

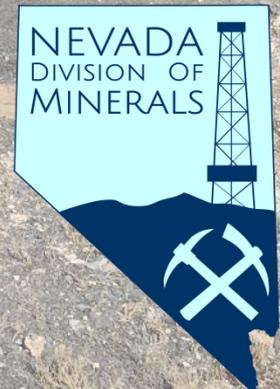
Nevada Division of Minerals

UPDATE ON NEVADA MINERAL, GEOTHERMAL AND OIL PRODUCTION

PDAC - TORONTO

March, 2019

Rich Perry, Administrator

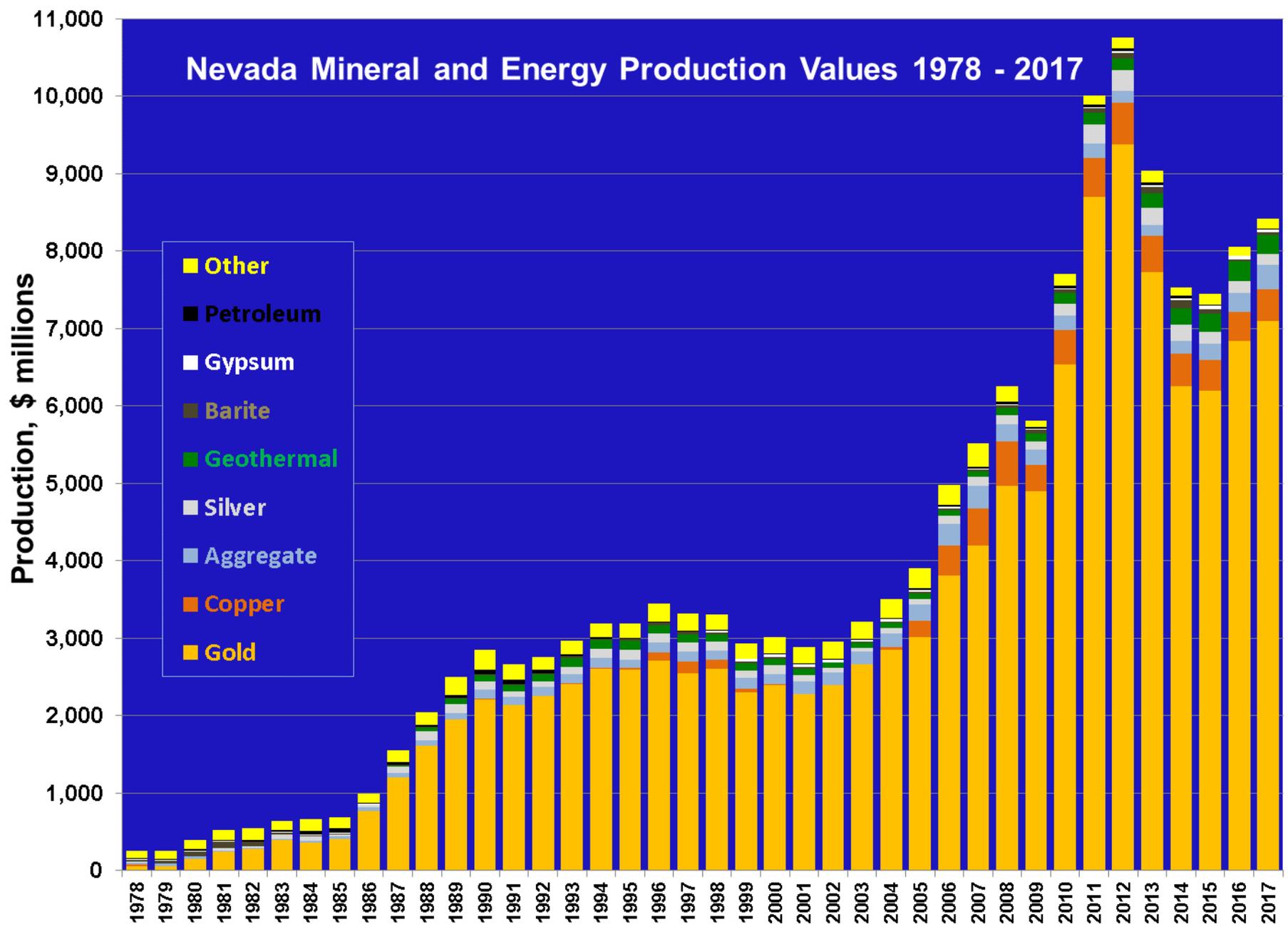


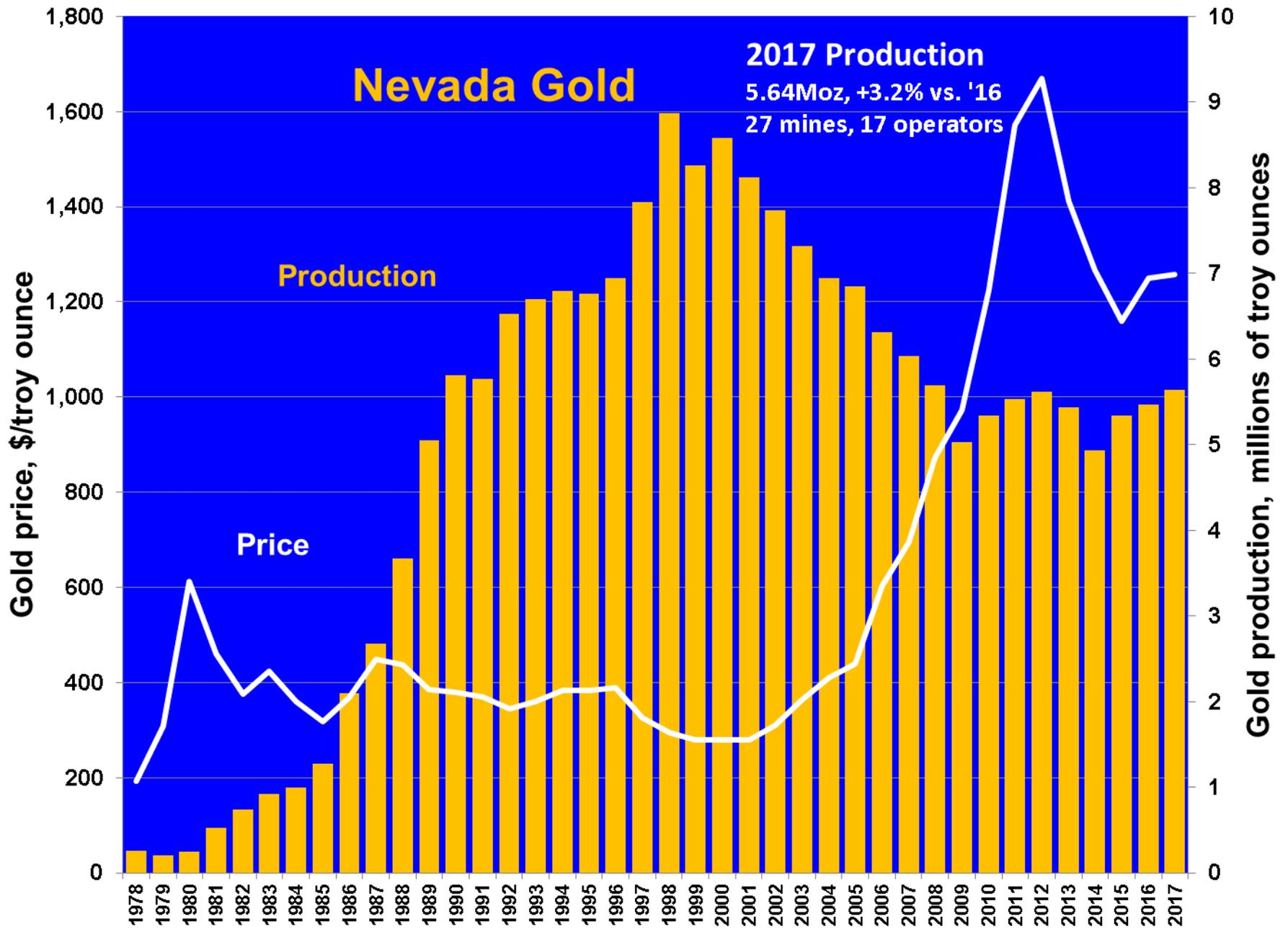
Nevada Division of Minerals (NDOM)

