

NEVADA DIVISION OF MINERALS

Commission on Mineral Resources

NEVADA'S DISSOLVED MINERAL RESOURCE EXPLORATION REGULATIONS

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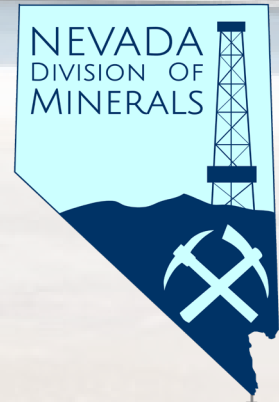
LITHIUM BRINE EXPLORATION ACTIVITY

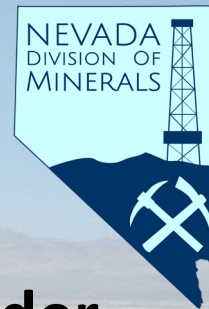
NWRA Mine Water Management Symposium

Sparks, NV

January 30, 2023

Mike Visher, Administrator

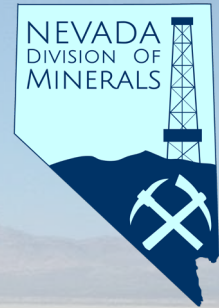




Lithium in the 1872 Mining Law

- **Lithium is a locatable mineral on Federal land under the General Mining Law of 1872**
- **Placer claims are generally used to locate potential lithium brine deposits**
- **Lode claims are generally used to locate potential lithium clay or hardrock resources**
- **Initial exploration performed under a BLM Notice (not a permit) which is a quick process**
 - **Only 15 days advance notice**
 - **Bond required before commencement of surface disturbance activities**
 - **Non-discretionary, not a permit**

The Challenge to Lithium Brine Exploration in Nevada



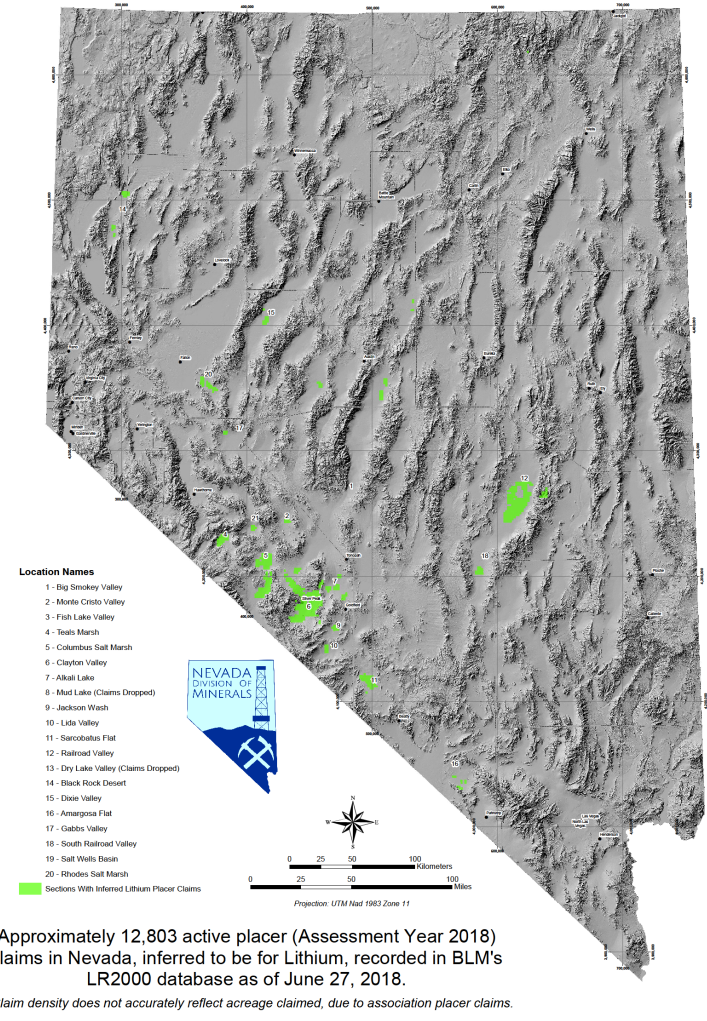
- **Water belongs to the State of Nevada.**
- **The State Engineer regulates quantity and beneficial use.**
- **To pump and test for lithium in brine you need a water right, which is not a quick process and is subject to appeal.**
- **Some lithium brine projects located on top of active oil and geothermal leases.**
 - **Each party is entitled to explore but are regulated under two different “rulebooks”.**
 - **BLM can’t require lithium brine explorer to use blowout prevention equipment – potential safety issue in geothermal areas.**
- **Typical locatable mineral explorers not accustomed to drilling and designing wells for testing of water or use of precautionary measures for hot water.**
- **New law was needed to create a streamlined path for safe exploration of lithium brine with limited pumping.**

DISSOLVED MINERAL RESOURCE EXPLORATION (DMRE) - STATUTES AND REGULATIONS

- Sponsored by Governor Sandoval, Assembly Bill 52 was passed by the Nevada legislature in 2017.
- Created Chapter 354B in Nevada Revised Statutes, effective January 1, 2018.
- Established authority for the Division of Minerals to regulate exploration of dissolved mineral resources – NDOM regulates oil, gas, and geothermal exploration and development.
- NDEP, NDWR and NDOM jointly developed regulations.
- Regulations became effective May 16, 2018.
- First DMRE well approved January 10, 2018.
- First DMRE borehole approved February 1, 2018.

