

# NEVADA DIVISION OF MINERALS

## California AML Forum

June 18, 2008

Sacramento, California

Alan R. Coyner, Administrator

Nevada Division of Minerals

400 W. King Street #106

Carson City, NV 89703

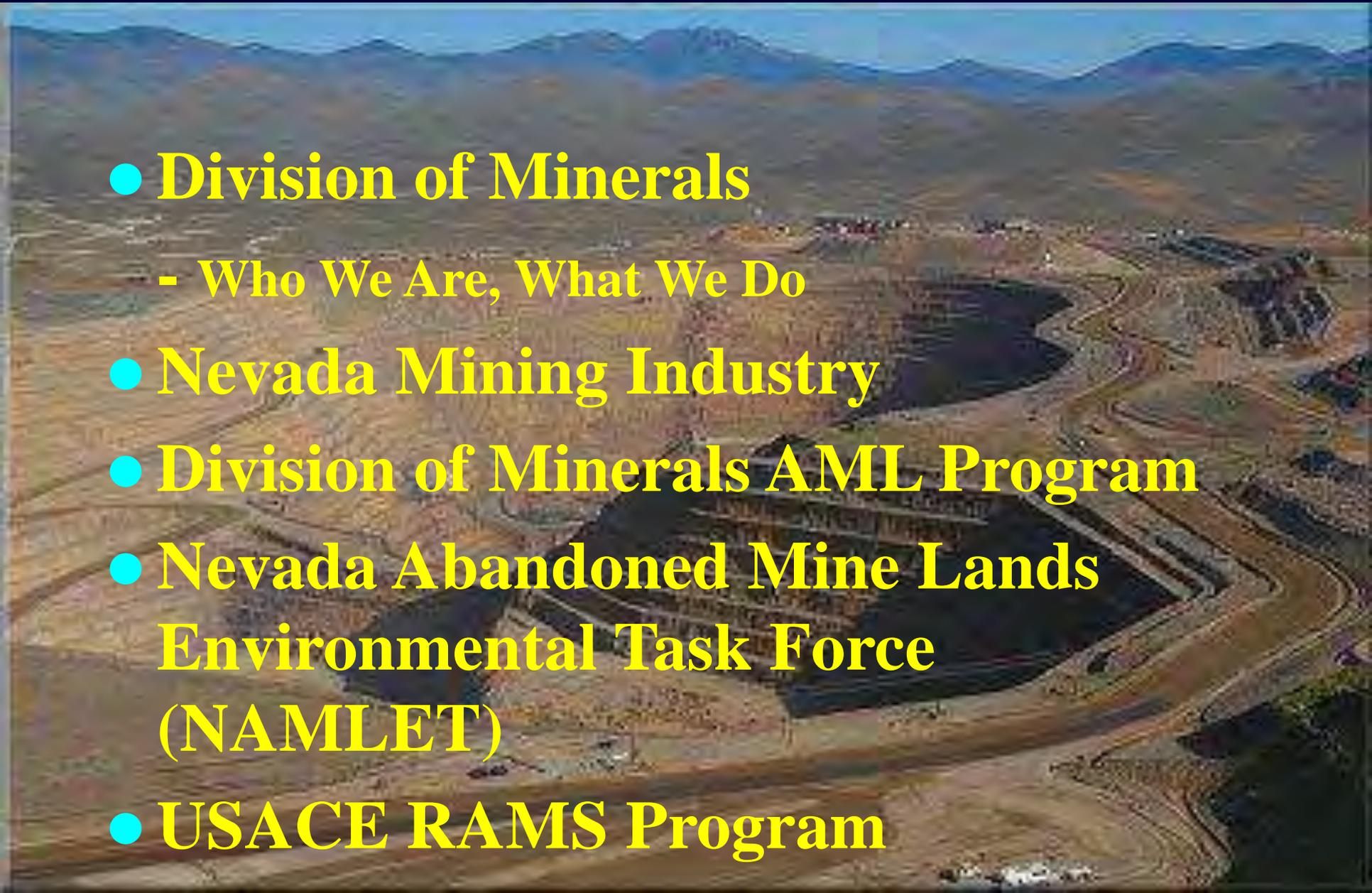
[minerals.state.nv.us](http://minerals.state.nv.us)

[acoyner@govmail.state.nv.us](mailto:acoyner@govmail.state.nv.us)