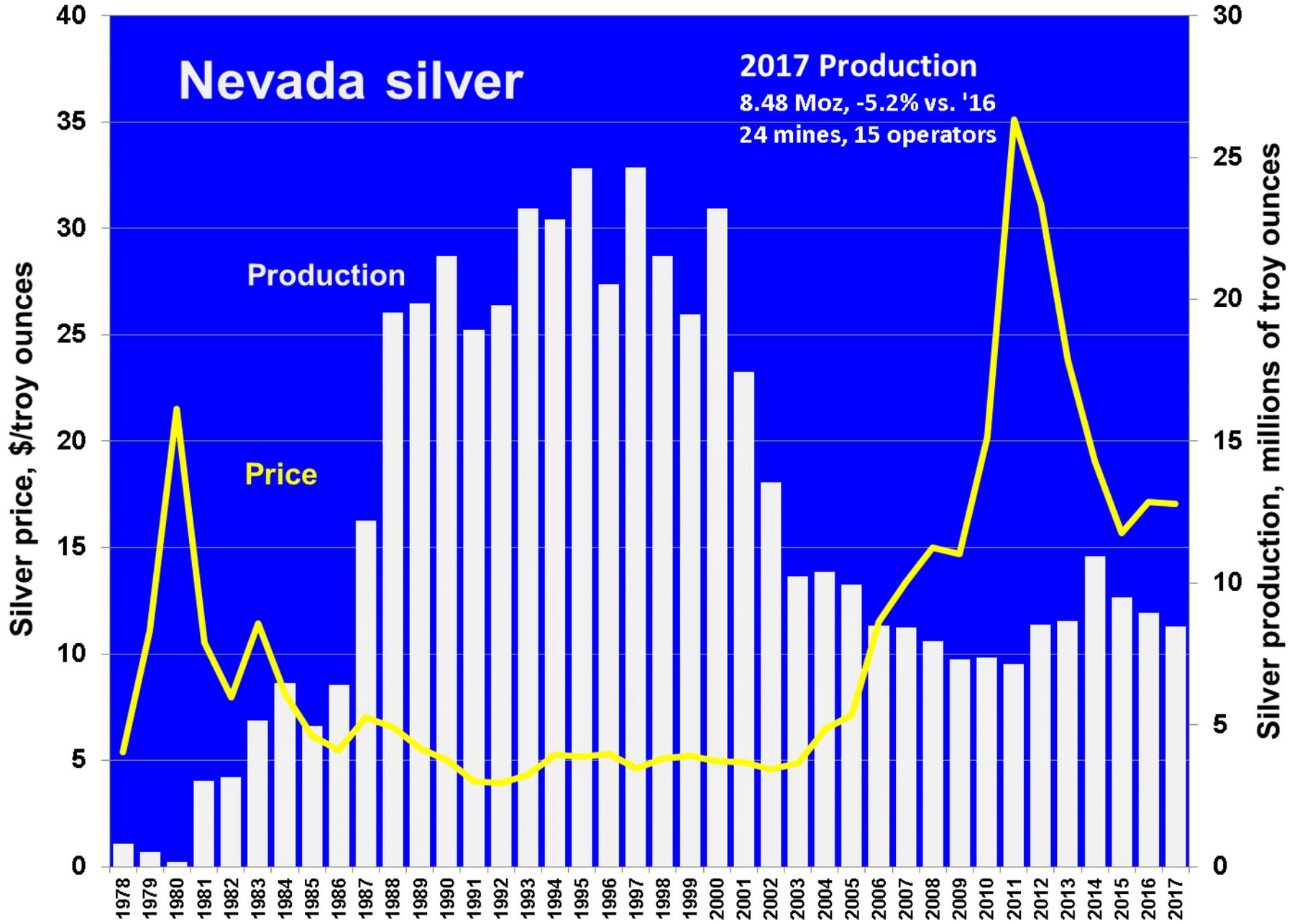
- **State Agency and part of the Commission on Mineral Resources (7 members appointed by Governor)**
- **Administrator reports through Commission and Governor's office**
- **Mission Statement: *To encourage and assist in the responsible exploration for and the production of minerals, oil, gas, and geothermal energy which are economically beneficial to the State.***
- **Offices in Carson City (8 employees) and Las Vegas (3 employees)**
- **No general fund monies, all revenue from mining claim fees, geothermal and oil permit and production fees, surface disturbance fee, reclamation bond pool administrative fee, BLM and USFS assistance agreements for AML securing activities**