Inferred Active Lithium Placer Claims in Nevada

Map Produced by: Lucia M. Patterson, Nevada Division of Minerals



What is in the Statute?

- Defines a “dissolve mineral exploration borehole” and allows for sampling of water in exploration boreholes .
- Defines “dissolved mineral resource exploration well” and enables an application process by NDOM
- DMRE approved well permits expire after 2 years, can be extended for 2 more years.
- Defines a “dissolved mineral resource exploration project” as a notice or plan-level approved project on Federal lands (claims), or a defined project area on non-federal lands.
- Requires a Nevada licensed water well driller to drill DMRE boreholes and wells.

What is in the Statute?

- **NDOM Administrator or State Engineer may call a public hearing if they deem it necessary to gather facts.**
- **Allows for up to 5 acre-feet (6,165 cubic meters) of water to be pumped for testing per project (not annually).**
 - **This volume is considered adequate to determine presence of a resource but not necessarily to quantify and fully model it.**
- **> 5 acre-feet requires a water right from NDWR.**
- **Must comply with NRS 445A for discharges during pump tests**
- **Does not change the appropriation procedures in NRS/NAC 533, 534**
- **Allows for application fee for wells and fines for violations**



What is in the Regulations ?

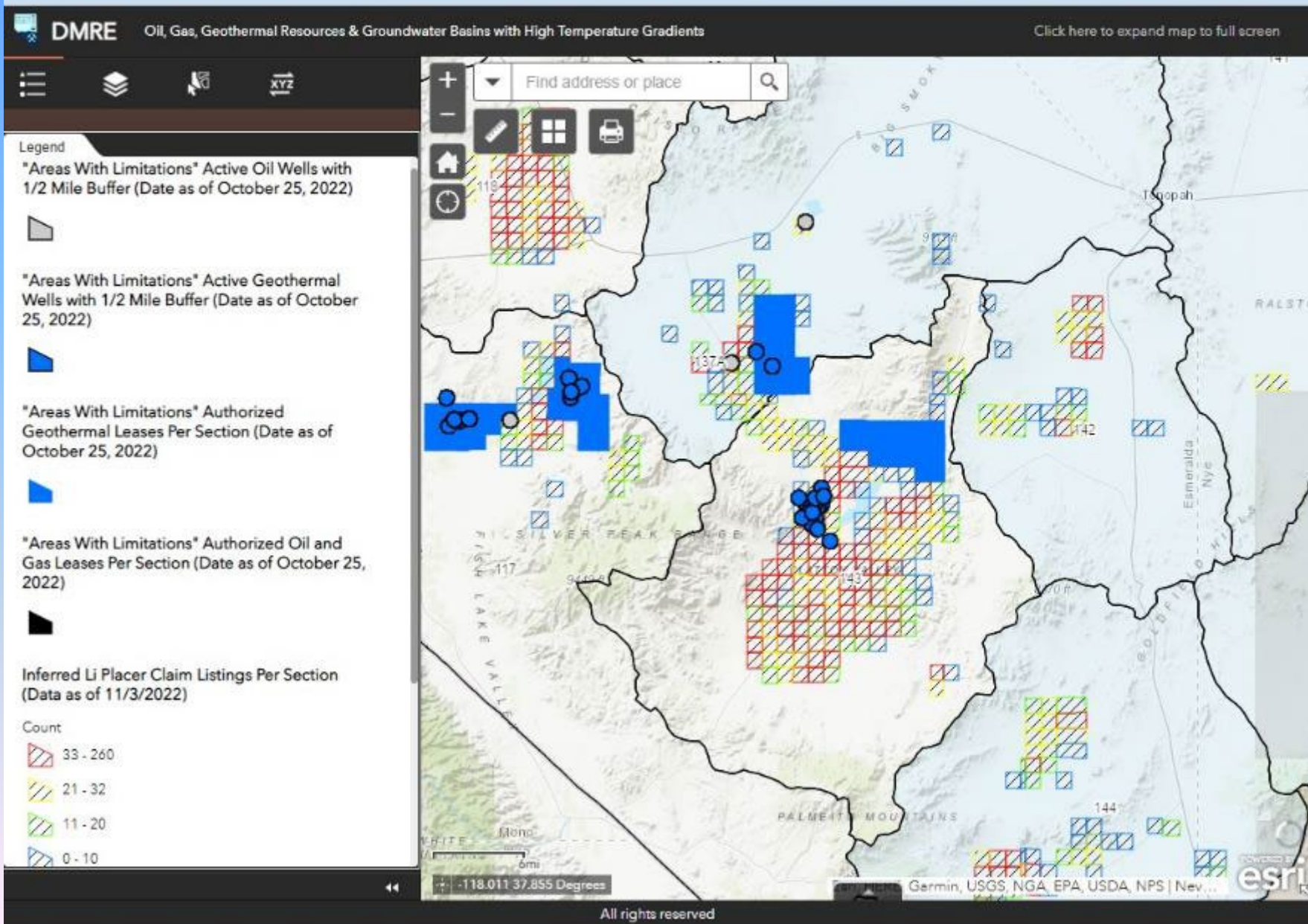
- **Exploration Boreholes:** notice of intent form required , no fee, allows for sampling (e.g. HydraSleeve) but not pumping
- **DMRE wells:** permitting process, application fee (\$1,000/well)
- **Well design approval required:** casing, seals, etc.
- **Regulations are very similar to those for NDWR**
- **Well permits not retroactive to existing MM waivers or existing permitted rights issued by NDWR**