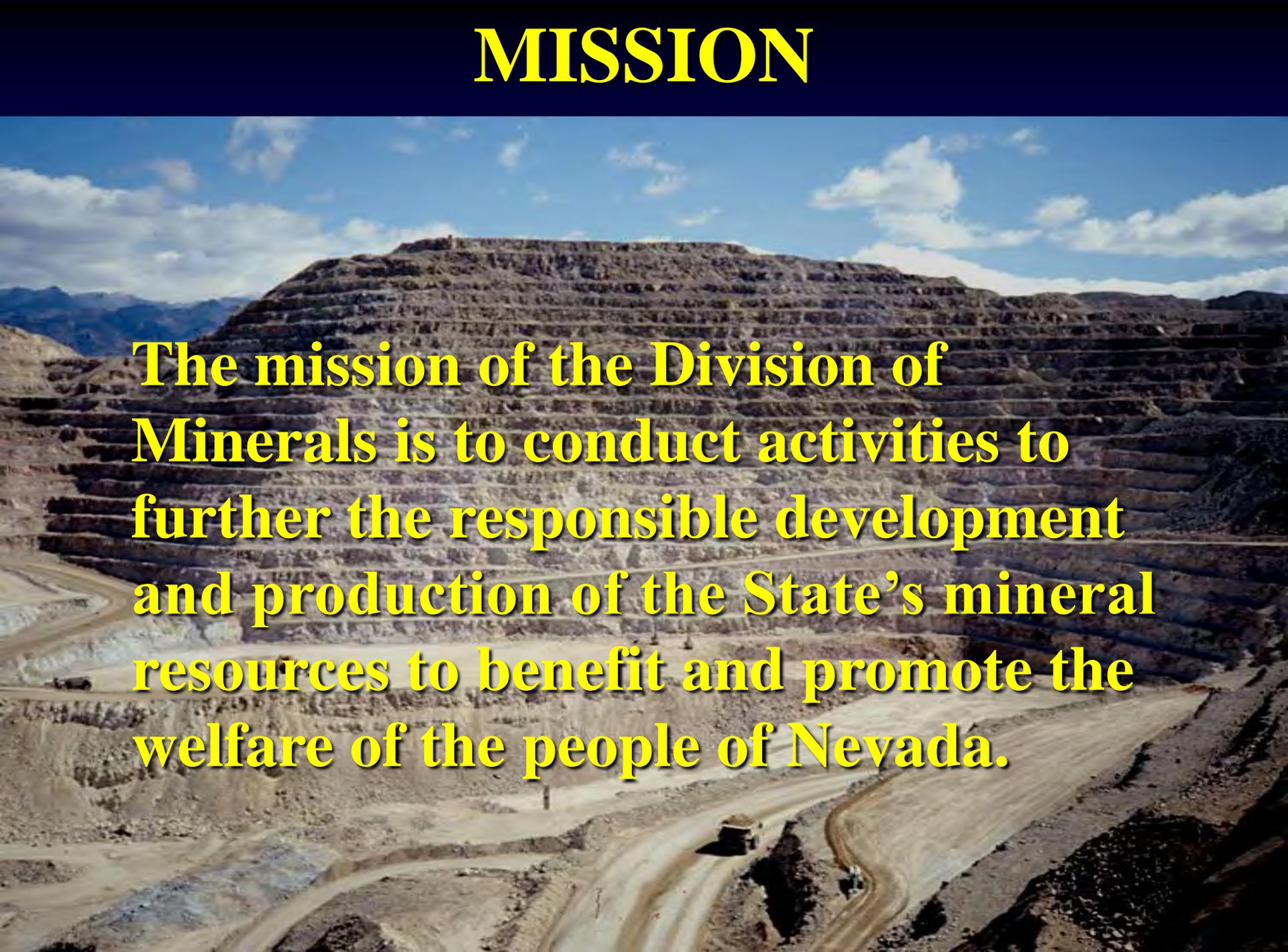
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# TOPICS

- **Division of Minerals**
    - Who We Are, What We Do
  - **Nevada Mining Industry**
  - **Division of Minerals AML Program**
  - **Nevada Abandoned Mine Lands Environmental Task Force (NAMLET)**
  - **USACE RAMS Program**
- 
- An aerial photograph of a mining site in a desert environment. The image shows a large, terraced open-pit mine in the center, with a winding road or conveyor system leading to it. In the foreground, there is a large, dark, rectangular body of water, possibly a tailings pond. The surrounding landscape is arid and hilly, with mountains visible in the distance under a clear sky.

# MISSION

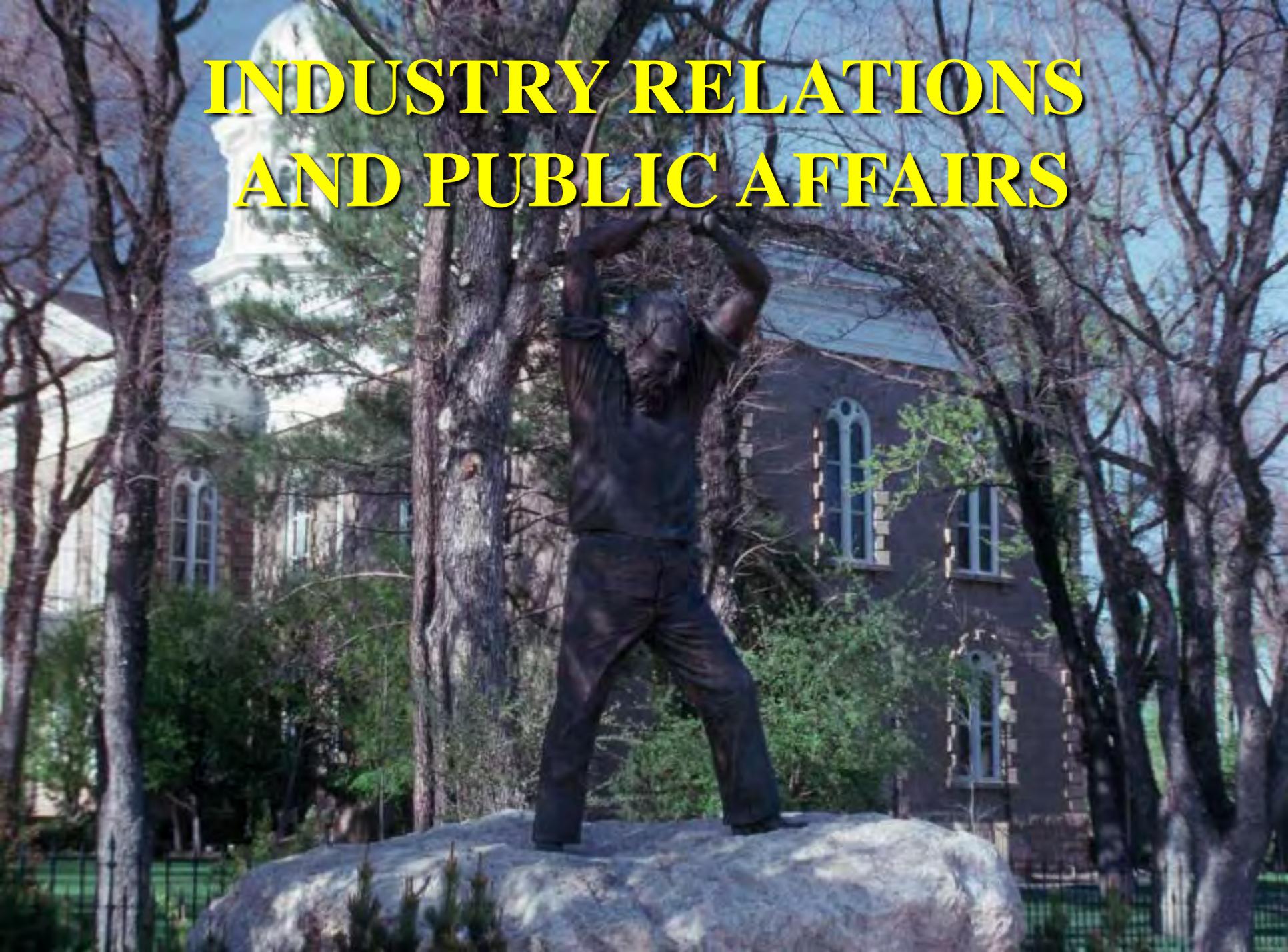
An aerial photograph of a large-scale open-pit mine. The mine is characterized by numerous horizontal terraced levels, creating a stepped appearance. A wide, light-colored dirt road winds through the lower levels of the mine. In the background, a large, flat-topped mountain rises against a blue sky with scattered white clouds. The overall scene depicts a significant industrial mining operation in a desert environment.