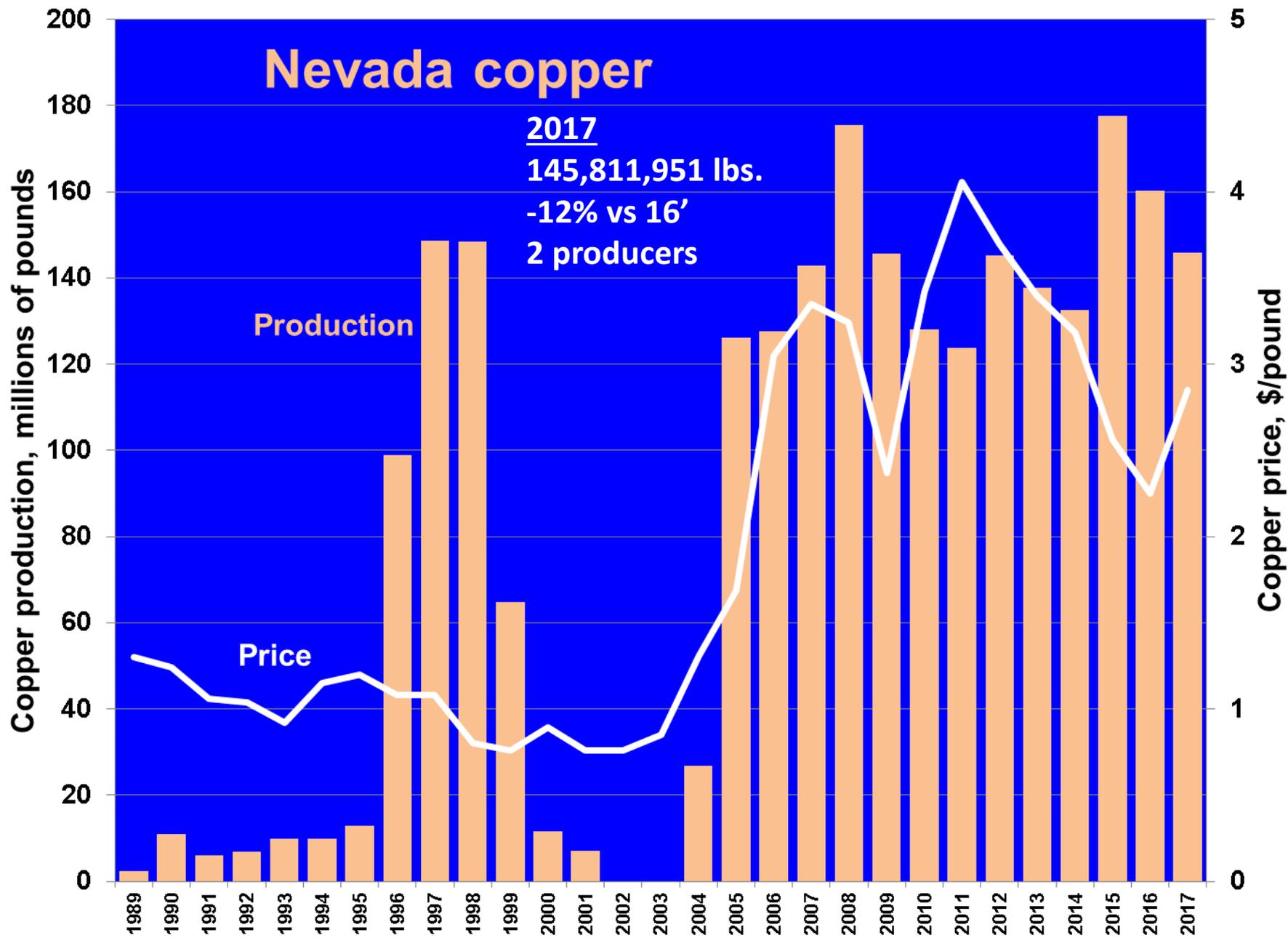


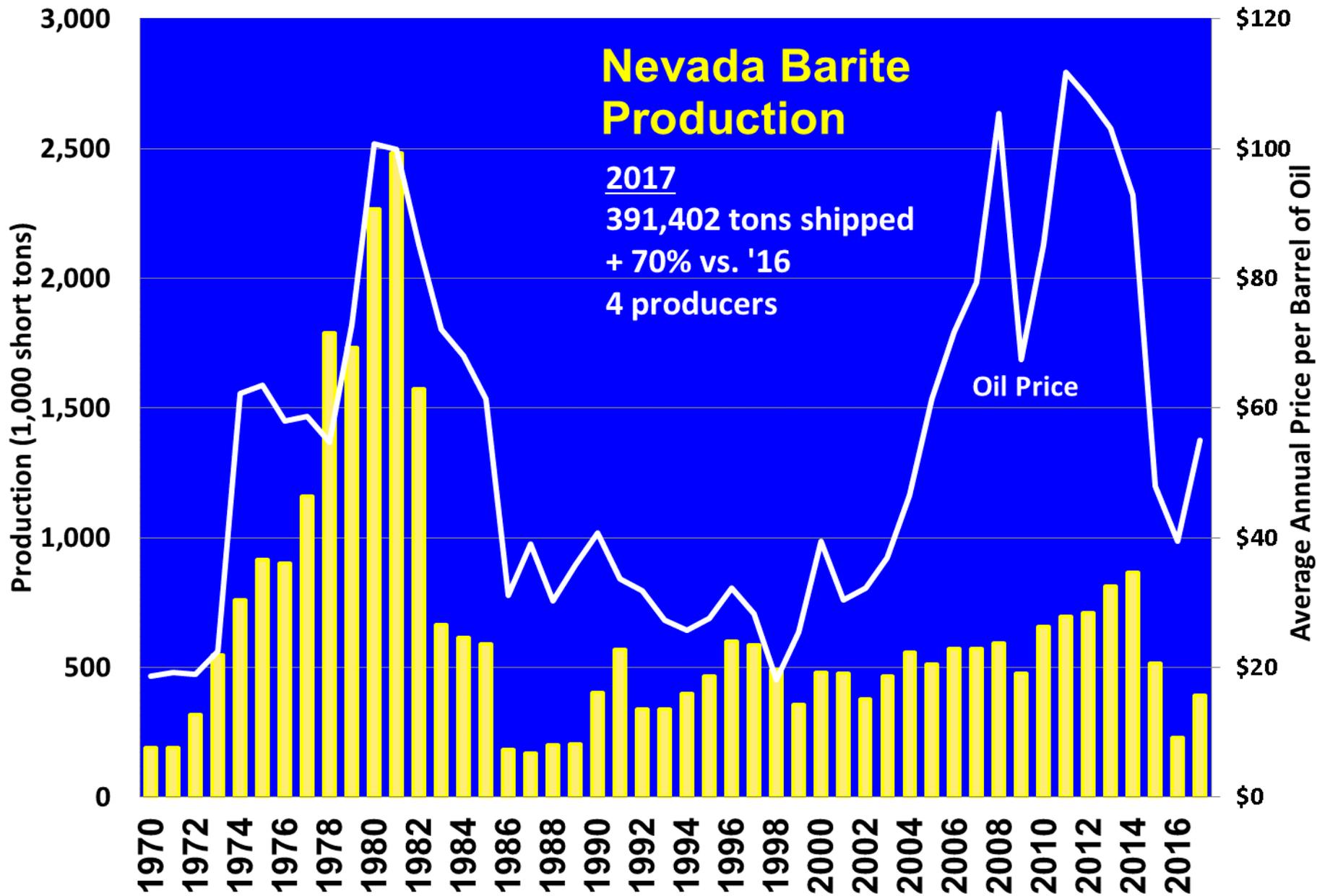
Nevada Mineral and Energy Production Values 1978 - 2017







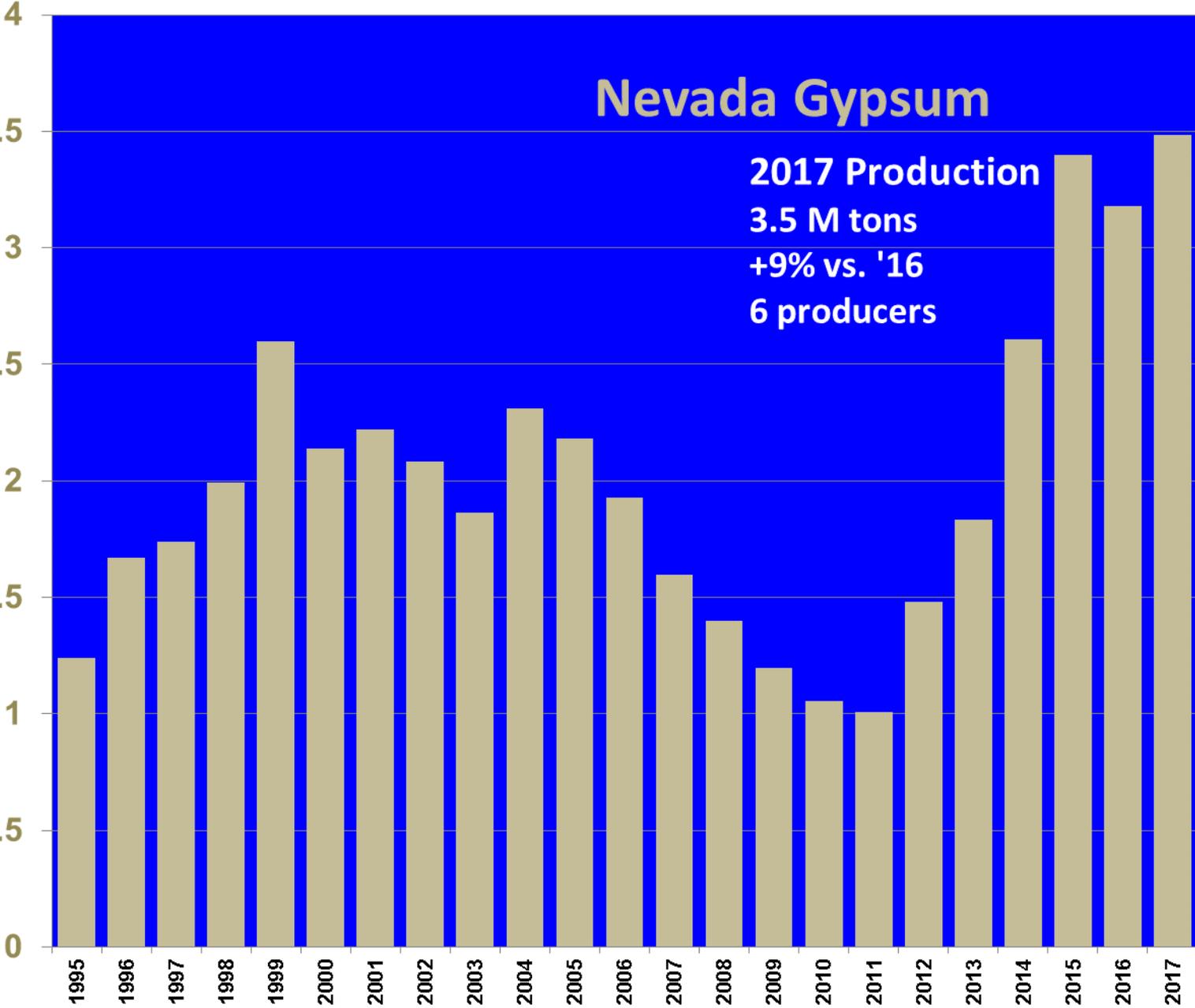




Nevada Gypsum

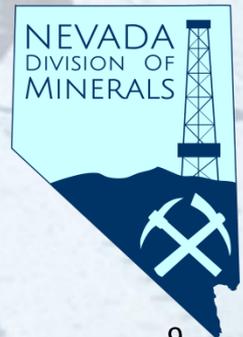
Gypsum production, millions of short tons