What is in the Regulations ?

- Drilling within “Areas with Limitations” subject to additional conditions
- 100’ setback from existing oil, geothermal or water wells.
- No limit on number or boreholes or wells, but total pumping for sampling is limited to <5 AF per project
- Plugging logs signed by licensed water well driller to be submitted for all boreholes and wells
- Reclamation bonding required
 - Held by BLM if on federal land
 - Held by NDOM if on private land
- Penalty of up \$1,000 for each violation and for each day violation continues

Areas With Limitations

- Regulatory mechanism for additional review to ensure proposed DMRE activity is safe and doesn't impact permitted oil, gas, and geothermal (OGG) wells and resources.
- Uses map published on NDOM website depicting:
 - NDOM-permitted OGG wells
 - Federally-authorized oil, gas, and geothermal leases
 - Groundwater basins having increased thermal gradient (125F at 1,500ft or 52C at 460m, using gradient of 67.42C/km)
- Depth limitations for drilling without Blowout Prevention Equipment
- Monitoring of drilling mud temperatures with requirement for cooling equipment when mud is >125F/52C



Applications, approved permits and notices, plugging reports, and quarterly flow reports posted on NDOM website

RECEIVED
MAR 12 2018
DIVISION OF MINERALS

STATE OF NEVADA
COMMISSION ON MINERAL RESOURCES
DIVISION OF MINERALS
400 W. King Street, Suite 106
Carson City, Nevada 89703
(775) 684-7040 | Fax (775) 684-7052
http://dnrminerals.nv.gov

Date Received: March 12, 2018
County: Nye
NDOM Permit Number: W6003
FOR DIVISION USE ONLY

DISSOLVED MINERAL RESOURCE EXPLORATION WELL PERMIT APPLICATION

Applicant/Operator Name: 3PL Operating Inc.
Street Address: 1602 N. Carson Street, Suite 206
City: Carson City State/Prov.: NV
Country: USA Zip Code: 89701
hereby makes application for a dissolved mineral resource exploration well permit.

(If applicant is a corporation, show state and date of incorporation; if a partnership, list names of partners.)
Nevada
October 4, 2017

Well Name: LD #1-32

This application is for a: ☒ New Exploration Well ☐ Borehole to Well Conversion
☒ Permit Extension (NDOM Permit # _____) (Indicate below any changes to original permit)
Permit Extension Reason: _____

Applicant is: ☒ Land Owner ☒ Lease/Claim Holder

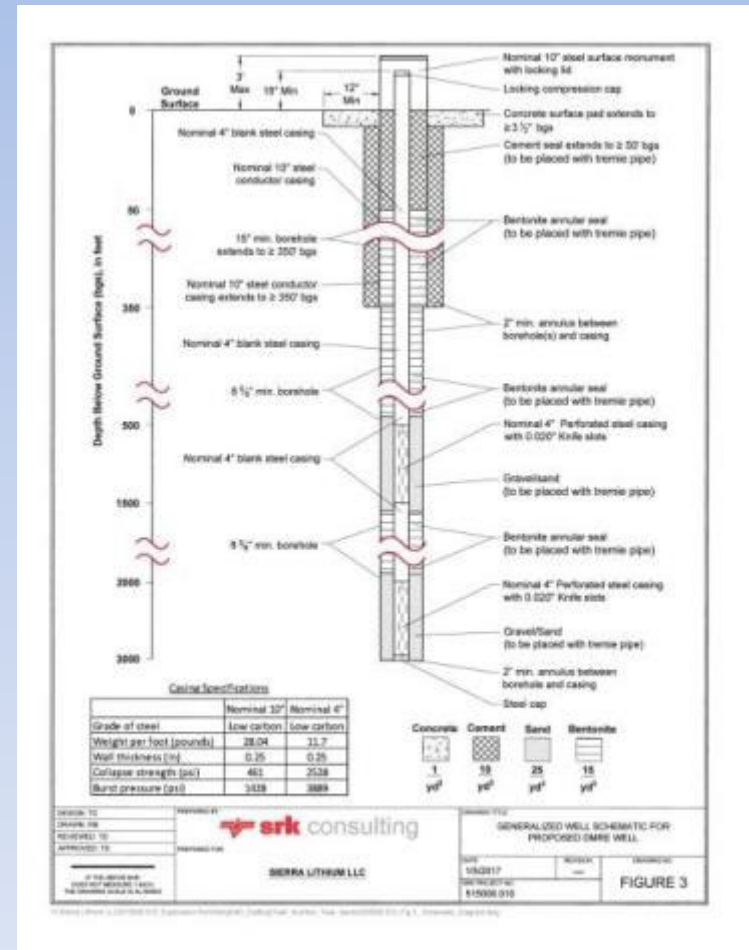
Land Status (choose one):
☒ Federal (BLM, USFS, etc...) ☐ Mining Claim: NMC# 1151038
Project Name: 3PL RRV 1 NVN# N-06428