**The mission of the Division of Minerals is to conduct activities to further the responsible development and production of the State's mineral resources to benefit and promote the welfare of the people of Nevada.**

# STRUCTURE

- **State Agency and part of the Commission on Mineral Resources (CMR)**
- **CMR is 7 members appointed by the Governor from the minerals industry**
- **Offices in Carson City (8 employees) and Las Vegas (2 employees)**
- **Annual budget of \$1,200,000**
- **No general fund money in budget, all revenue from fees on mineral industry**

# INDUSTRY RELATIONS AND PUBLIC AFFAIRS



# ABANDONED MINE LANDS PROGRAM



# MINERALS EDUCATION



# OIL and GAS



	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Railroad Valley</b>	<b>6</b>	<b>7</b>	<b>15</b>
<b>Nye County</b>	<b>7</b>	<b>6</b>	<b>7</b>

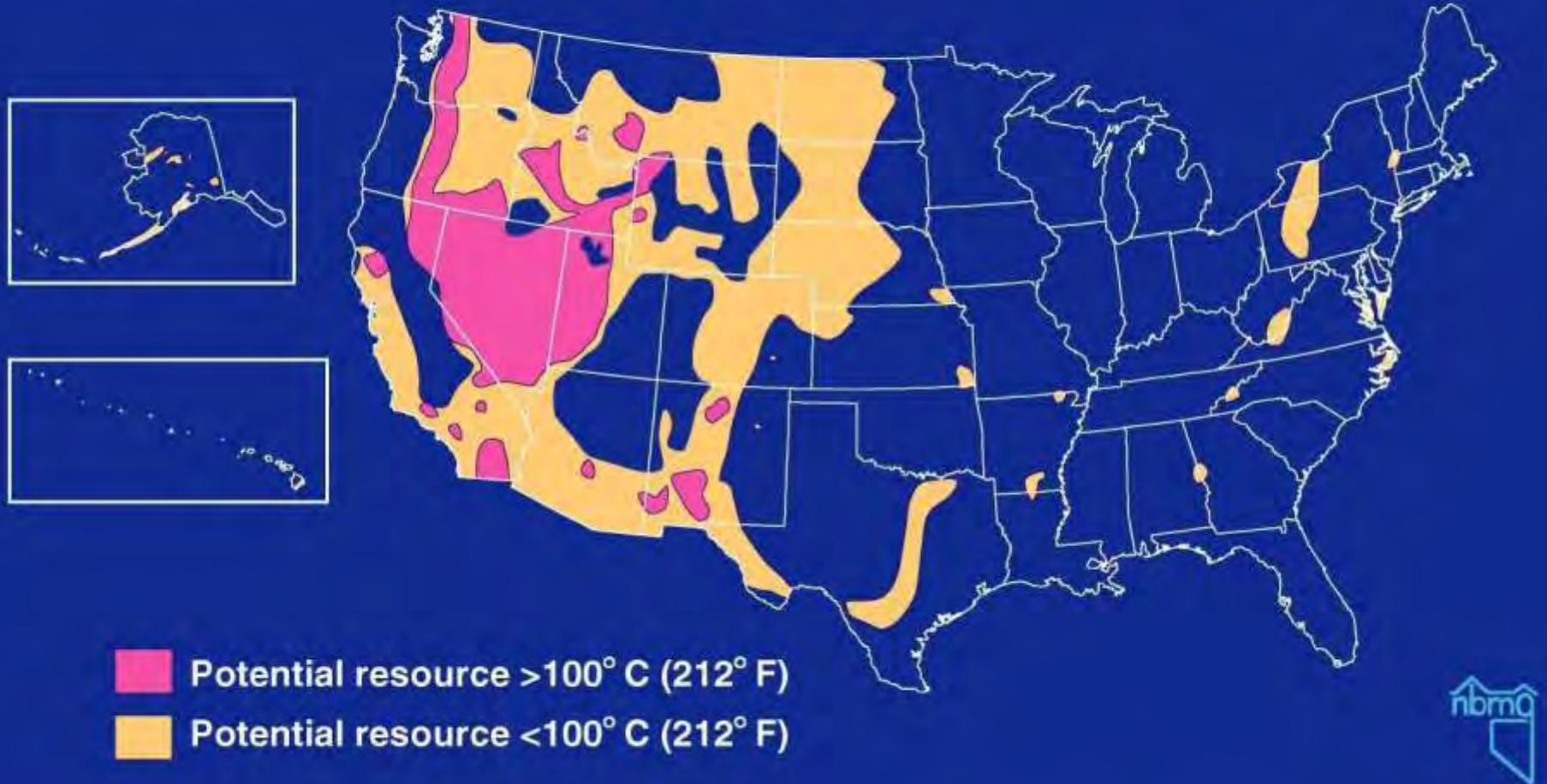
# GEOHERMAL



	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Beowawe Plant</b>	<b>63</b>	<b>45</b>	<b>72</b>
<b>Lander County</b>	<b>34</b>	<b>13</b>	<b>43</b>