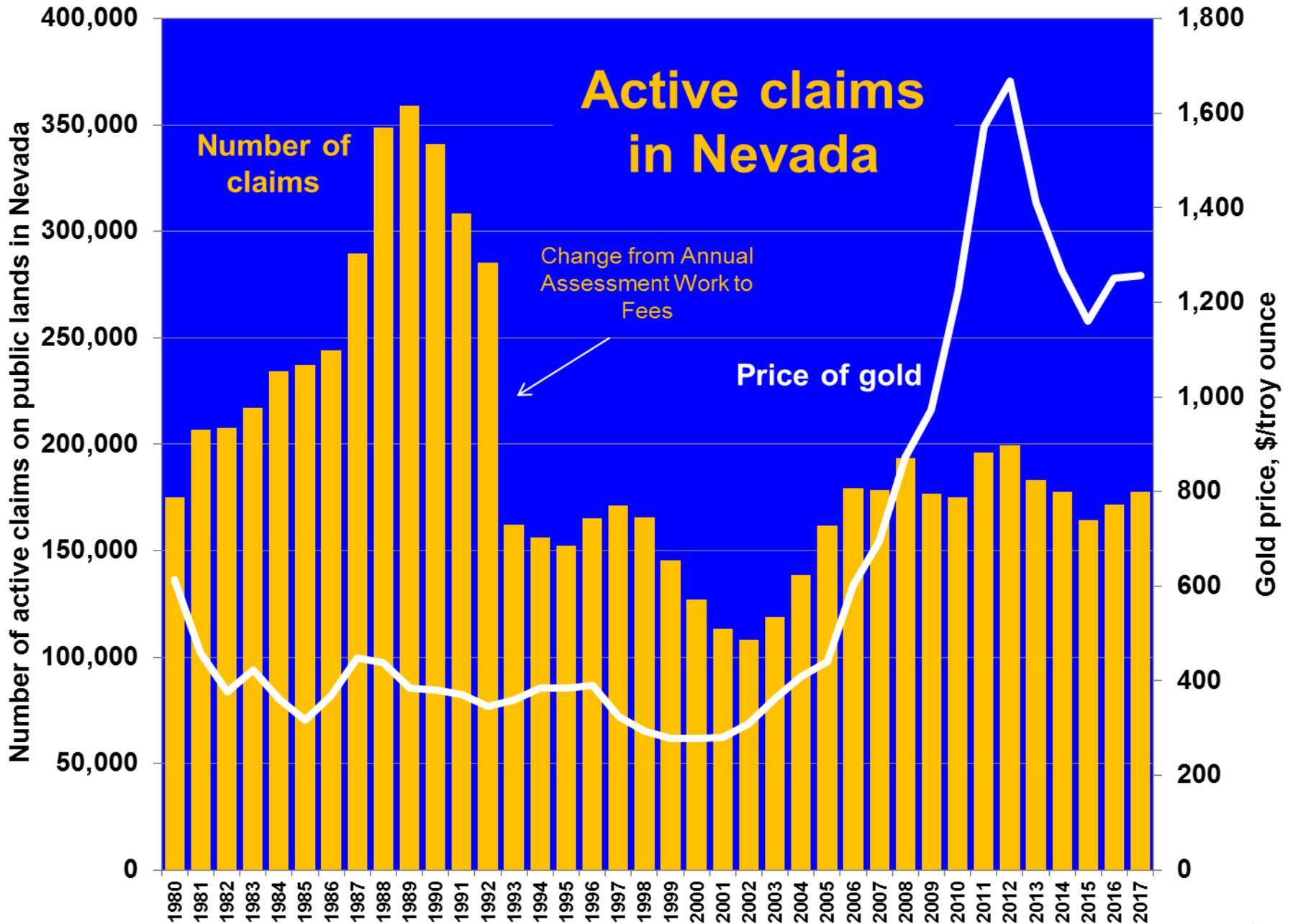
2017 Production
3.5 M tons
+9% vs. '16
6 producers



Other Industrial Minerals Produced, 2017

- 10,233,342 lbs of lithium compounds (+9.6%)
- 112,139 tons of magnesium compounds (+1.9%)
- 277,043 tons of diatomaceous earth (+15.1%)
- 727,088 tons of silica products (-27.3%)
- 24,855 tons of salt (+30.1%)





Oil & Gas Development 2017-2018

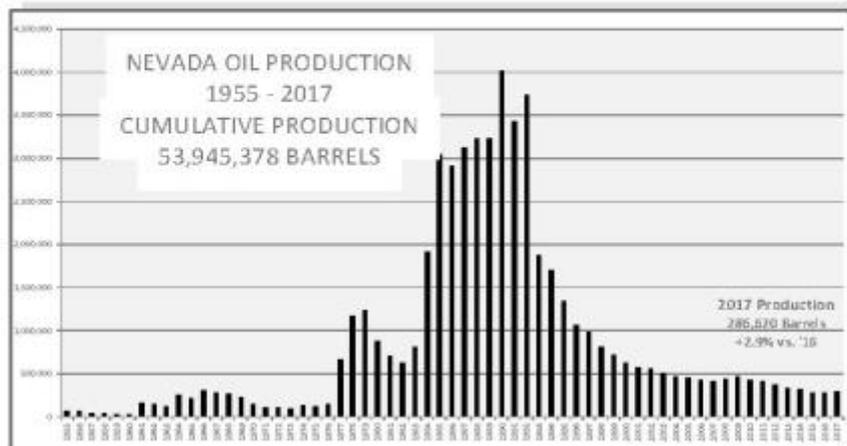
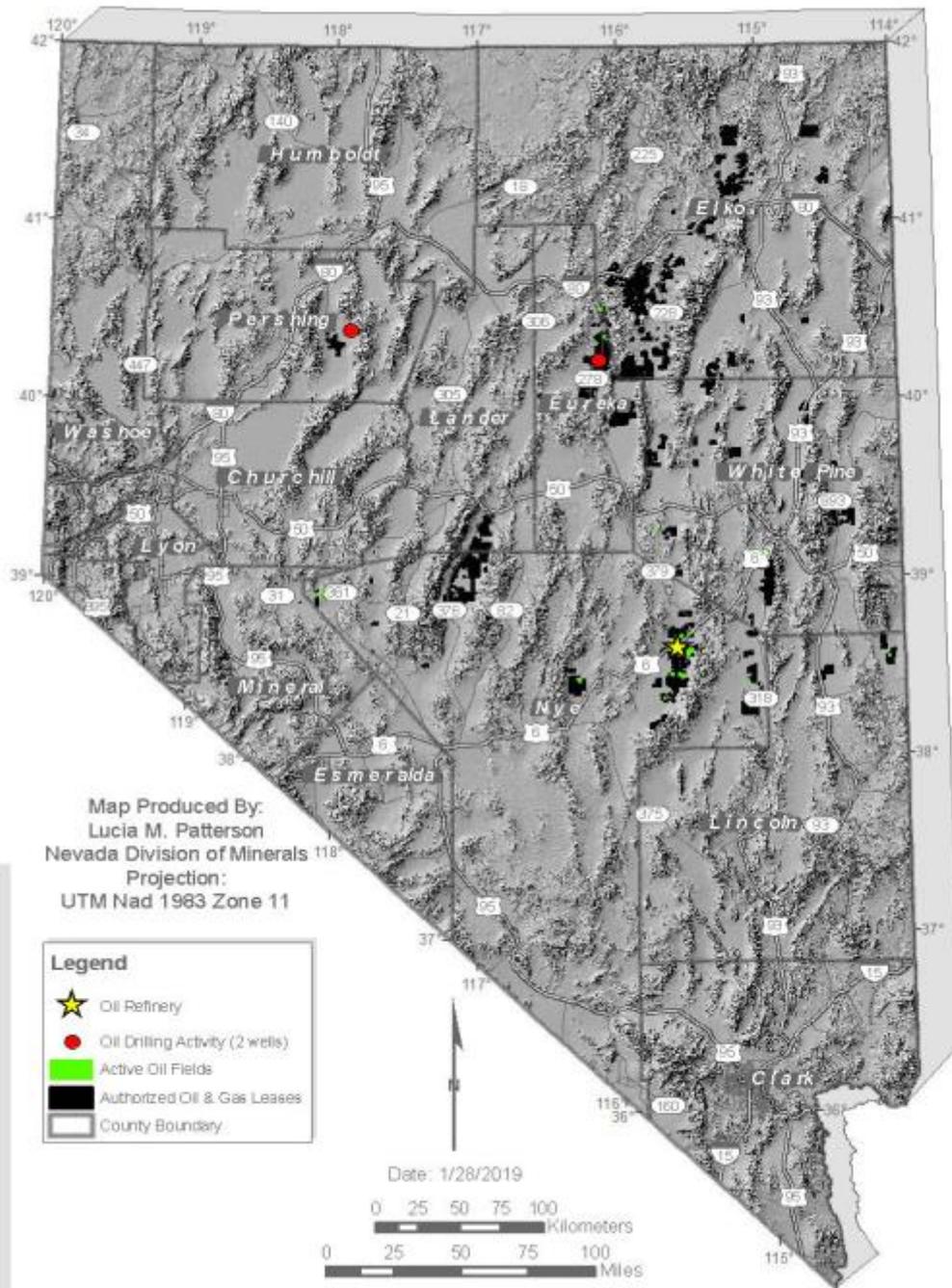