☒ Non Federal
APN#: _____ Land Owner: _____
Bond Type: _____ Issued by: _____
Amount: _____ Number: _____

Groundwater Basin Name and Number: Railroad Valley North, 1738 Area With Limitations? ☒ Y ☐ N
(Well proposed to be drilled within areas with limitations may require Blowing Prevention Equipment, per NAC 594)

Location of Well:
County: Nye
NE 1/4 of the NE 1/4 of 32 Sec. Township 7 N Range 56 E
UTM East: 614102.33 or Longitude: -115.682934
UTM North: 4253196.78 Latitude: 38.419758
☒ NAD83 ☐ WGS84 ☐ M.D.B. & M.

DISSOLVED MINERAL RESOURCE EXPLORATION WELL PERMIT APPLICATION PAGE 1 - 01/19/2018



Cooperating Agencies

- **Pre-existing Memorandum of Understanding (MOU) between NDOM and BLM for permitting and field activities for oil, gas, and geothermal was modified to include DMRE.**
 - **BLM Field Offices provide submitted Notices for lithium brine exploration to NDOM**
 - **NDOM and BLM coordinate on review of proposed activities**
 - **Coordinate on field inspections for compliance**
- **DMRE Notices and Well Permit applications shared with NDWR for notification and review.**
- **Ongoing discussions with NDEP-BMMR, NDEP-BWPC, and NDWR to ensure regulatory oversight of future activities as operators move from exploration to mine development.**
- **New NDWR-NDOM “permitting matrix” for proposed activities**

NDWR-NDOM Activity Matrix

Dissolved Mineral Wells and Water Rights					
Activity	Agency Lead	Paperwork Required	Timeframe	Required Action	Approval Required
Application for Approval of Notice of Intent to Drill Exploration Borehole	NDOM	DMRE Borehole or Exploration Permit Application	Must be abandoned 60 days after completion	Submit Notice	Yes, if application is complete, NDOM accepts it, no fee
Well Driller drills DMRE Borehole	NDOM	DMRE Borehole or Well Driller's Plugging Report	30 Days after Plugging	Submit Report to NDOM	No
Application for Permit to Drill a DMRE Exploration Well	NDOM	DMRE Borehole or Exploration Permit Application	Well is allowed to remain open for 2 years after completion with possibility of one 2 year extension. Well must transferred to NDWR or P&A after maximum of 4 years	Complete application including all needed data, bond and fee payment	Yes, Fee \$1,000
Extension for Exploration Well	NDOM	Written notice to the Administrator	60 days before permit expires	NDOM with good cause	Application for Permit to Drill an Exploration Well
Well Driller Completes DMRE Exploration Well	NDOM	DMRE Well Driller's Report	30 Days after Completion	Submit Report to NDOM	No
Well Driller Plugs DMRE Exploration Well	NDOM	DMRE Borehole or Well Driller's Plugging Report	30 Days after Plugging	Submit Report to NDOM	No
Operator has active or idle DMRE Exploration Well	NDOM	Quarterly Flow Report for DMRE Well	Once every quarter	Submit Report to NDOM regardless if there is zero production	No
Pump testing for brine not more than 5 acre/ft	NDOM	Quarterly Flow Report for DMRE Well	Once every quarter	Submit Report to NDOM regardless if there is zero production	No
Project to utilize more than 5 acre-feet of water for the exploration project or project starts consumptively using water	NDWR	Water Right Application	Minimum of 3 Months, DWR cannot review application until publication notice and protest period are complete as required by statute	Submit application and water right map to Division for review	Yes, required prior to drilling well in designated basin or using any water for the proposed use on the application.
Use of water for mineral exploration. This is only for drill water for the drilling of the exploration wells	NDWR	Mining and Milling (MM) Waiver	None provided by regulation or statute	Submit Mining and Milling (MM) Waiver request for NDWR review	Yes, prior to submitting NOI to drill a new well or prior to using water from an existing well
Drill or plug production well	NDWR	Notice of Intent to Drill	3 working days prior to drilling	Licensed Well driller submits a Notice of Intent to the Division for review	Yes required prior to drilling or plugging well
Licensed Well Driller completes well	NDWR	Well Log Form	Within 30 days after completion of well	Well driller submits Well Driller's Report (Well Log) to the Division within 30 days of completing the well	No
Consumptively using water under the terms of water right Permit.	NDWR		Up to 10 years	Comply with terms of permit including any filing of proofs or submission of data.	Yes, for certain filings.