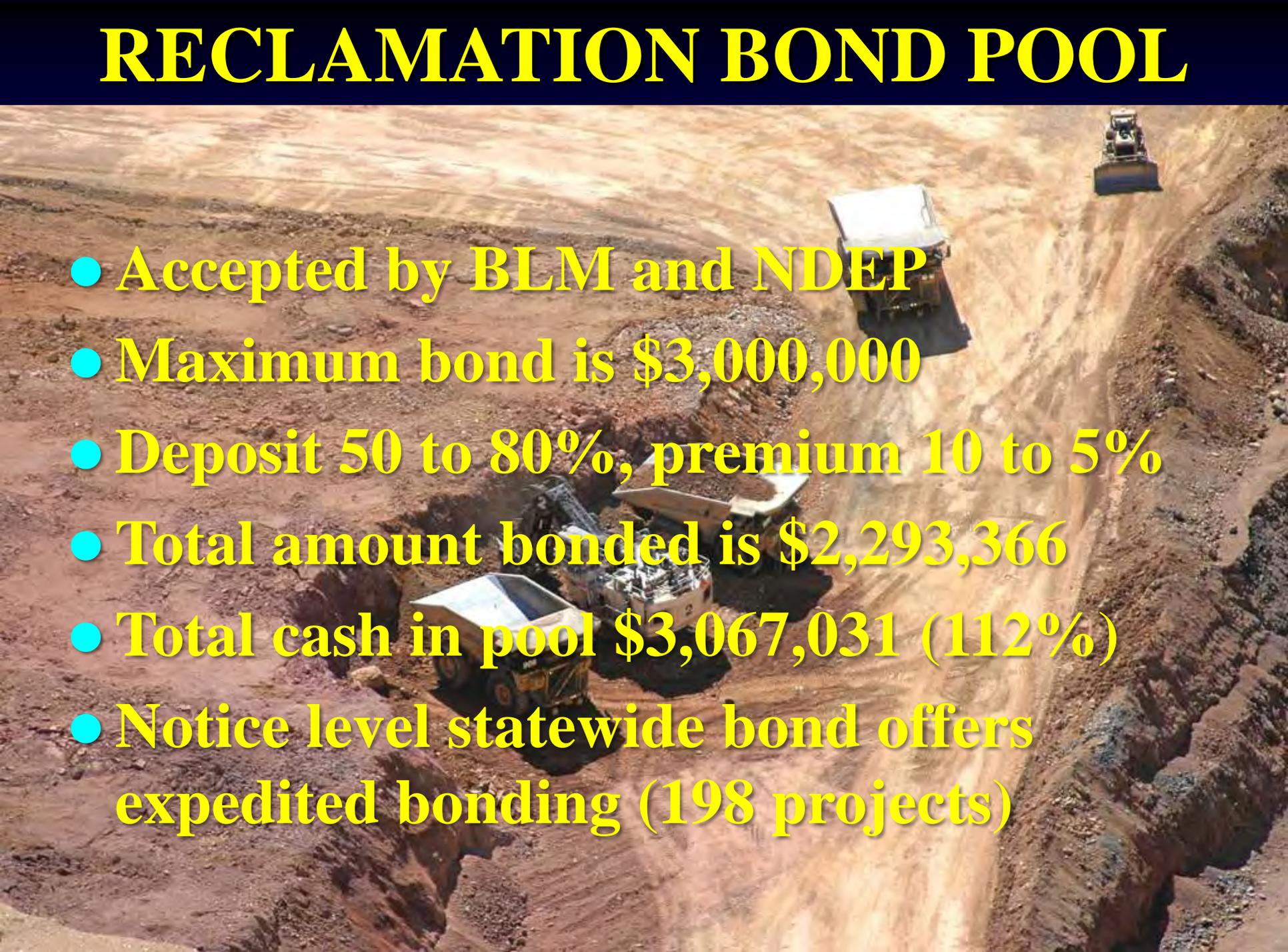
*Nevada is the Saudi Arabia of Geothermal Energy – Sen. Harry Reid*