As of 12/31/2018 there were 119 permitted oil wells

There are currently 14 active oil fields in Nevada

To date there are 194 authorized oil leases which
total 337,404 acres

There is one oil refinery in Nevada



Geothermal Development 2017-2018



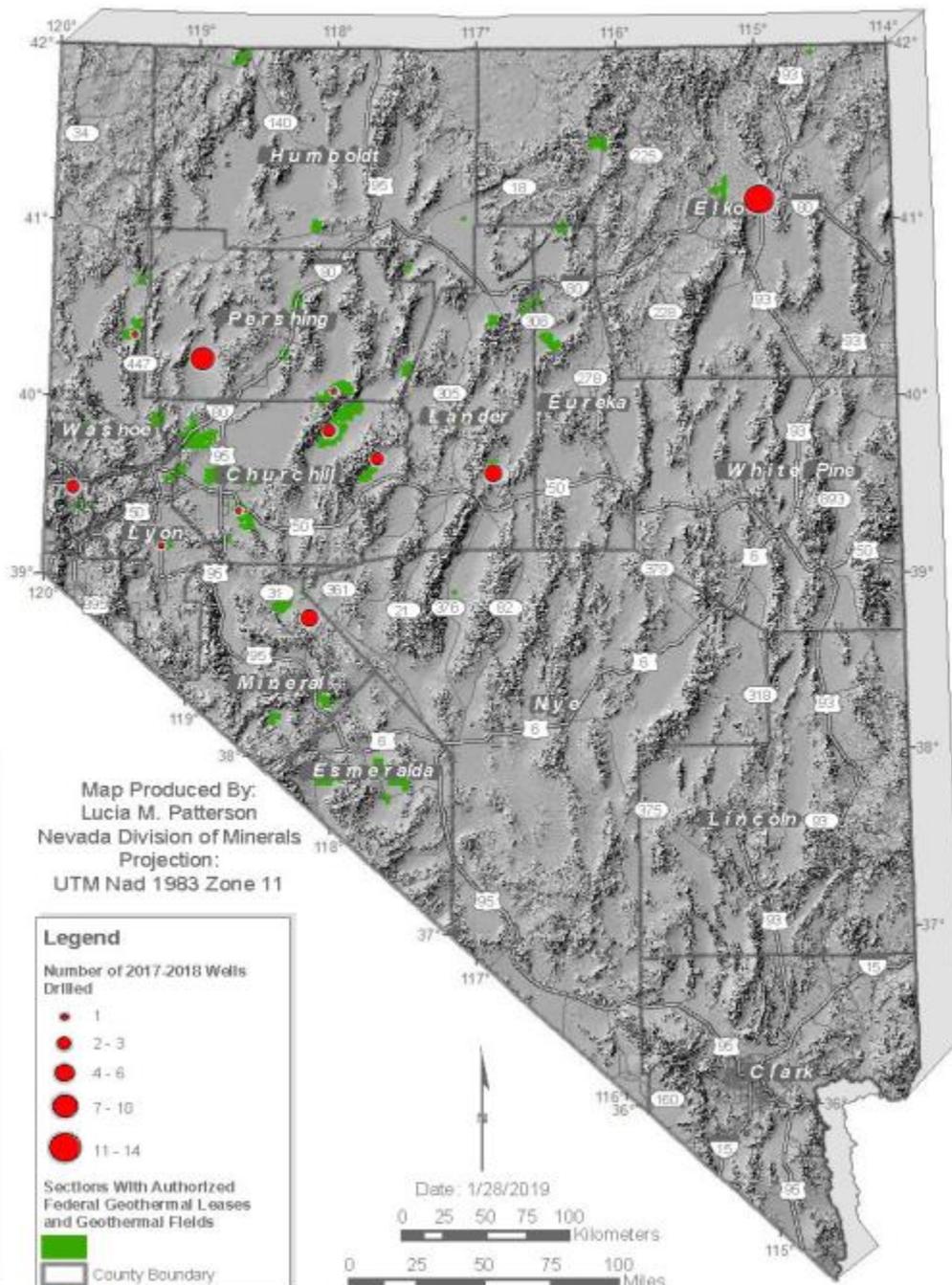
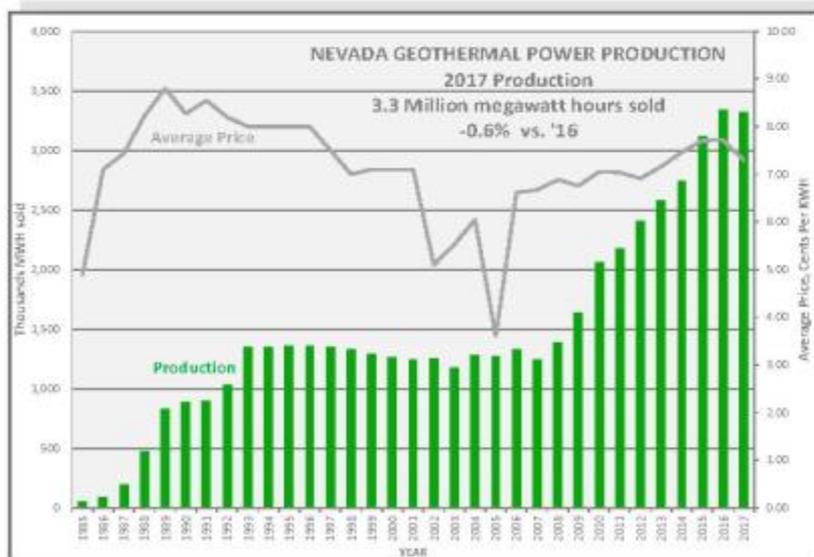
Wells Drilled 2017-2018

- 3** Domestic
- 4** Industrial Injection
- 8** Industrial Production
- 3** Observation
- 31** Temperature Gradient

As of 12/31/2018 there were 459 permitted commercial and industrial wells

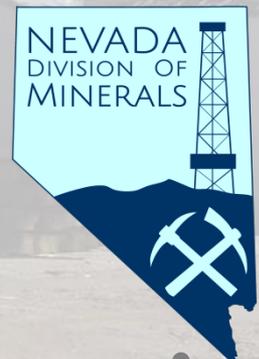
There are 25 active geothermal plants in Nevada

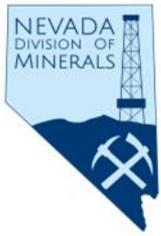
There are 727 authorized geothermal leases as of 01/07/2019 which total 334,303 acres



ABANDONED MINE LANDS PUBLIC SAFETY PROGRAM

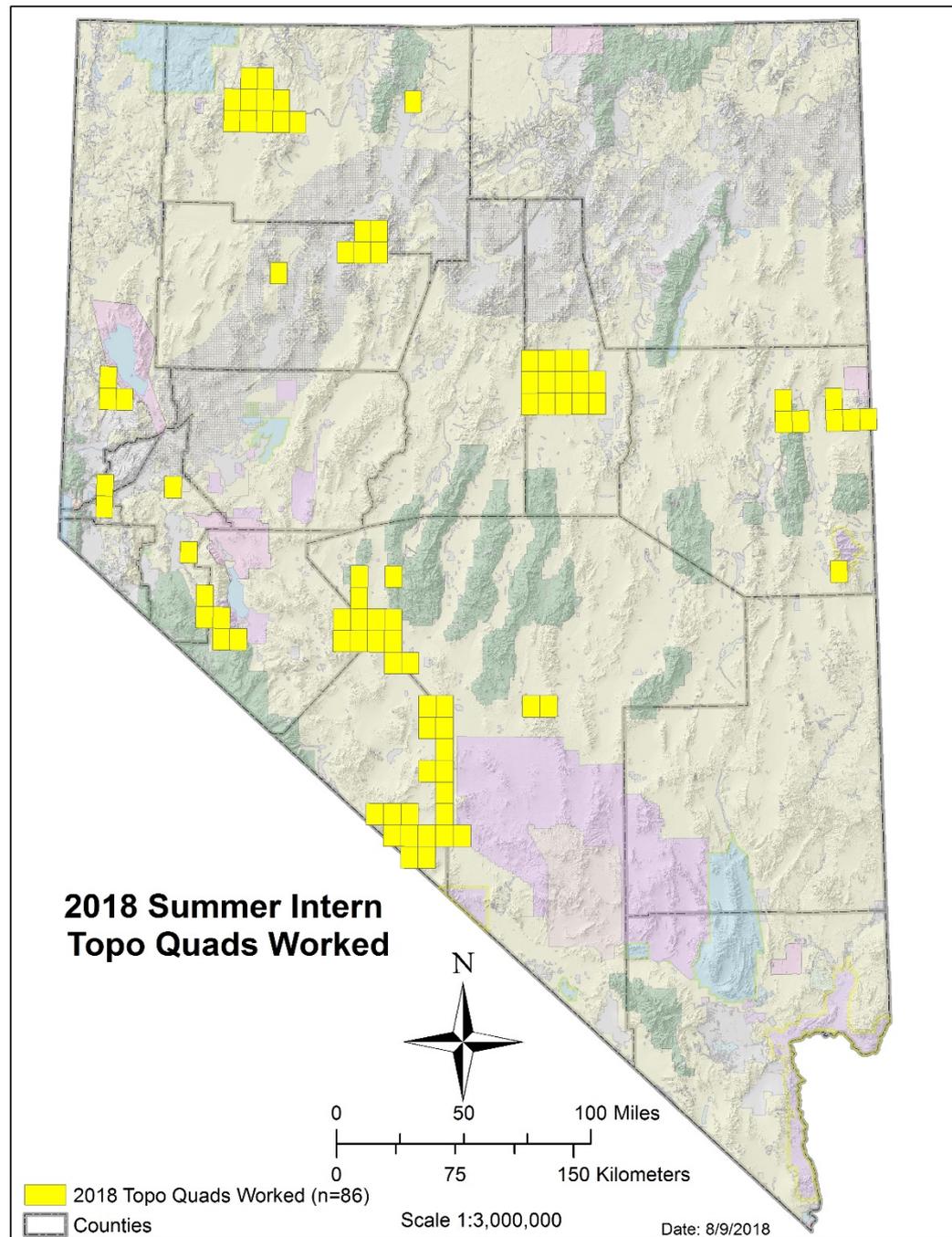
- **Created the Abandoned Mine Lands Program in 1987**
- **Regulated by NRS 513 and NAC 513**
- **Funded by claim fees**
- **Three program activities mandated:**
 - **Statewide Inventory of Sites**
 - **Securing of Hazardous Mines**
 - **Public Awareness Campaign**





NDOM AML PROGRAM

**EACH YEAR HAZARD
AREAS ARE
PRIORITIZED FOR FIELD
WORK BASED ON A
RATING SYSTEM
FOR DEGREE OF
DANGER AND
ACCESSIBILITY**



Over 20,000 Hazards Inventoried

- Since program inception in 1987, 22,596 abandoned mine hazards logged and 18,015 have been secured.