DMRE Information - <https://minerals.nv.gov/Programs/DMRE/DMRE/>

Home Home ▾ About Us ▾ Commission ▾ Programs ▾ Data News FAQs ▾ Contact Us

Programs

Abandoned Mine Lands
(AML)

Bond Pool (Reclamation)

Dissolved Mineral Resource Exploration (DMRE)

- DMRE Forms
- Approved Notices
- Approved Permits
- Filed Permit Applications
- Filed Reports

Education and Outreach

Geothermal

Mining

Oil & Gas

Dissolved Mineral Resource Exploration (DMRE)

Dissolved Mineral Resource Exploration Program Sub-Pages

If you are on a cellphone and cannot see the left-side submenu page links, please select the [Programs Page link](#) to see all submenu pages.

Dissolved Mineral Resource Exploration Program

Assembly Bill 52 of the 2017 session was signed into law in June, 2017. The purpose of this legislation is to define a permitting path for dissolved mineral exploration, including lithium brines, and to develop regulations to ensure exploration drilling for dissolved minerals is protective of groundwater, as well as oil and geothermal resources. The legislation authorizes regulation by the Division beginning on January 1, 2018. The Division of Minerals is now accepting applications for Dissolved Mineral Resource Exploration (DMRE) wells and notices of intent for DMRE exploration boreholes. All forms for the program are located below, can be picked up at the Division office, or mailed to the public upon request.

- [NRS 534B](#)
- [NAC 534B \(codified\)](#)
- [Oil, Gas, and Geothermal Resources and Groundwater Basins with High Temperature Gradients - Areas with Limitations Map 11/04/2022](#)
- [NDEP – BMRR Permitting Requirements for Lithium Exploration and Extraction Activities \(2019 edit\)](#)
- [NDWR-NDQM Matrix for DMRE Activities](#)

Areas with Limitations Interactive Map

This map is to be utilized in order to determine if a proposed dissolved mineral resource exploration well is located within a boundary designated by the Division as an "area with limitations" pursuant to NAC 534B.

- [Areas with Limitations Interactive Map Viewer](#)

Dissolved Mineral Resource Exploration Contact

Dustin Holcomb,
dholcomb@minerals.nv.gov
or Mike Visser,
mvisser@minerals.nv.gov
DHolcomb 775-684-7046 or
MVisher - 775-684-7044

Statute & Regulations

[NRS 534B](#)

[NAC 534B \(codified\)](#)

Mining Links

[State and Federal Permits
Required Before Mining or
Milling Can Begin](#)

[DMRE Frequently Asked
Questions \(FAQ\)](#)



Forms – Well Permit



STATE OF NEVADA
COMMISSION ON MINERAL RESOURCES
DIVISION OF MINERALS
400 W. King Street, Suite 106
Carson City, Nevada 89703
(775) 684-7040 Fax (775) 684-7002
<http://minerals.nv.gov>

Date Received: _____
County: _____
NDOM Permit Number: _____ FOR DISCUSSION ONLY

DISSOLVED MINERAL RESOURCE EXPLORATION WELL PERMIT APPLICATION

Applicant/Operator Name: _____
Street Address: _____
City: _____ State/Prov.: _____
Country: _____ Zip Code: _____
hereby makes application for a dissolved mineral resource exploration well permit.
(if applicant is a corporation, show state and date of incorporation; if a partnership, list names of partners.)

Well Name: _____
This application is for a: ☐ New Exploration Well ☐ Borehole to Well Conversion
☐ Permit Extension (NDOM Permit # _____) (describe below any changes to original permit)
Permit Extension Reason: _____

Applicant is: ☐ Land Owner ☐ Lessee/Claim Holder

Land Status (choose one):

☒ Federal (BLM, USFS, etc...)

Mining Claim: NMC# _____

Project Name: _____ NVN# _____

☒ Non Federal

APN#: _____ Land Owner: _____

Bond Type: _____ Issued by: _____

Amount: _____ Number: _____

Groundwater Basin Name and Number: _____ Area With Limitations? ☐ Y ☐ N

(Well proposed to be drilled within areas with limitations may require Blowout Prevention Equipment, per NAC 534B)

Location of Well:

County: _____

_____ 1/4 of the _____ 1/4 of _____ Sec., Township _____ ☐ N ☐ S Range _____ E

UTM East: _____ or Longitude: _____
UTM North: _____ Latitude: _____
☐ NAD83 ☐ WGS84 M.D.B. & M.

