

THE NEVADA DIVISION OF MINERALS
OF THE COMMISSION ON MINERAL RESOURCES
INFORMATIONAL STATEMENT
SUBMITTED IN COMPLIANCE WITH NRS 2338.066.
UPON ADOPTION OF REGULATION FOR GEOTHERMAL RESOURCES
IN CHAPTER 534A OF
THE NEVADA ADMINISTRATIVE CODE

R032-19

November 26, 2019

1. A clear and concise explanation of the need for the adopted regulation.

The need for the adopted regulation is to update the geothermal resource regulations to be consistent with current industry and regulatory practices.

2. A description of how public comment was solicited, a summary of public response, and an explanation of how other interested persons may obtain a copy of the summary.

Copies of the proposed regulation, notices of workshop and the notice of intent to act upon the regulation were sent by U.S. mail and email to persons who were known to have an interest in the geothermal industry as well as any persons who had specifically requested such notice. These documents were also made available at the website of the Division of Minerals, the website of the Nevada Legislature, the Nevada Public Notice website of the Nevada Department of Administration, mailed to all county libraries in Nevada and posted at the following public locations:

Division of Minerals
400 W. King St. #106
Carson City, NV 89703

Division of Minerals
2030 E. Flamingo Rd. #220
Las Vegas, NV 89119

Legislative Counsel Building
401 S. Carson St.
Carson City, NV 89701

State Library and Archives
100 N. Stewart St.
Carson City, NV 89701

State Capitol Building
101 N. Carson St.
Carson City, NV 89701

Workshops were held in Reno on September 25, 2019 and in Carson City on November 6, 2019, and the minutes of those meetings, attached hereto, contain a summary of the discussions held regarding the proposed regulation. On October 18, 2019, the Administrator of the Division of Minerals issued a Notice of Intent to Act Upon a Regulation which incorporated in the proposed regulation certain suggestions of the parties attending the Reno and Carson City workshops.

A document entitled *Responses to Summary of Comments on the proposed Geothermal regulations of the Nevada Division of Minerals of the Commission on Mineral Resources*

dated November 25 and consisting of four pages, was prepared by the agency and is attached to this Information Statement, as Appendix A, in compliance with NRS 233B.066(1)(b),(e). A copy of this document may also be obtained from the Division of Minerals, 400 W. King St. #106, Carson City, NV 89703, 775-684-7040, or email to ndom@minerals.nv.gov .

3. The number of persons who:
 - (a) Attended the adoption hearing on November 21,2019: 6
 - (b) Testified at the adoption hearing on November 21,2019: 1
 - (c) Attended the public workshop on November 6, 2019: 7
 - (d) Testified at the public workshop on November 6,2019: 6
 - (e) Attended the public workshop on September 25,2019: 8
 - (f) Testified at the public workshop on September 25,2019: 8
 - (g) Submitted to the agency written comments: 3 (workshops and hearing)
4. A list of names and contact information, including telephone number, business, address, electronic mail address and name of entity or organization represented, for each person identified in #3 (b),(d), (f) and (g) above, is attached as Appendix B.
5. A description of how comment was solicited from affected businesses, a summary of their response, and an explanation how other interested persons may obtain a copy of the summary.

Comments were solicited from affected businesses in the same manner as they were solicited from the public. The summary is attached as Appendix A and can also be obtained as instructed in the response to #2.

6. If the regulation was adopted without changing any part of the proposed regulation, a summary of the reasons for adopting the regulation without change.

The regulation was adopted on November 21, 2019 and included seven non-substantive changes made for clarity.

7. The estimated economic effect of the adopted regulations on the business which it is to regulate and on the public. These must be stated separately, and each case must include:
 - (a) Both adverse and beneficial effects; and
 - (b) Both immediate and long-term effects.

(a) The proposed regulations would have the adverse effect on the geothermal industry of slightly increasing the cost to bond and drill geothermal wells. The estimated increased cost would be approximately \$3,250 per geothermal domestic well and \$6,800 per industrial or commercial geothermal well. There is no adverse effect on the public. The beneficial effect on the geothermal industry would be increased workplace safety. The beneficial effect on the public would be increased funding available for plugging wells on non-federal land if an operator fails to fulfill the permit requirements.

