subject: Re: Lightning Dock Geothermal Project (GTHT-1) Final Signed Permit

Carl,

Thanks, I will get that to you shortly.

Jay

From: "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
To: Jay Hamilton <hamiltonenviro@yahoo.com>
Cc: Michael Hayter <Michael.Hayter@rasertech.com>; "Reeves, Jacqueta, EMNRD" <Jacqueta.Reeves@state.nm.us>
Sent: Thursday, August 6, 2009 12:45:03 PM
Subject: Lightning Dock Geothermal Project (GTHT-1) Final Signed Permit

Jay:

FYI, the OCD has not received the signed version of the OCD discharge permit (GTHT-001) issued on July 1, 2009. The OCD needs the signed discharge permit from Mr. Brown (the applicant) I believe. Also, Los Lobos has already paid the $100 filing fee and permit fee, so we just need the signed version of permit that was mailed out on July 1, 2009. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Jay Hamilton [mailto:hamiltonenviro@yahoo.com]
Sent: Tuesday, August 04, 2009 4:37 PM
To: Chavez, Carl J, EMNRD
Subject: Re: Fw: Lightning Dock - Move Well 47-07

Carl,

thanks,

Jay

From: "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
To: Jay Hamilton <hamiltonenviro@yahoo.com>
Cc: Steve Brown <steve.brown@rasertech.com>; Michael Hayter <Michael.Hayter@rasertech.com>; "Reeves, Jacqueta, EMNRD" <Jacqueta.Reeves@state.nm.us>
Sent: Tuesday, August 4, 2009 4:32:50 PM
Subject: RE: Fw: Lightning Dock - Move Well 47-07

Jay:

I would complete a C-103 change of location for Well 47-07 and attach the C-101 and 102 forms to it. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Jay Hamilton [mailto:hamiltonenviro@yahoo.com]
Sent: Tuesday, August 04, 2009 4:23 PM
To: Chavez, Carl J, EMNRD
Cc: Steve Brown; Michael Hayter
Subject: Re: Fw: Lightning Dock - Move Well 47-07

Carl,

Thanks, I will have you the C-101 and C102 as soon as they give me a new location for 47-07.

Jay

From: "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
To: Jay Hamilton <hamiltonenviro@yahoo.com>; carl <carlj.chavez@state.nv.us>
Cc: Steve Brown <steve.brown@rasertech.com>; Michael Hayter <Michael.Hayter@rasertech.com>; "Reeves, Jacqueta, EMNRD" <Jacqueta.Reeves@state.nm.us>; "Fesmire, Mark, EMNRD" <mark.fesmire@state.nm.us>
Sent: Tuesday, August 4, 2009 3:36:36 PM
Subject: RE: Fw: Lightning Dock - Move Well 47-07

Jay, et al.:

The OCD testified that moving a well location is possible through the OCD's administrative process.

If Raser is looking to change the location significantly from the originally proposed location, then the OCD would need to scrutinize this more closely in our review and approval process. If the location is slightly altered, the OCD must approve the new location too, but the review process may be minor in scope. I hope this addresses your question. Both reviews fall under the OCD's administrative process and may require a site visit to make a final call too. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462

E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Jay Hamilton [mailto:hamiltonenviro@yahoo.com]
Sent: Tuesday, August 04, 2009 11:14 AM
To: Chavez, Carl J, EMNRD; carl
Cc: Steve Brown; Michael Hayter
Subject: Fw: Fw: Lightning Dock - Move Well 47-07

Carl,

My moving Well 47-07 will that have impact on Damon or the appealing process?

We are a little gun shy.

Thanks,

Jay

----- Forwarded Message ----
From: Steve Brown <Steve.Brown@rasertech.com>
To: Jay Hamilton <hamiltonenviro@yahoo.com>
Cc: Michael Hayter <Michael.Hayter@rasertech.com>
Sent: Monday, August 3, 2009 7:50:55 PM
Subject: RE: Fw: Lightning Dock - Move Well 47-07

Jay,

Will this have an impact on Damon Seawright?

Steve

From: Jay Hamilton [mailto:hamiltonenviro@yahoo.com]
Sent: Monday, August 03, 2009 12:44 PM
To: Steve Brown; Ben Barker
Subject: Fw: Fw: Lightning Dock - Move Well 47-07

Steve/Ben

Because of State regulations Well 47-07 needs to be moved.

The well needs to be 165 feet from quarter-quarter-quarter section.

Mark has given us a map with the boundaries of where the well can be moved.

Ben this probably is your call. This well will probably be moved in the future unless this it is the first well we will be drilling.

I just need to get this approved so we can moved forward.

Please call if you have questions. I need this as soon as possible.

Thanks,

Jay

-- Forwarded Message ----
From: Mark Winkelaar <winkerstick@gmail.com>
To: Jay Hamilton <hamiltonenviro@yahoo.com>
Sent: Monday, August 3, 2009 8:53:17 AM
Subject: Re: Fw: Lightning Dock - Move Well 47-07

Attached map document with description of 100 ft x 100 ft area at least 165 ft from quarter quarter section lines.

Mark Winkelaar

On Wed, Jul 29, 2009 at 9:56 AM, Jay Hamilton<hamiltonenviro@yahoo.com> wrote:
> oops!!! Here is the attachment from the OCD. Well 47-07 needs to be at
> least 165 feet from the outer boundary of the quarter-quarter-quarter
> section.
> Thanks,
>
> Jay
> ----- Forwarded Message ----
> From: Jay Hamilton <hamiltonenviro@yahoo.com>
> To: Mark Winkelaar <winkerstick@gmail.com>
> Cc: Steve Brown <steve.brown@rasertech.com>; Michael Hayter
> <Michael.Hayter@rasertech.com>
> Sent: Wednesday, July 29, 2009 9:52:27 AM
> Subject: Lightning Dock - Move Well 47-07
>
> Mark,
>
> Please give the boundry where we can move Well 47-07 at Lightning Dock.
>
> Thanks,
>
> Jay

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