Drilling Contractor (if known): _____
Address: _____
City, State Zip: _____

Purpose of Well:

Drill Rig Type: _____
Surface Hole Diameter: _____ Casing Size/Length: _____
Expected Total Depth: _____ Casing Weight/Gauge: _____
Casing Schedule/Grade: _____

Blowout Prevention Equipment Rating: ☐ None ☐ 2000 psi ☐ 3000 psi ☐ 5000 psi

Fluid Management Plan (NAC 534B):

(Describe here or Attach Additional Pages)

Contamination Prevention/Cementing Plan (NAC 534B):

(Describe here or Attach Additional Pages; must include Well Schematic)

Flow Monitoring and Plugging Plan (NAC 534B):

(Describe here or Attach Additional Pages)

Drilling will commence approximately on: _____

Signature of Applicant/Agent: _____

Printed Name/Title: _____

Date: _____

(An application submitted without a signature will not be considered for approval)

---- Attach \$1,000.00 Application Fee Per NAC 534B ----

Forms – Quarterly Flow Report



STATE OF NEVADA
COMMISSION ON MINERAL RESOURCES
DIVISION OF MINERALS
400 W. King Street, Suite 106
Carson City, Nevada 89703
(775) 684-7040 | Fax (775) 684-7052
<http://minerals.nv.gov>

QUARTERLY FLOW REPORT FOR DISSOLVED MINERAL RESOURCE EXPLORATION WELL

Operator Name: _____
Address: _____
City, State/Prov, Country, Zip: _____
Well Name: _____
NDOM Permit Number: _____
Project Name/BLM NVN#: _____
Reporting Quarter/Year (ex. Q3/2018): _____

Monthly flow volume information must be provided to the Division of Minerals on a quarterly basis until the permitted well has been plugged in accordance with Nevada Administrative Code (NAC) 534B. File not later than last day of the month for the preceding quarter (ex. October 31 for quarter ending September 30).

Flow Meter Specifications
Date(s) of Installation: _____
☐ Check if Replacement
Flow Meter Serial No.: _____ Units: ☐ Gallons ☐ Acre-feet
Model: _____
Manufacturer: _____ Diameter: _____

Month	Initial Reading for Month	Final Reading for Month	Monthly Net for Well	Cumulative for Well

In the case that Initial Reading and Final Readings for Month do not equate to Monthly Net provide explanation with supporting data or calculations as attachment

Reporting Operator Representative: _____
Report Date: _____

QUARTERLY FLOW REPORT FOR DISSOLVED MINERAL RESOURCE EXPLORATION WELL v1/10/2018

- Remember that that under DMRE regulations the maximum quantity of brine allowed to be pumped is 5 acre-feet and that is cumulative for the **project** and **not** per well.
- It is the operator's responsibility to ensure project remains in compliance.
- A DMRE well permit expires 2 years from the date issued, not completion date.
- A 2-year extension can be granted once for good cause shown, however the request and justification must be received not later than 60 days prior to the expiration date.