## Known and Potential Geothermal Resources



*Compiled by the Energy and Geoscience Institute, University of Utah*

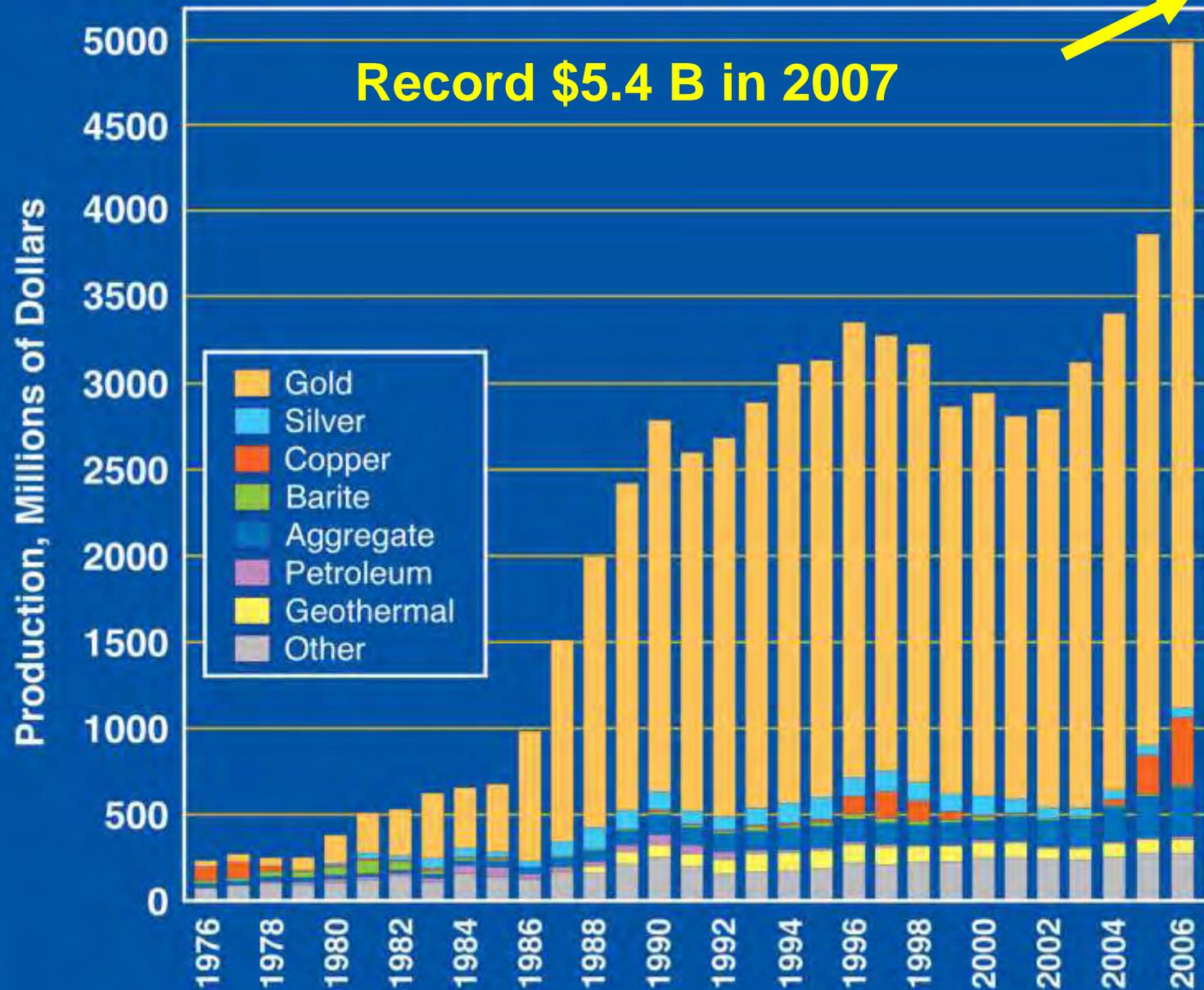
# RECLAMATION BOND POOL

- Accepted by BLM and NDEP
  - Maximum bond is \$3,000,000
  - Deposit 50 to 80%, premium 10 to 5%
  - Total amount bonded is \$2,293,366
  - Total cash in pool \$3,067,031 (112%)
  - Notice level statewide bond offers expedited bonding (198 projects)
- 
- An aerial photograph of a large-scale mining or reclamation site. The terrain is rugged and reddish-brown, with deep tracks from heavy machinery. In the foreground, a large yellow haul truck is parked on a dirt road. Further up the road, another haul truck is visible, and in the distance, a bulldozer is working on a slope. The overall scene depicts active earthmoving and construction work.