20,000th Logging



16,000th Securing



Hard Closure Projects - 206 closures in 2016

- **Backfills**



- **Bat Compatible Closures**



- **Polyurethane Foam Plugs**



Monte Cristo Claims-6 Mile Canyon area, Comstock District, Storey County

Reported: 3/29/2017

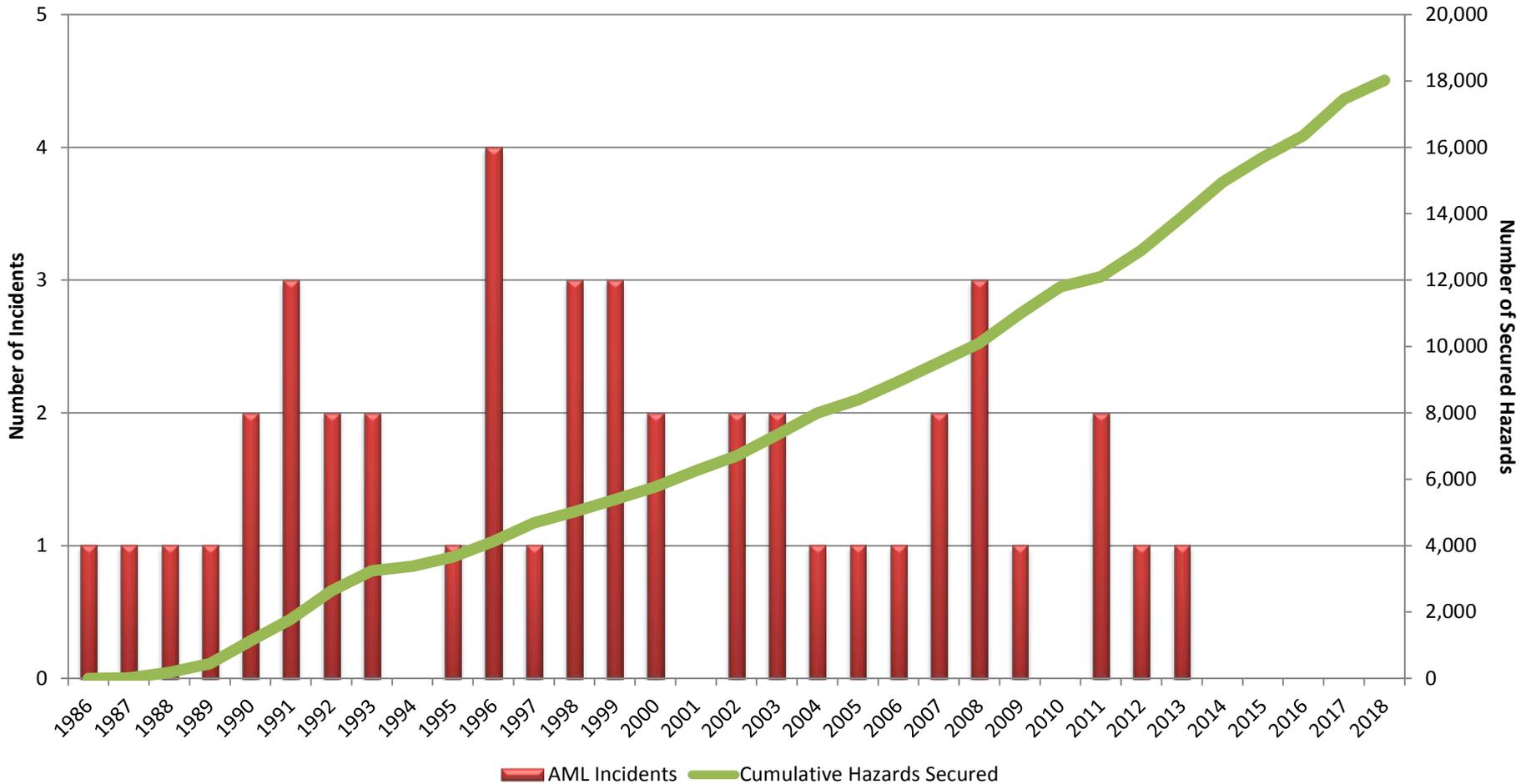
Fenced: 3/29/2017



Backfilled: 6/22/2017



Reported AML Incidents vs. Cumulative Hazards Secured

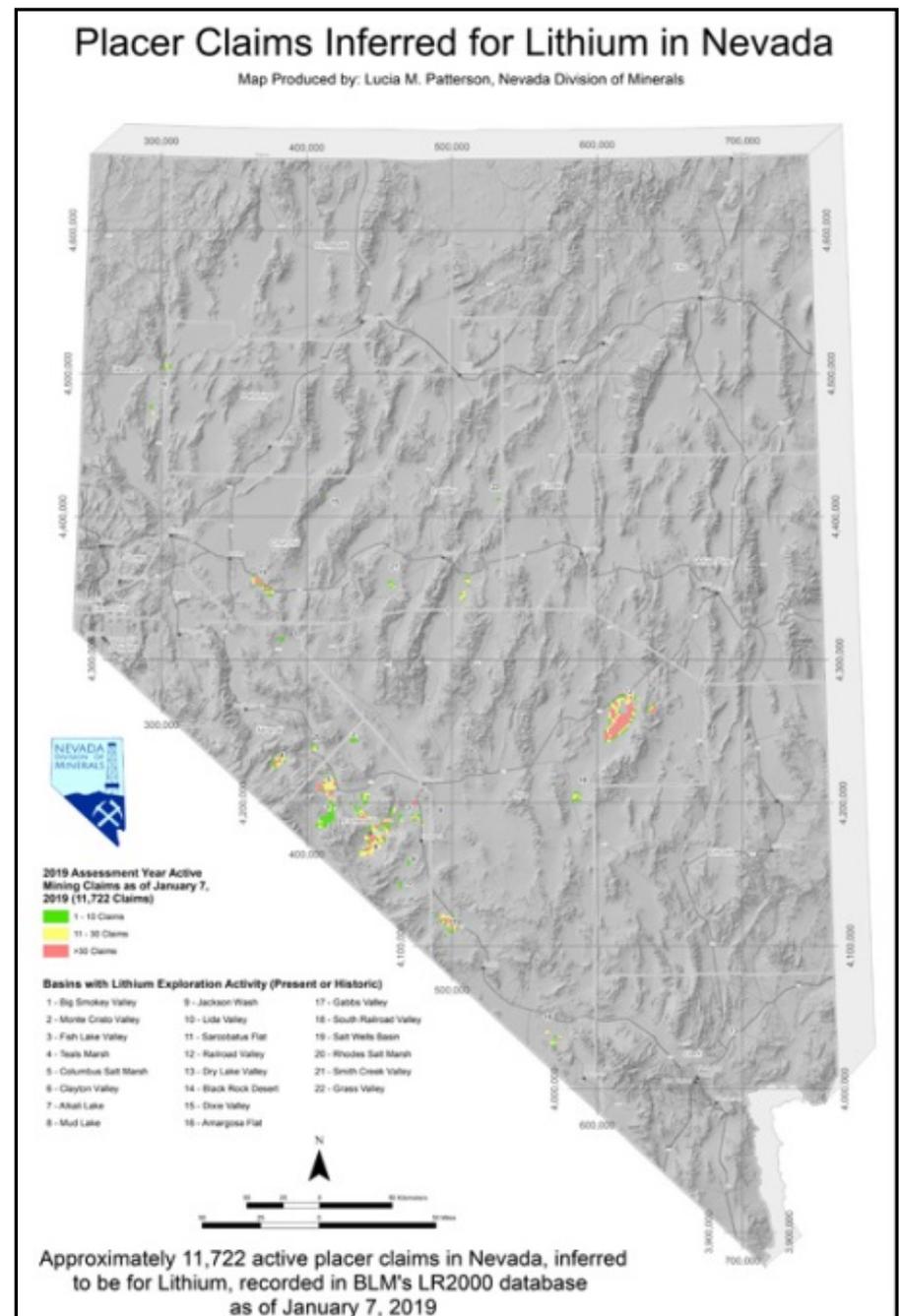


POSITIVE RESULTS: SECURING AND PUBLIC EDUCATION EFFORTS HAVE RESULTED IN “NO REPORTABLE ACCIDENTS OR INJURIES” AT AML FEATURES FOR PAST 3 YEARS.