(b) The immediate and long-term effects on the geothermal industry are improved regulations providing clarity and which are reflective of, and adaptive to, current best practices leading to a more efficient permitting process. The immediate and long-term effect on the public would be increased clarity in the permitting process and better understanding of how the geothermal industry is regulated for conservation of the resource while being protective of groundwater and the increased funding available to properly plug wells if necessary.

8. The estimated cost to the agency for the enforcement of the adopted regulation.

There is no additional cost to the agency for the enforcement of the adopted regulation.

9. A description of any regulations of other state or government agencies which the adopted regulation overlaps or duplicates and a statement explaining why the overlapping or duplication is necessary. If the regulation overlaps or duplicates a federal regulation, the name of the regulating federal agency.

There are no other state agency regulations that the proposed regulation overlaps or duplicates. The proposed regulation may overlap or duplicate certain federal regulations only on public lands administered by the U.S. Department of the Interior, Bureau of Land Management (BLM). These federal regulations pertain to the requirements for submission of an application for a Geothermal Drilling Permit (GDP) to the appropriate BLM Field Office. The duplication is necessary to afford satisfactory concurrent review during the permitting process while ensuring the proposed activities are protective of waters of the state.

10. If the regulation includes provisions that are more stringent than a federal regulation which regulates the same activity, a summary of such provisions.

The proposed regulation may duplicate or overlap federal regulations only on public lands administered by the U.S. Department of the Interior, Bureau of Land Management. The proposed regulation is more stringent than current federal law with regards to the requirement for the use of mud cooling equipment when geothermal drilling fluids reach 125°F.

11. If the regulation provides a new fee or increases an existing fee, the total annual amount the agency expects to collect and the manner in which the money will be used.

There is no new fee or fee increase.

Respectfully submitted,

/s/

Richard M. Perry,
Certified Professional Geologist
Administrator, NDOM
November 26, 2019

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Introduction and Overview

Existing law authorizes the Division of Minerals of the Commission on Mineral Resources to adopt regulations relating to geothermal resources (NRS 534A.090).

The Commission on Mineral Resources (CMR) directed the Division of Minerals (NDOM) to move forward with updating regulations for geothermal resources at their August 23, 2018 meeting. NDOM developed the initial draft regulation and submitted it to the Legislative Counsel Bureau July 19, 2019.

As provided in NRS 233B and for all agency proposed regulations, the Legislative Counsel completed their review and approved the revised text of the proposed regulation and returned it to NDOM on September 11, 2019 as R032-19.

On September 5, 2019, and as provided in NRS § 233B.0603, NDOM issued the Notice of Public Workshop to be held on September 25, 2019. The Notice was sent to all interested persons on the agency established mailing list and was posted on the NDOM internet web page. The Notice was also sent to all geothermal producers and geothermal drilling companies in Nevada, each county library, the State Library and Archives, the Legislative Building, and the facility where the workshop would take place. At the workshop, full opportunity was provided all wishing to comment or submit written comments on the proposed rule.

Appendix A

Response to Summary of Comments on the proposed regulation R032-19 of the Nevada Division of Minerals of the Commission on Mineral Resources, November 25, 2019

On October 18, and as provided in NRS § 233B.0603, NDOM issued the Notice of Public Workshop to be held on November 6, 2019 and the Notice of Public Hearing and the Notice of Intent to Act on a Regulation, both to be held on November 21, 2019. The Notices were sent to all interested persons on the agency established mailing list and was posted on the NDOM internet web page. The Notice was also sent to all geothermal producers and geothermal drilling companies in Nevada, each county library, the State Library and Archives, the Legislative Building, and the facility where the workshop would take place. At the workshop, full opportunity was provided all wishing to comment or submit written comments on the proposed rule. The date for submitting written comments was extended to November 15, 2019.

The following sections include the agency responses to a summary of the comments.

Response to Comments on the Definition of Cement

- Comment: This definition does not account for the use of lighter weight cements often used in geothermal resource environments. (Multiple comments received)
- Comment: The language could include API specs and minimum compressive strength requirements.
- Response: The definition of cement was removed from definitions and moved to apply only to the abandonment of thermal gradient wells, Section 32, new subsection 3.

Response to Comments on the Definition of Natural Heat of the Earth

- Comment: How was the reference of 85°F arrived at?
- Comment: Would this definition then exclude ground source heat pumps and downhole "trombone" systems from the requirements for permitting through NDOM.
- Response: The reference to 85F came from Idaho's recent geothermal regulations and provides much needed clarity for if and when a permit is required from NDOM. Ground source heat pumps and closed loop downhole systems using a working fluid would not require a permit from NDOM.