**Nevada is a great place to explore for and mine gold, silver, and other mineral commodities**

# Nevada Mineral, Petroleum, and Geothermal Production



6.04 M oz X \$695 per oz average price = \$4.2 B in 2007

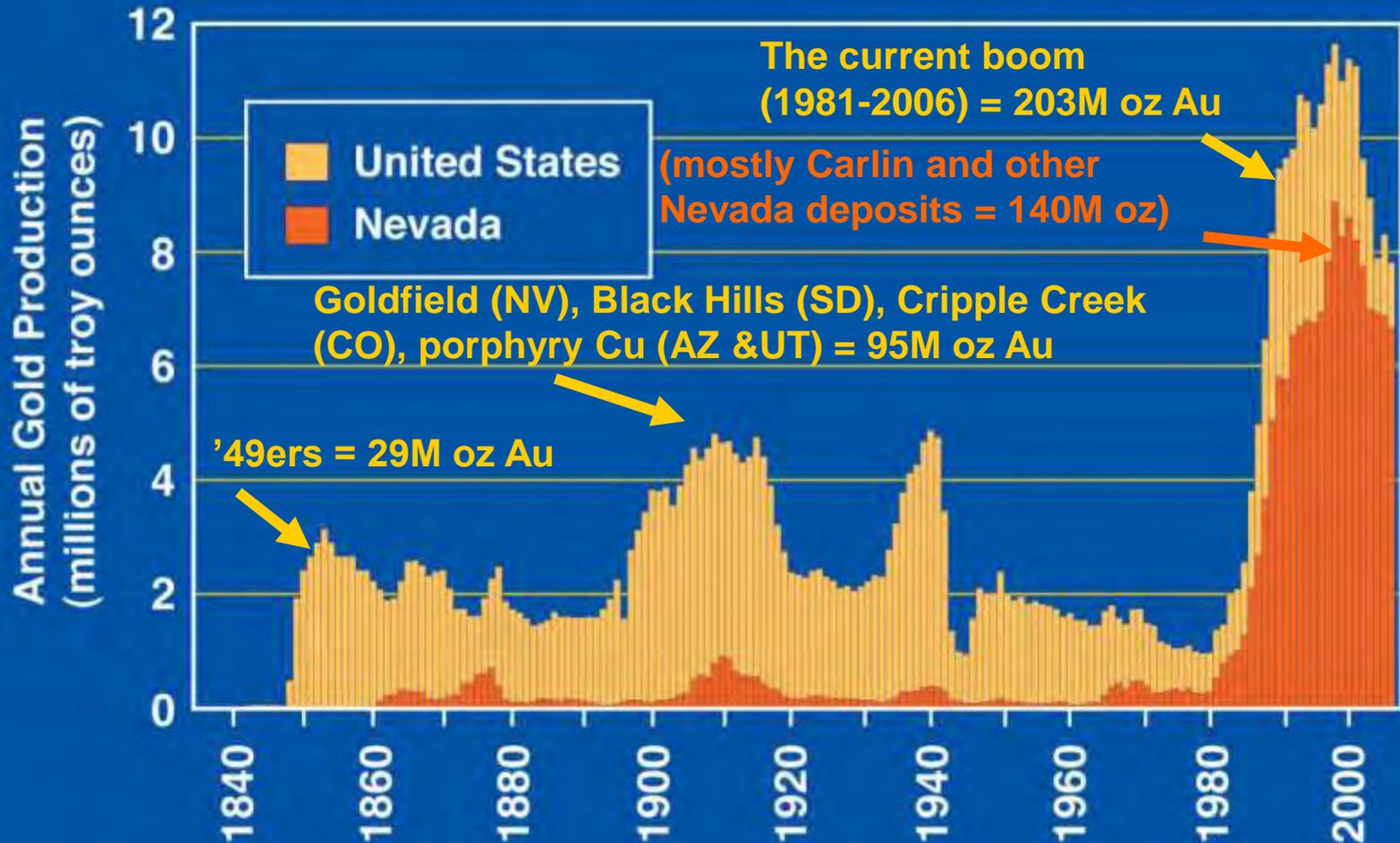
# Nevada Gold



Nevada produced 78% of U.S. and 8% of world gold in 2007

We are in the biggest gold-mining boom in history

# Gold Production, 1835—2006



U.S. Total = 522 M oz    Nevada = 170 M oz

# Not \$650, but ~\$900+/oz Au!

## 1 Year Gold

High 1002.80 Low 641.80



Based on New York Close

# Not \$300, but ~\$900+/oz Au!

## 10 Year Gold

High 1002.80 Low 252.80



Based on New York Close



**Most productive open pit: Barrick's Betze-Post mine  
1,215,447 million oz of gold in 2007 (25M+ total)**



**Most productive underground: Barrick's Meikle mine  
413,186 oz of gold in 2007 (7M+ total)**



# CARLIN TREND

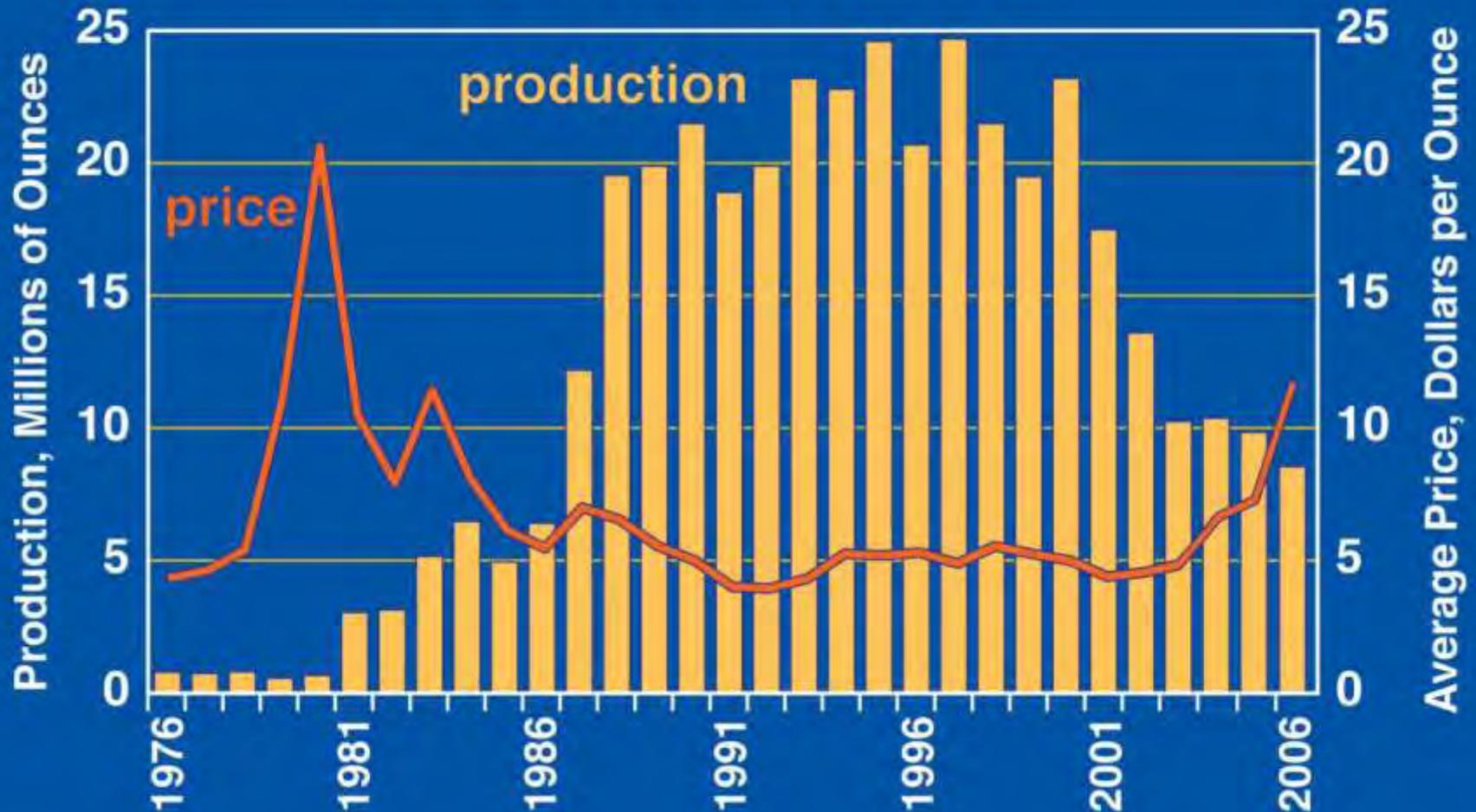
**Cumulative production from the Carlin trend (1965-2007) = 68.5 million ounces of Au**

