Overview of Current Mineral Production and Development Activity in Nevada

GSN 2022 Symposium
May 2, 2022

Michael Visher, Administrator
Nevada Division of Minerals
Nevada Mining Summary

- In 2021, Nevada mining employed >15,000 workers at an average salary of $103,000 ($49.52/hr)
- In 2021, NV produced 77% of all US gold and ranked 5th in global production (behind China, Australia, Russia, and Canada)
- 20+ commodities are produced from ~150 mines in Nevada
- $14B impact to Nevada’s economy
- Nevada is ranked 3rd best mining jurisdiction based on Investment Attractiveness Index (Fraser Institute, 2021)
- Lots of interest in exploration for, and production of, critical minerals
- Permitted surface disturbance of exploration and mining smaller than Storey County
2021P = $9.6B in total value of all mineral commodities
Nevada Gold

2021 Production (Preliminary)
4.47 Moz, -3.6% vs. '20
32 mining operations
19 operators

Price
Production

Gold production, millions of troy ounces
Gold price, $/troy ounce
## 2021 NEVADA METAL PRODUCTION, BY PRODUCER - Preliminary

### Ranked by gold production

<table>
<thead>
<tr>
<th>Operator</th>
<th>Gold (ozs)</th>
<th>Silver (ozs)</th>
<th>Copper (lbs)</th>
<th>Moly (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada Gold Mines</td>
<td>3,318,854</td>
<td>1,600,225</td>
<td>36,736,179</td>
<td></td>
</tr>
<tr>
<td>Kinross</td>
<td>450,567</td>
<td>808,072</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSR Mining</td>
<td>235,282</td>
<td>4,285</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Majestic Silver</td>
<td>98,303</td>
<td>1,809</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hycroft Mining</td>
<td>56,045</td>
<td>397,546</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida Canyon Mining (Argonaut Gold)</td>
<td>51,175</td>
<td>27,681</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walker Lane Minerals</td>
<td>46,459</td>
<td>44,551</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calibre Gold</td>
<td>45,783</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McEwen Mining</td>
<td>43,881</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KGHM International</td>
<td>41,050</td>
<td>NR</td>
<td>123,700,000</td>
<td>240,000</td>
</tr>
<tr>
<td>Coeur</td>
<td>27,985</td>
<td>3,158,017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rawhide Mining</td>
<td>23,209</td>
<td>126,510</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I80 Gold</td>
<td>17,442</td>
<td>3,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold Acquisition Corp.</td>
<td>5,388</td>
<td>12,773</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borealis Mining</td>
<td>3,936</td>
<td>6,473</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mineral Ridge Gold</td>
<td>1,827</td>
<td>1,154</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevada Copper</td>
<td>NR</td>
<td>NR</td>
<td>3,296,515</td>
<td></td>
</tr>
<tr>
<td>Geo-Nevada</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hecla (Klondex)</td>
<td>0</td>
<td>26,214</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>4,467,189</strong></td>
<td><strong>6,218,814</strong></td>
<td><strong>163,732,694</strong></td>
<td><strong>240,000</strong></td>
</tr>
</tbody>
</table>
Nevada Gold Mines Production Comparison

2009 - 2021 Annual Gold Production in Nevada

BARRICK & NEWMONT
COMBINED PRODUCTION

ALL OTHERS

9%
26%
Nevada Gold Production Statistics

**Au % by Mine Type**

<table>
<thead>
<tr>
<th>Mine Type</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underground</td>
<td>25.53%</td>
<td>26.49%</td>
</tr>
<tr>
<td>Open Pit</td>
<td>74.47%</td>
<td>73.51%</td>
</tr>
</tbody>
</table>

**% Au by Process (2020 vs. 2021)**

<table>
<thead>
<tr>
<th>Process</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoclave/Roaster/Gravity</td>
<td>38.9%</td>
<td>40.5%</td>
</tr>
<tr>
<td>Milling</td>
<td>28.8%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Heap Leach</td>
<td>32.3%</td>
<td>29.5%</td>
</tr>
</tbody>
</table>