CONCERN: INCREASING VANDALISM OF FENCING AND GATES REQUIRES RE-VISITS FOR MAINTENANCE

DISSOLVED MINERAL RESOURCE EXPLORATION UPDATE

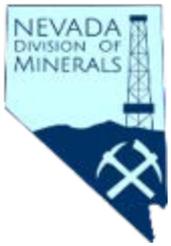
- Statute from 2017 session
- NRS/NAC 534B
- Addresses sampling of brines in exploration boreholes and wells
- Replaces NDWR MM well waivers
- NDEP, NDWR and NDOM jointly developed regs.
- Regulation must be approved by Commission on Mineral Resources
- Statute became effective 1/1/2018





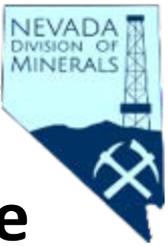
What is in the statute ?

- **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 have 2 year limits, renewable for another 2 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 boreholes and wells.**



What is in the Statute?

- **NDOM Administrator or State Engineer may call a public hearing if they deem necessary to gather facts.**
- **Allows for up to 5 acre-feet of water to be pumped for testing per project (not annually). > 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 Draft Regulations ?

- **Boreholes: notice of intent form required , no fee**
- **DMRE wells: permitting process, application fee**
- **Well design approval required: casing, seals, etc.**
- **Consultation with NDOM triggered when proposing boreholes or wells within “areas with limitations”**
- **Setbacks 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**
- **Plugging logs required for boreholes and wells**
- **Reclamation bonding of Federal land through BLM**



Disclaimer

The Nevada Division of Minerals (NDOM) hereby assumes no responsibility for errors or omissions. Its consent is made by NDOM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, no part of the act of distribution to contractors, partners, or clients, nor for any such warranty, for individual or aggregate use with other data. In no event shall NDOM be liable for any liability, including, but not limited to, any loss of profits arising out of the use or reliance on the data.

Pages

Visit one of our pages to view interactive maps and download data, view over any of the photos below and click on text box that appears



Dissolved Mineral Resource Exploration

To access the Oil, Gas, and Geothermal Resources and Groundwater Basins with High Temperature Gradients Map

[Click here](#)



Upcoming Events/Meetings/Public Hearings:

Meetings, events, and public hearings are your opportunity to stay informed and to be heard on issues that have an impact on the mineral production and exploration communities.

Upcoming

- Sediment Society of Nevada Monthly Meetings
- Nevada Petroleum and Geothermal Society Monthly Meetings



The Commission on Mineral Resources Quarterly Meeting

Contact Information (Questions/Comments/Suggestions)

Impatterson@minerals.nv.gov

About

- Open Forum on Open Data
- Documentation
- State Open Data Community

NDOM Open Data Site

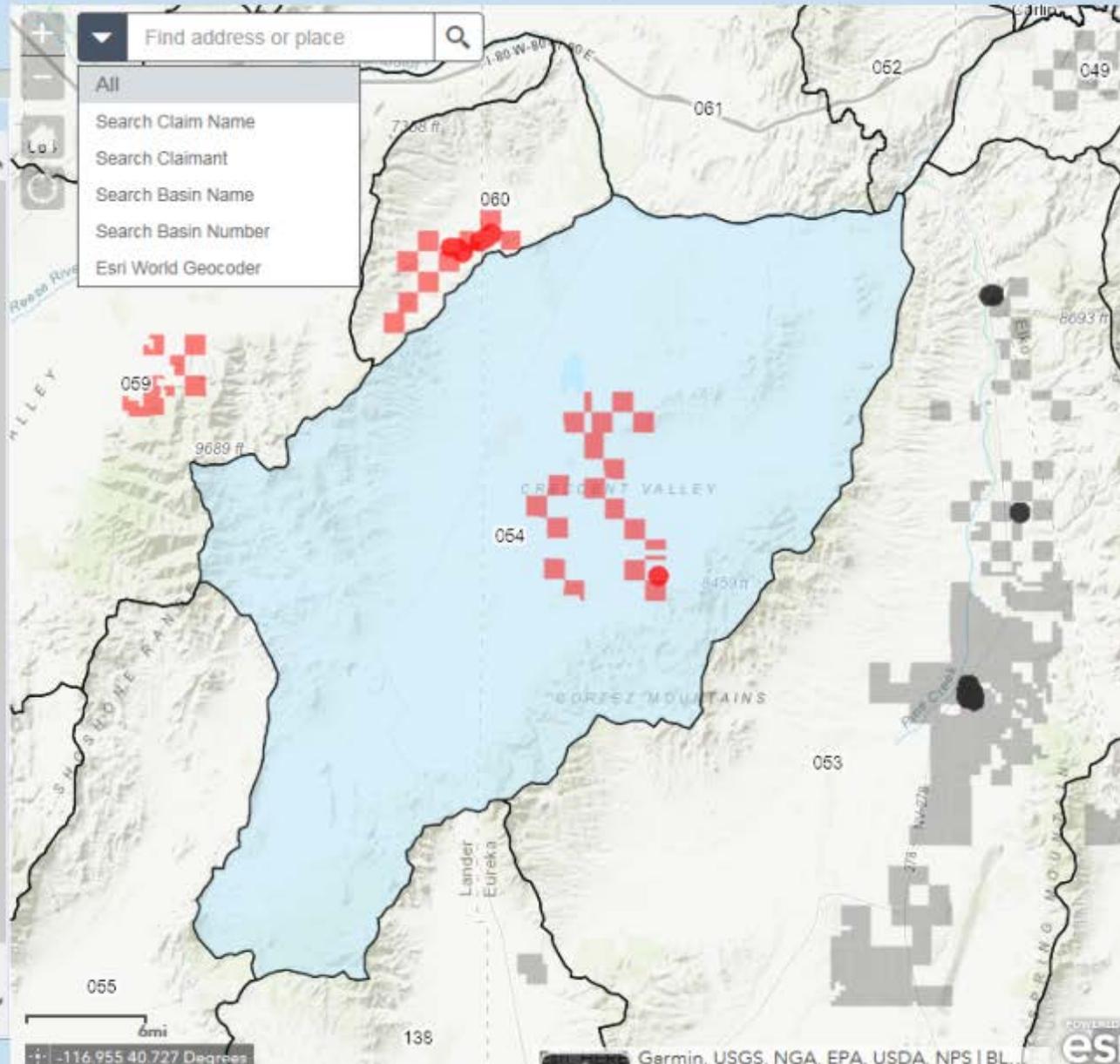
- Public interface data repository available for download or interactive viewing
- A practical response to high volumes of data requests and limited staff

Oil, Gas, and Geothermal Resources and Groundwater Basins with High Temperature Gradients



Layer List

- Operational layers
- "Area With Limitations" Active Geothermal Wells with 1/2 Mile Buffer (Data as of December 18, 2017)
- "Area With Limitations" Active Oil & Gas Wells with 1/2 Mile Buffer (Data as of December 18, 2017)
- "Area With Limitations" Active BLM Geothermal Leases (Data as of 11/15/2017)
- "Area With Limitations" Active BLM Oil & Gas Leases (Data as of 11/15/2017)
- Lithium Placer Claim Points (LR2000 date as of 10/31/2017)
- Lithium Claims Per Section (LR2000 Data as of 10/31/2017)
- Count_
- "Area With Limitations" Basins With High Temperature Gradient



First DMRE Well Permit Approved Jan. 10th, 2018



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>

Date Received <u>1-10-2018</u>
County <u>Esmeralda</u>
NDOM Permit Number <u>W0001</u>
FOR DIVISION USE ONLY

DISSOLVED MINERAL RESOURCE EXPLORATION WELL PERMIT APPLICATION

Applicant/Operator Name Sierra Lithium LLC
Street Address 4755 Caughlin Parkway
City Reno State/Prov. Nevada
Country USA Zip Code 89519

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.)

Sierra Lithium LLC is a domestic Limited Liability Company incorporated in the State of Nevada on October 31, 2016.

This application is for a: New Exploration Well Borehole to Well Conversion
 Permit extension (NDOM Permit # _____) (indicate below any changes to original permit)

Applicant is: Land Owner Lease/Claim Holder

Land Status:

Federal (BLM, USFS, etc...)