**Barrick and Newmont's announced proven and probable reserves on the Carlin trend (end of 2007) = 27.3 million ounces of Au**

**At current prices and production rates approximately 9 years of reserves remain to be mined**

8.4 M oz X \$13.38 per oz average price = \$113 M in 2007

## Nevada Silver



Nevada is "The Silver State", but Alaska is #1

143 M lbs X \$3.23 per lb average price = \$461 M in 2007

# Nevada Copper



516,000 pounds of Mo produced in 2007

**Barite, 7.3 cm wide  
Northumberland Mine  
Nye County**



**Barite – Nevada is the leading producer in the US**

**Diatomite - Nevada is largest producer in US  
Eagle-Picher's Colado plant is largest producer in NV**



Miocene fish fossils in diatomite



# Nevada Mining Financial Assurance

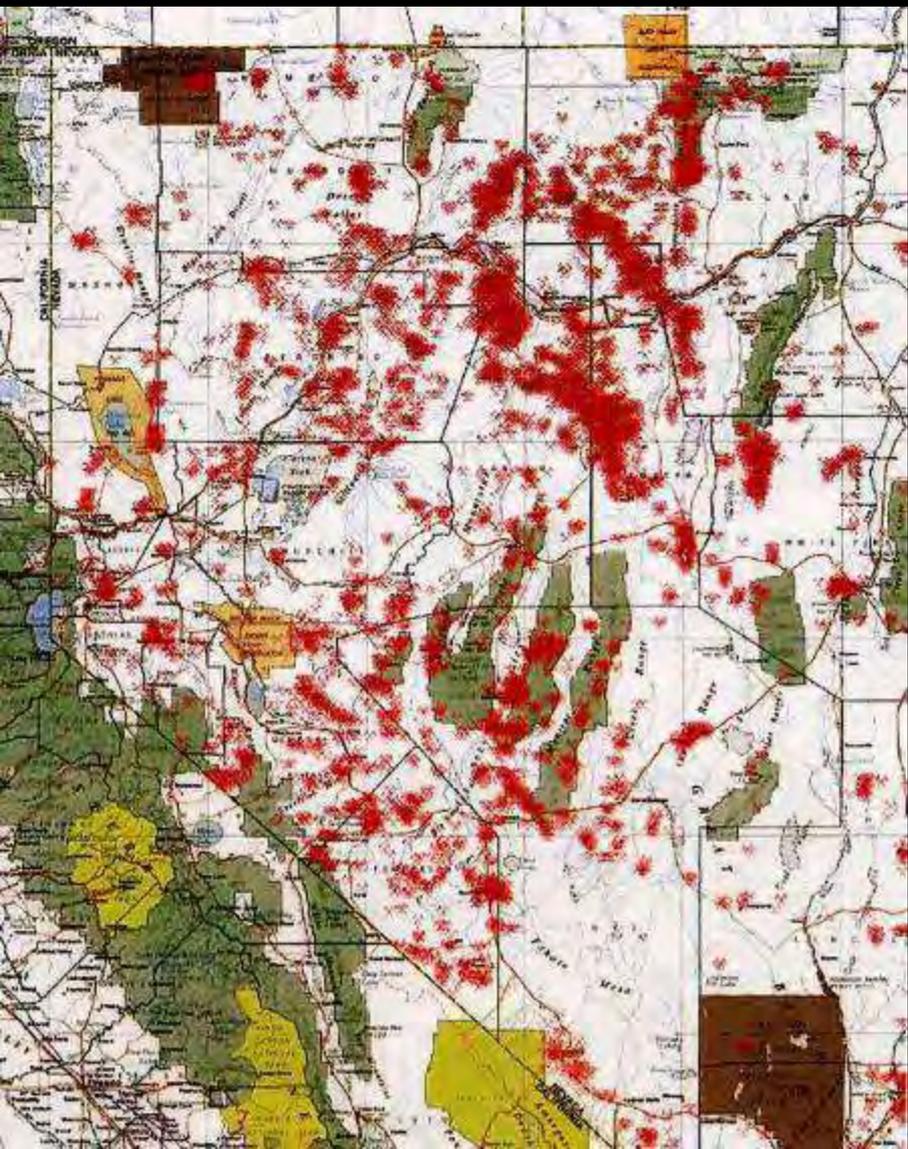
(in millions)

	2003	2005	2007	2008
Bonds	\$272	\$248	\$210.6	\$214.0
Letters of Credit	In above	\$254	\$412.7	\$618.1
CD / Cash	In above	\$4	\$4.7	\$9.3
Corp Guarantee	\$271	\$204	\$187.3	\$182.0
USFS	\$14	\$10	\$12.3	\$12.5
Bond Pool	\$1	\$1	\$2.3	\$2.7
<b>Total</b>	<b>\$558</b>	<b>\$721</b>	<b>\$829.9</b>	<b>\$1,038.6</b>