**2021 Au % By Land Ownership**

- Public, 52.2%
- Private, 47.8%
Nevada Silver

2021 Production (Preliminary)
6.22 Moz, +1.5% vs. '20
23 mining operations
15 operators

Silver price, $/troy ounces
Silver production, millions of troy ounces

Production
Price
Nevada Copper

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound

2021 production (preliminary)
163.7M lbs, +6.1% vs. '20
3 mining operations
3 operators

Copper production, millions of pounds

Copper price, $/pound
Gypsum production, millions of short tons

Nevada Gypsum

2021 Production
2.5 M tons
5 mines
4 producers
Other Industrial Minerals Produced in 2021 (Preliminary)

- 12,700,000 lbs of lithium compounds
- 658,000 tons of silica sand
- 129,000 tons of magnesium compounds
- 306,000 tons of diatomite
- 240,000 pounds of molybdenite
- 16,000 tons of salt
- 3,700 tons of perlite
- ~200,000 tons of specialty clays
Nevada Aggregate
Demand is closely linked to construction activity in, and adjacent to, Nevada.
Nevada Aggregates

- 4th highest valued commodity in NV
- Includes:
  - Crushed rock
  - Sand and gravel
- Used primarily for construction but also for landscaping material and products
- 100s of former and current borrow pits
  - NDOT and county road maintenance
- BLM Mineral Materials sales of $10M in FY20
- Unlike most commodities, cost is determined largely by distance needed to transport
- Creates NIMBY challenges in urban areas
244,492 Active Mining Claims in Nevada as of 3/29/2022

Increase of 11% from April 2021

>50% of all US mining claims

Annual maintenance payments of $165/claim to BLM and $12/claim to county recorder

~$39M to BLM (2021 AY)

~$2.8M to Nevada counties

The trend in claims is an indicator for exploration interest and largely the price of gold

>$643M spent on exploration in NV in 2019 and 2020

71% increase in number of placer claims for lithium brine YOY
NDOM has been gathering active claim data from LR2000/MLRS at the end of October for the last eight years. The purpose of this graph is to show claims data and statistics from the same snapshot in time.
The Demand for Lithium

- The Tesla/Panasonic battery factory alone needs 5X the amount of lithium mined annually in Nevada.
- If one or more Li clay project begins mining, NV will produce >10% of world production, would then expect vertical integration with a cathode plant built in NV.
- Successful application of DLE technology will dramatically increase lithium brine mining.
**Critical Minerals**

A “critical mineral,” as defined by the E.O. 13817, is a mineral:

1. identified to be a nonfuel mineral or mineral material essential to the economic and national security of the United States
2. from a supply chain that is vulnerable to disruption
3. that serves an essential function in the manufacturing of a product, the absence of which would have substantial consequences for the U.S. economy or national security.

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Bold indicates known occurrences</th>
<th>* indicates past or present production in Nevada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimony*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic*</td>
<td>Gallium</td>
<td></td>
</tr>
<tr>
<td>Barite*</td>
<td>Germanium</td>
<td></td>
</tr>
<tr>
<td>Beryllium*</td>
<td>Graphite</td>
<td></td>
</tr>
<tr>
<td>Bismuth</td>
<td>Hafnium</td>
<td></td>
</tr>
<tr>
<td>Bismuth</td>
<td>Holmium</td>
<td></td>
</tr>
<tr>
<td>Cerium</td>
<td>Indium</td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>Iridium</td>
<td></td>
</tr>
<tr>
<td>Cobalt</td>
<td>Lanthanum</td>
<td></td>
</tr>
<tr>
<td>Cobalt</td>
<td>Lithium*</td>
<td></td>
</tr>
<tr>
<td>Dysprosium</td>
<td>Lutetium</td>
<td></td>
</tr>
<tr>
<td>Erbium</td>
<td>Magnesium*</td>
<td></td>
</tr>
<tr>
<td>Europium**</td>
<td>Magnesium*</td>
<td></td>
</tr>
<tr>
<td>Gallium</td>
<td>Neodymium</td>
<td></td>
</tr>
<tr>
<td>Germanium</td>
<td>Nickel</td>
<td></td>
</tr>
<tr>
<td>Graphite</td>
<td>Palladium</td>
<td></td>
</tr>
<tr>
<td>Hafnium</td>
<td>Platinum</td>
<td></td>
</tr>
<tr>
<td>Holmium</td>
<td>Praseodymium</td>
<td></td>
</tr>
<tr>
<td>Indium</td>
<td>Rhodium</td>
<td></td>
</tr>
<tr>
<td>Iridium</td>
<td>Rubidium</td>
<td></td>
</tr>
<tr>
<td>Lanthanum</td>
<td>Samarium</td>
<td></td>
</tr>
<tr>
<td>Lithium*</td>
<td>Scandium</td>
<td></td>
</tr>
<tr>
<td>Lutetium</td>
<td>Tantalum</td>
<td></td>
</tr>
</tbody>
</table>