Mining Claim: NMC# 1138145

Project Name: Columbus Salt Marsh Valley Exploration Project (CB-1) NVN# 95705

Non Federal

APN#: _____ Land Owner: _____

Bond Type: _____ Issued by: _____

Amount: _____ Number: _____

Groundwater Basin Name and Number Columbus Salt Marsh Valley - 118 Area With Limitations? Y N

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

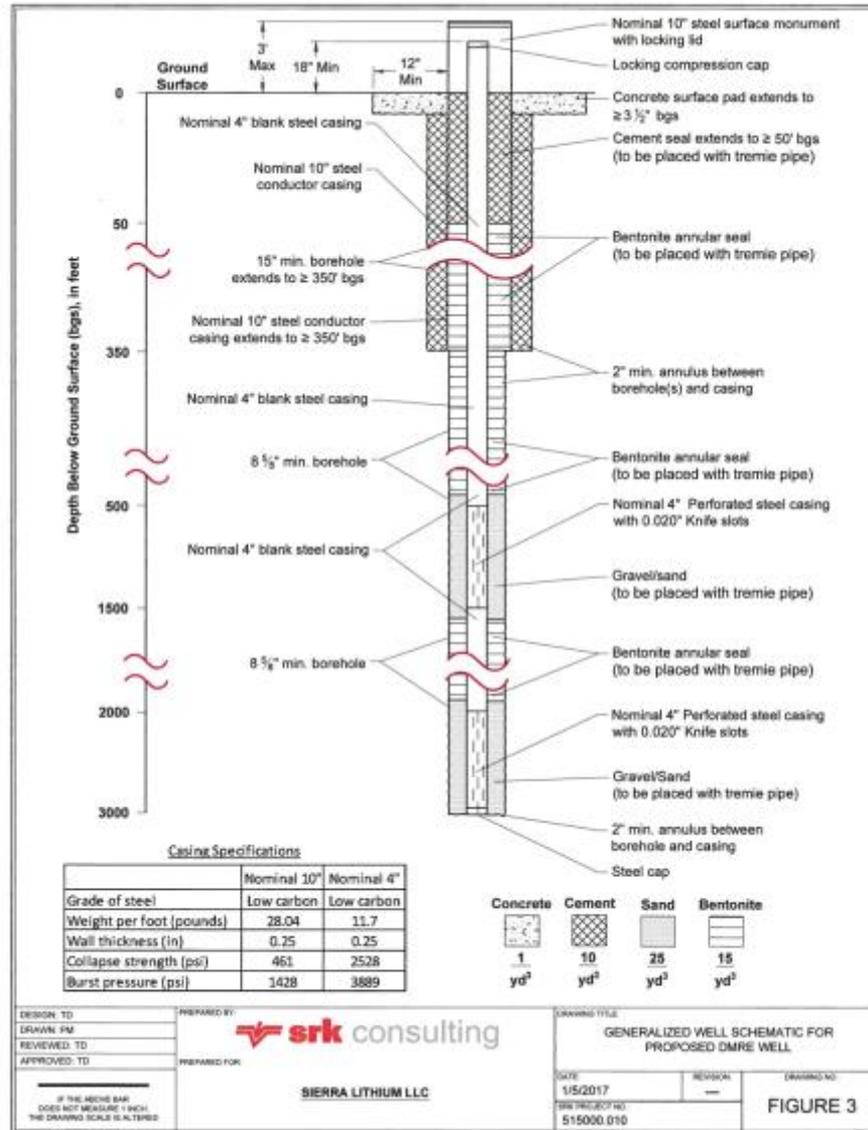
Location of Well:

County: Esmeralda

8W $\frac{1}{4}$ of the SE $\frac{1}{4}$ of 22 Sec., Township 02 N S, Range 36 E

UTM East: <u>415759.58</u>	or	Longitude: _____
UTM North: <u>4207298.85</u>		Latitude: _____
<input checked="" type="checkbox"/> NAD83 <input type="checkbox"/> WGS84 <u>M.D.B. & M.</u>		

Sierra Lithium LLC CB-1 Exploration Well Schematic



First DMRE Borehole NOI Feb. 1, 2018



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>

Date Received:
2-1-18
Approved By:
[Signature]
Date Approved:
2-2-18
NDOM NOI#: 10001

NOTICE OF INTENT TO DRILL DISSOLVED MINERAL RESOURCE EXPLORATION BOREHOLE

Note: one form per borehole, to be submitted at least five (5) days prior to drilling

Today's Date: 2/01/2018 Intended Start Date: 2/05/2018

Operator Name: Mathers Lithium Corp.
Operator Address: 1470-701 West Georgia Street, Vancouver, British Columbia V7Y 1C6, Canada
Email Address: blbconsult@gmail.com

Groundwater Basin Name and Number: Clayton Valley, NV - 143 Area of Limitations?
 Yes No

Federal Lands - BLM NVN Number N-95118 3809(NVB0200)
or

Non-Federal Lands
Land owner's name: _____
APN Number: _____
Address: _____

Drilling Method: Mud Rotary Rev Circ Air Core
 Sonic Other _____

Diameter (inches): 6 Anticipated Final Depth (feet): 1000 feet

Location: NE of the 1/4 SE 1/4, Sec 32 T2 N S R 40 E

County: Esmeralda

Global Positioning System (GPS) coordinates and datum for borehole:

Universal Transverse Mercator (UTM) or Geographic Coordinate System (decimal degrees)
UTM East: -450815 or Longitude: _____
UTM North: -4175005 or Latitude: _____
 NAD 83 WGS 84

Drilling Company Name: Harris Exploration Drilling
On-site Driller's Name: Pat Harris
On-site Driller's License Number: NV 2554

RECEIVED
FEB 01 2018

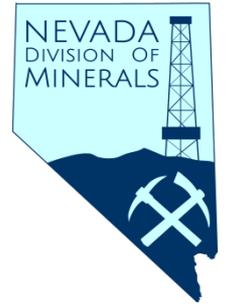
Submit completed form to: (email) ndom@minerals.nv.gov or (fax) 775-684-7052

--- No Fee Required ---

Lithium Brine Exploration in NV

- **Nevada has the only operating lithium mine in the U.S. – located in Clayton Valley, Esmeralda County**
 - Operated since 1967, employs 85 people
 - Produces lithium carbonate
 - Uses surface evaporation ponds to concentrate lithium pumped from brine aquifers in valley
- **Geologic Model for a lithium brine deposit:**
 - Salar deposits – a salt flat that may represent the basin of a salt lake
 - Accumulations of saline groundwater that are enriched in dissolved lithium.
 - Exploration by drilling and sampling of brine aquifers

Lithium



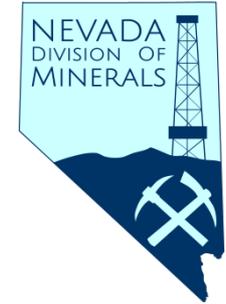
- Is a locatable mineral on Federal land under the general Mining law
- Placer claims are used to locate potential lithium brine deposits
- Lode claims are used to locate potential lithium clay deposits

MINERALS EDUCATION - 2018

- **325 PRESENTATIONS, DELIVERED TO 15,744 ATTENDEES**
 - **317 K-12 CLASSROOM PRESENTATIONS**
 - **50 PRESENTATIONS ON NEVADA MINING & OIL/GAS/GEOTHERMAL PRODUCTION TO CIVIC GROUPS, CLUBS AND ORGANIZATIONS**
 - **9 MEDIA PRESENTATION**
 - **94 PRESENTATIONS IN NORTHERN NEVADA, 25 IN SOUTHERN NEVADA**
- **FILLED AN EDUCATION & OUTREACH SPECIALIST POSITION IN LV OFFICE**
 - **Established position to meet demand for K-12 classroom education**



Kindergartener examining
a rock collection



MINERALS EDUCATION

• CALL US FOR A PRESENTATION FOR CLASSROOMS, CIVIC OR PROFESSIONAL GROUPS

- Classroom: minerals & rocks, geology, mining, abandoned mine safety
- K-12 career day events
- Civic group & trade associations: Nevada mineral production, geothermal/oil/gas production

1st Grade, Bead Mining





State of Nevada Commission on Mineral Resources Division of Minerals



NV.gov

[Agencies](#) [Jobs](#) [About Nevada](#)

Google Custom Search



ADA Americans with Disabilities Act

[HOME](#) [ABOUT US](#) [COMMISSION](#) [PROGRAMS](#) [NEWS](#) [FAQS](#) [CONTACT US](#)



CMR: Commission on Mineral Resources visits ACG Materials' Adams Claim Mine, Lyon County, December 2017.



Current Information

- [Dissolved Mineral Resources regulation update](#)
- [Dissolved Mineral Resources permitting page](#)
- [2017 Nevada Excellence in Mine Reclamation Award](#)
- [2015/2016 NV Mineral and Energy Resource Exploration Survey \(NBMG\)](#)
- [Recent Presentations](#)
- [Information Related to Proposed Land Use Plans and Withdrawals](#)

Programs