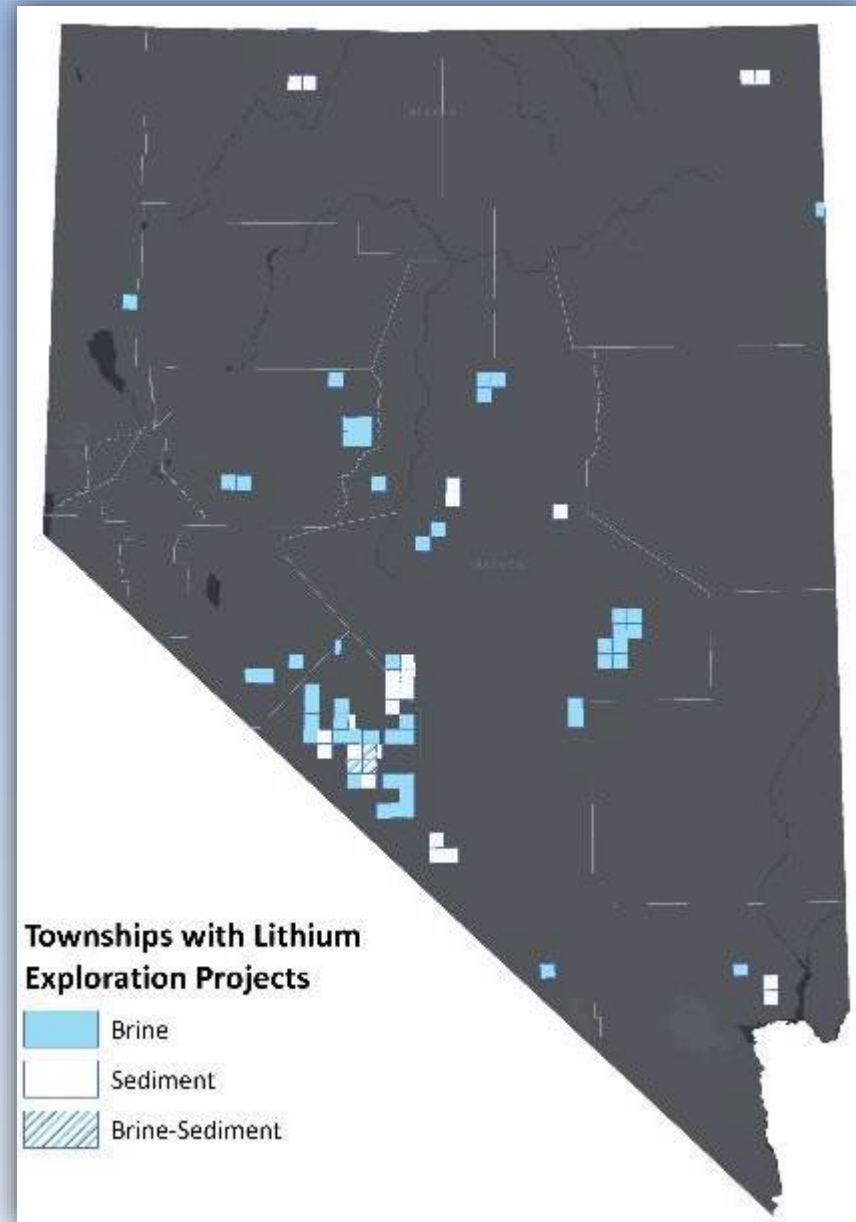
FAQ's

- **Q: Do I need a DMRE borehole NOI approval to sample Li clays and I do not intend to sample Li brines?**
 - **A: No.**
- **Q: If I have an existing water right, do I need to permit a DMRE well through NDOM?**
 - **A: If it is a production well, no.**
 - **A: If it was an exploration well permitted before 1/1/2018, no.**
 - **A: If it is a new exploration well that was not permitted by NDWR before 1/1/2018, yes.**
- **Q: Can I instrument a DMRE borehole?**
 - **A: Yes, but:**
 - ***it must be plugged within 60 days, with instrumentation in place if desired, or***
 - ***if it is intended to be left open it must be converted to a DMRE well and the design must meet requirements for DMRE wells.***
- **Q: How do I permit an exploration well to be tested for injection?**
 - **A: Same process as for exploration production well. Submit quarterly flow report quantifying monthly amount injected.**
- **Q: Can I keep a DMRE well open for more than 4 years?**
 - **A: No. The well must be permanently plugged or the well would have to be transferred to NDWR under an existing water right using a change application.**

LITHIUM EXPLORATION

(As of November 2022)

- > 44 companies in various stages of exploration; ~35,000 mining claims (~13% of total mining claims in NV)
- 28 current authorized or pending lithium notices, 10 in 2022 alone
 - Compared to 254 for Au and Ag
- 2 Exploration and 8 Mining Plans for lithium
 - Compared to 134 mining plans for Au and Ag
- 18,281 placer claims for lithium, +47% YOY
- ~30 different companies involved in Clayton Valley alone, through numerous joint ventures and/or agreements
- ~26 lithium in sediment projects (open pit)
- ~35 lithium brine projects (DLE?)
- Advancements in Direct Lithium Extraction (DLE) are critical to the future of lithium brine production in Nevada
- A total of 47 DMRE Notices and 17 Well permits approved by NDOM
- 25 Notices and 9 Well Permits in 2022 alone