- An updated list was published as final by USGS in Feb. 2022
- 33 of the 50 occur in Nevada
Renewed exploration in NV for cobalt, copper, graphite, lithium, nickel, REE, tungsten, vanadium, and zinc while conservation efforts continue to remove land from development.

Nevada is uniquely positioned to lead the US in transitioning away from fossil fuels so long as federal land is available for the environmentally responsible extraction of the commodities needed to electrify the nation.
New NDOM Open Data Services

- Claims Location Array Interactive Map Service (C.L.A.I.M.S.)
  - A platform for exploring and downloading mining claims, BLM Plan and Notice GIS data
  - Includes both historic and current data for: AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA and WY
  - [https://claims-nvdataminer.hub.arcgis.com/](https://claims-nvdataminer.hub.arcgis.com/)

- Claim Residency Interactive Map Experience (C.R.I.M.E.)
  - For viewing of mining claim density and annual federal fees paid through time per section
  - View sum and average of fees per section
  - Includes same 11 western states, notice and plan data, and USGS MRDS and USMIN datasets
  - [https://data-ndom.opendata.arcgis.com/](https://data-ndom.opendata.arcgis.com/)
Copper is #2 in gross value and increasing
- Limitation is lack of downstream smelting and refining
- Electric vehicles vs. gas require 5-8X more copper

Industrial mineral production in NV likely to increase as it is easier to put into operation than in other western states

Increase in # of projects being permitted largely due to increased gold price but also in relation to increased demand for commodities needed for renewable energy and batteries (Co, Li, Ni, V, Zn)

Competition for workers will result in changes to workplace, schedules, benefits, and $$$

Permitting timelines increasing due to insufficient human resources necessary to handle increased volume; locatables, solar, geothermal, oil are all experiencing an upswing

Escalation in investor and consumer interest on the value of environmental, social and corporate governance (ESG) regarding sourcing and mining of commodities
For More Info:

- **Agency Homepage:** minerals.nv.gov
- **“Mining” program page**
  - Production summaries and stats
  - Numerous free publications and maps
- **“Current Information”**
  - Links to 17 Distance Learning Educational Videos
  - Recent Presentations
- **“Important Links - Open Data Site”**
  - Interactive web mapping application to display and download information related to the minerals industry.
  - Location of mining claims, current and historical exploration activity and mineral production.
  - Public lands issues
  - New “C.R.I.M.E.” page
If you want to learn more about data, web maps and web applications available for explorationists in Nevada and beyond, please come to our short course!

**Topics to be Explored:**

- NDOM/NBMG Open Data Sites
- How to use the web applications
- How to filter/query the data
- How to download the data
- C.L.A.I.M.S. hub site (Claims, notices & plans for the western US)
- The new C.R.I.M.E. (Claims Residency Interactive Map Experience) application

**Sponsored by:**

**NEW FRONTIER DRILLING**

**Thursday:**

2-4pm
Nugget 1

**IT'S FREE!! LIVE DEMOS, OPEN DISCUSSION... YOU DESIGN THE CLASS...NOT US!!**

**FREE BEER!!**