Response to Comments on Order To Plug A Well

- Comment: A notice from NDOM to an operator to plug a well within 45 days does not allow sufficient time to budget and mobilize the necessary resources.
- Comment: For older observation wells, will there be some advanced notice of wells that may need to be plugged before an order is issued by NDOM?
- Response: The language was changed to require a "response in writing within 45 days with a plan to plug". Once the regulations become effective, and before NDOM issues an order to plug an inactive well, NDOM will provide operators with a list of wells which appear not to have been in use for more than two years.

Appendix A
Response to Summary of Comments on the proposed regulation R032-19
of the Nevada Division of Minerals of the Commission on Mineral Resources, November 25, 2019

Response to Comments on Increased Bonding Requirements

Comment: Are the increased bonding requirements retroactive?

Response: No, the increased bonding requirements only apply to new Well or new Project Area permits.

Response to Comments on Casing Requirements

Comment: 10% of total depth with 200' minimum does not provide the needed flexibility for shallow geothermal systems.

Comment: Having a maximum, of 1,500', for surface casing is unnecessary.

Comment: If surface casing depth is insufficient to protect fresh water aquifers then an intermediate string must be run and cemented before drilling into the resource.

Comment: The current regulation language, 10% or 50' minimum, is sufficient and should not be changed.

Comment: Clarify that the pressure test is that of differential pressure.

Response: NDOM chose to use current regulations from California and Idaho for surface casing minimum depth requirements. While there are current geothermal fields with very shallow systems, they are atypical and require a careful review of casing and cementing programs to ensure workplace safety and protection of fresh water. Under Section 9, exceptions can be granted to the requirement. In some cases a second string of surface may be required to satisfy the requirement as noted in Section 24 subsection 3. Because surface casing is typically a large diameter as is the annulus which must be filled with cement to the surface, the maximum depth of 1,500' was intended to provide a limit to what would be required of an operator. The word "differential" was added for clarification.

Response to Comments on Mud Cooling Equipment

Comment: 200°F is more appropriate (than the proposed 125°F), just be careful.

Comment: Maintaining mud temperatures below 125°F is not practical.

Comment: Many residential drilling locations are not sufficiently sized to accommodate mud cooling equipment.

Response: NDOM has removed the language, "maintained below 125F", but retained the requirement of "when flow line temperatures reaches 125°F". A random sampling of ten geothermal drill logs found that on average, the temperature at which mud cooling equipment was added was 138.5°F. Though adding to both the cost and space requirements of drilling, NDOM believes the required use of mud cooling equipment and the continuous observation of mud temperatures above 125F are crucial for workplace safety. Additionally, the BLM uses the threshold of 125°F "... as an indicator that direct contact with the geothermal resource has occurred or is imminent..." for exploration drilling of thermal gradient holes.

Appendix A

*Response to Summary of Comments on the proposed regulation R032-19
of the Nevada Division of Minerals of the Commission on Mineral Resources, November 25, 2019*

Response to Comments on Well Signage

Comment: The location of the well should include lots and tracts.

Response: The language was changed to include lots or tracts.

Response to Comments on Agency Assignment of Unique Well Number

Comment: What's wrong with API numbers?

Response: The American Petroleum Institute number standard was transferred to the Professional Petroleum Data Management Association in 2010 and API Number was replaced with U.S. Well Number.

Written or verbal comments were received from the following:

Brian Amme
Kemba Anderson
John Menghini
Alex Jensen
Jose Rios
Bureau of Land Management
Nevada State Office
1340 Financial Blvd.
Reno, NV 89502

Cheryl Eanes
Mark Hanneman
Josh Nordquist
Ormat
6140 Plumas St.
Reno, NV 89519

Brian Crane
Enel Green Power North America
1755 E. Plumb Lane, Suite 155
Reno, NV 89502

Bill Rickard
Geothermal Resource Group
77530 Enfield Lane, Bldg. E
Palm Desert, CA 92211

Bruce MacKay
Monty Loper
Chris Shedeger
Bruce MacKay Pump and Well Service
1600 Mt. Rose Hwy
Reno, NV 89511

Mark Brennen
Resource Cementing, LLC
2500 Airport Rd.
Rio Vista, CA 94571

Andrew Tiedeman
Navy Geothermal Program
Naval Air Station Fallon
4755 Pasture Rd.
Fallon, NV 89496