Inferred Nevada Lithium Placer Claim Listings

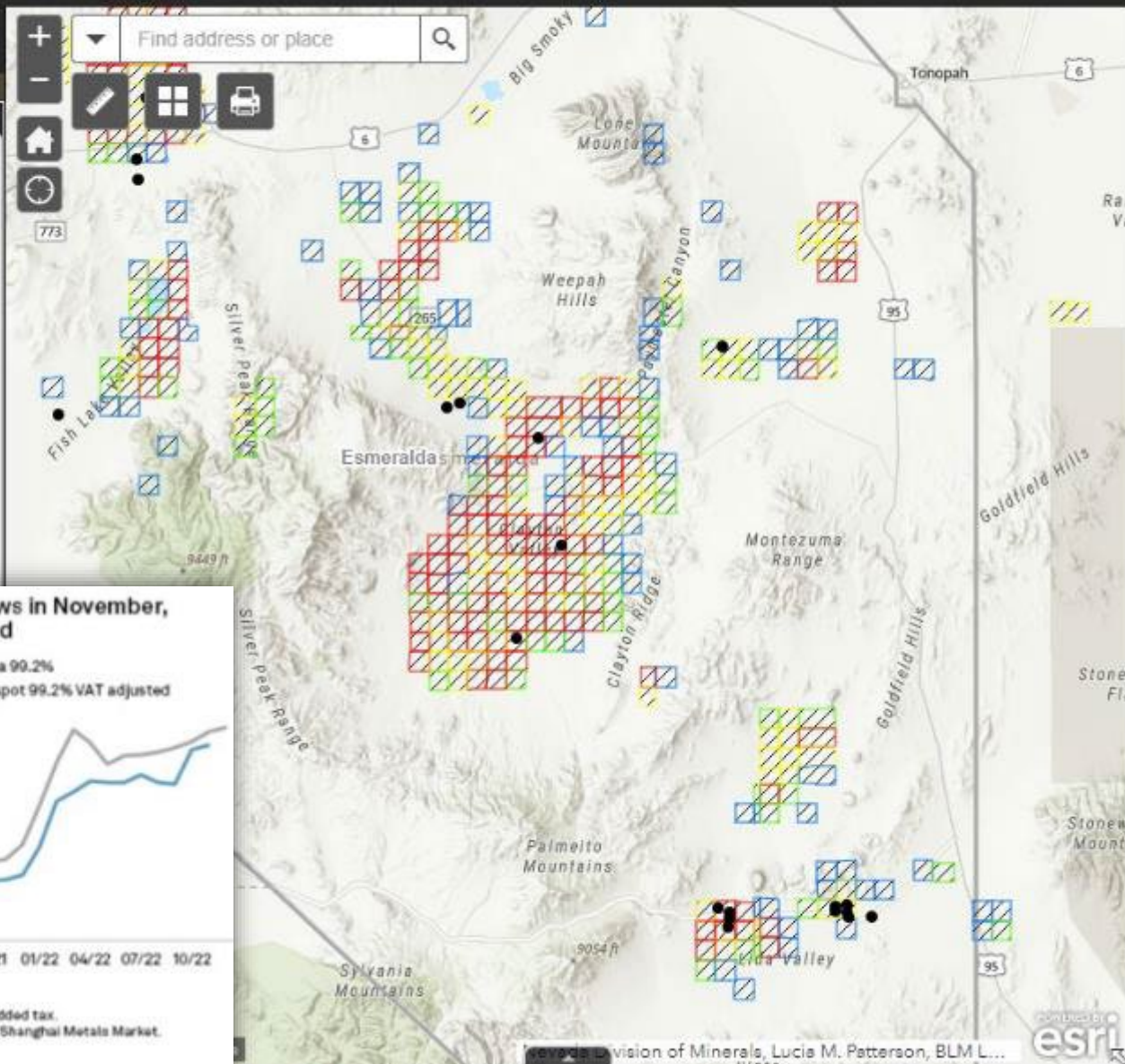
[Click here to expand map to full screen](#)



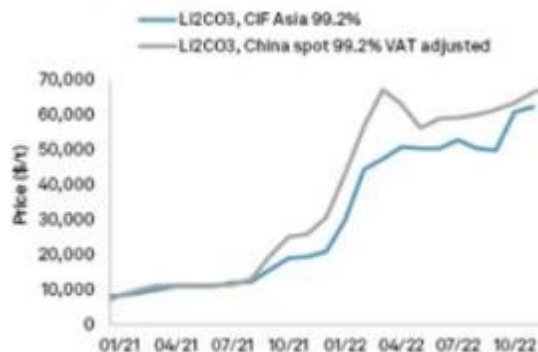
Layer List

Layers

- ☒ DMRE Approved Permits Notices ...
- ☐ Inferred Li Placer Claim Point Listings ...
- ☒ Inferred Li Placer Claim Listings Per Section ...
- ☒ Nevada County Boundaries ...
- ☐ Surface Management Symbology ...
- ☒ SectionReference ...
- ☐ NVPLSSTiles ...
- ☐ Nevada Surface ...



Asia Li2CO3 price rise slows in November, mirroring China price trend



As of Dec. 19, 2022.
Li2CO3 = lithium carbonate; VAT = value-added tax.
Source: Benchmark Mineral Intelligence; Shanghai Metals Market.
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Nevada Division of Minerals, Lucia M. Patterson, BLM L...



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Welcome to the Division of Minerals & the Commission
on
Mineral Resources



New Jimmy King - King of Bad Ideas Videos

Current Information

2022 Nevada Excellence in
Mine Reclamation Award
presented to KG Mining (Bald
Mountain), Inc. 

Release of New Jimmy King -
King of Bad Ideas Video

Distance Learning -
Educational Videos

Recent Presentations page

Information Related to
Proposed Land Use Plans and
Withdrawals

Current Open Positions

- Fluid Minerals Program Manager, Division of Minerals
 - Posted: January 9, 2023
 - Location: Carson City, Nevada
 - Unclassified Position
 - [Announcement Details for Fluid Minerals Program Manager NDOM](#) 

Public Meeting(s)

- Commission on Mineral Resources, Division of Minerals
 - CMR Quarterly Meeting
 - Date/Time: February 1, 2023 at 1:00pm
 - Location: Great Basin Science Sample and Records Library - 2175 Raggio Pkwy (NV Bureau of Mines and Geology) - Reno

QUESTIONS?