# **ABANDONED MINE LANDS**

- **Mining and prospecting has occurred all across Nevada for last 150 years**
- **526 identified mining districts**
- **Over 200,000 mining-related features**
- **Estimated 50,000 mining-related features (adits, shafts, tunnels, declines, pit high-walls) considered hazardous to people**

# AML SAFETY HAZARDS



**For every mine, adit, shaft or prospect symbol on a topographic map, there are 2 to 3 more waiting to be found**

# “STAY OUT AND STAY ALIVE”

12,782 Discovered - 9,427 Secured (1987 – 2007)



# DELAMAR, NEVADA RUINS



# GOODSPRINGS, NEVADA





NY-1464  
Logged  
6/14/07  
Looking for

06/14/2007

# CALL TO ACTION

- **Because of the number of deaths and injuries related to abandoned mines, the Nevada Legislature created the Abandoned Mine Lands Program in 1987**
- **Three Program Activities Mandated:**
  - **State-wide Inventory of Sites**
  - **Securing of Hazardous Mines**
  - **Public Awareness Campaign**

# **STATE-WIDE INVENTORY**

- **Locate on the ground using GPS**
- **Written description, sketch and photograph**
- **Apply numerical hazard ranking based on location and type of mine opening**
- **Conduct land ownership research to determine current land owner or party responsible for securing mine**

STATE OF NEVADA  
COMMISSION ON MINERAL RESOURCES  
**DIVISION OF MINERALS**  
ABANDONED MINE LANDS PROGRAM

**Hazard Inventory Sheet**

Hazard ID #: \_\_\_\_\_ Degree of Hazard (per NAC 513) \_\_\_\_\_

Date Investigated: \_\_\_\_\_ Location: \_\_\_\_\_

Investigated By: \_\_\_\_\_ Degree: \_\_\_\_\_

Ownership Research Date: \_\_\_\_\_ Total: \_\_\_\_\_ Hazard Rank: \_\_\_\_\_

Research By: \_\_\_\_\_ Hazard Type: \_\_\_\_\_ Signs of Visitation: Yes \_\_\_ No \_\_\_

County: \_\_\_\_\_ BLM: \_\_\_ USFS: \_\_\_ NPS: \_\_\_ Private: \_\_\_ BIA: \_\_\_ Pat: \_\_\_

Topographic Sheet: \_\_\_\_\_ BLM Field Office: \_\_\_\_\_

Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section: \_\_\_\_\_ Quarter/Quarter: \_\_\_\_\_

UTM NAD27: \_\_\_\_\_ E \_\_\_\_\_ N Accuracy \_\_\_\_\_ Elevation (ft): \_\_\_\_\_

Waste Rock? Yes \_\_\_ No \_\_\_ Size Estimate (yd<sup>3</sup>): \_\_\_\_\_ Is water present? Yes \_\_\_ No \_\_\_ Apparent chemical toxicity? Yes \_\_\_ No \_\_\_

Water and/or Chemical description, if any: \_\_\_\_\_

Is all of mine visible? Yes \_\_\_ No \_\_\_ Crevices? Yes \_\_\_ No \_\_\_ Is there cribbing or timbers? Yes \_\_\_ No \_\_\_ Is there detectable airflow? Yes \_\_\_ No \_\_\_

Apparent Wildlife Use and Rating (Bats, Owls, Tortoise, e.g. bat(C), owl(A), tortoise(B), etc.): \_\_\_\_\_  
Rating Criteria: A = present; B = possible habitat, contains nesting, feces, or other sign; C = habitat limited to unsurveyed crevices or debris; D = no wildlife habitat potential

Apparent Cultural/Historical Resources: \_\_\_\_\_

Mine/site Name: \_\_\_\_\_ Claim Name: \_\_\_\_\_ Patented: MS#: \_\_\_\_\_ APN: \_\_\_\_\_

Apparent Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Date owner notified: \_\_\_\_\_ Date county notified: \_\_\_\_\_

If orphan hazard, date of approval to secure given by BLM or USFS: \_\_\_\_\_

General Hazard Sketch (include North arrow and scale bar): \_\_\_\_\_ Written Hazard Description (include type, dimensions, relationship to nearby features or other hazards) \_\_\_\_\_

Secured: \_\_\_\_\_ By: \_\_\_\_\_ Method: \_\_\_\_\_ Date: \_\_\_\_\_ Documentation: \_\_\_\_\_

Re-visit Date: \_\_\_\_\_ By: \_\_\_\_\_ Action Taken: \_\_\_\_\_ Documentation: \_\_\_\_\_

Re-visit Date: \_\_\_\_\_ By: \_\_\_\_\_ Action Taken: \_\_\_\_\_ Documentation: \_\_\_\_\_

# **SECURING OF HAZARDOUS MINES**

- **Notify land owners of responsibility to secure mine hazards on their property**
- **Division of Minerals secures mine openings on public land if no responsible party exists**
- **Mine hazards are fenced, barricaded, posted with warning signs, sealed or backfilled**
- **Division of Minerals maintains records of mine securing work**

# SUMMER INTERN PROGRAM 2007

## 6 MACKAY STUDENTS

- 156 hazards secured
- 549 loggings
- 52 re-visits
- 1,731 non-hazards



**DANGER**  
UNSAFE MINE  
ENTRANCE

EU-558  
Secured  
7-24-07  
Location S



Performed securing and logging of hazards and non-hazards in 14 of 17 counties, logging nearly 9,500 miles in 14 weeks.



2007

ES-1552  
Logged  
6-4-07  
Looking N

06/04/2007



ES 1577  
Logged  
6-5-07  
Looking NW

06/05/2007

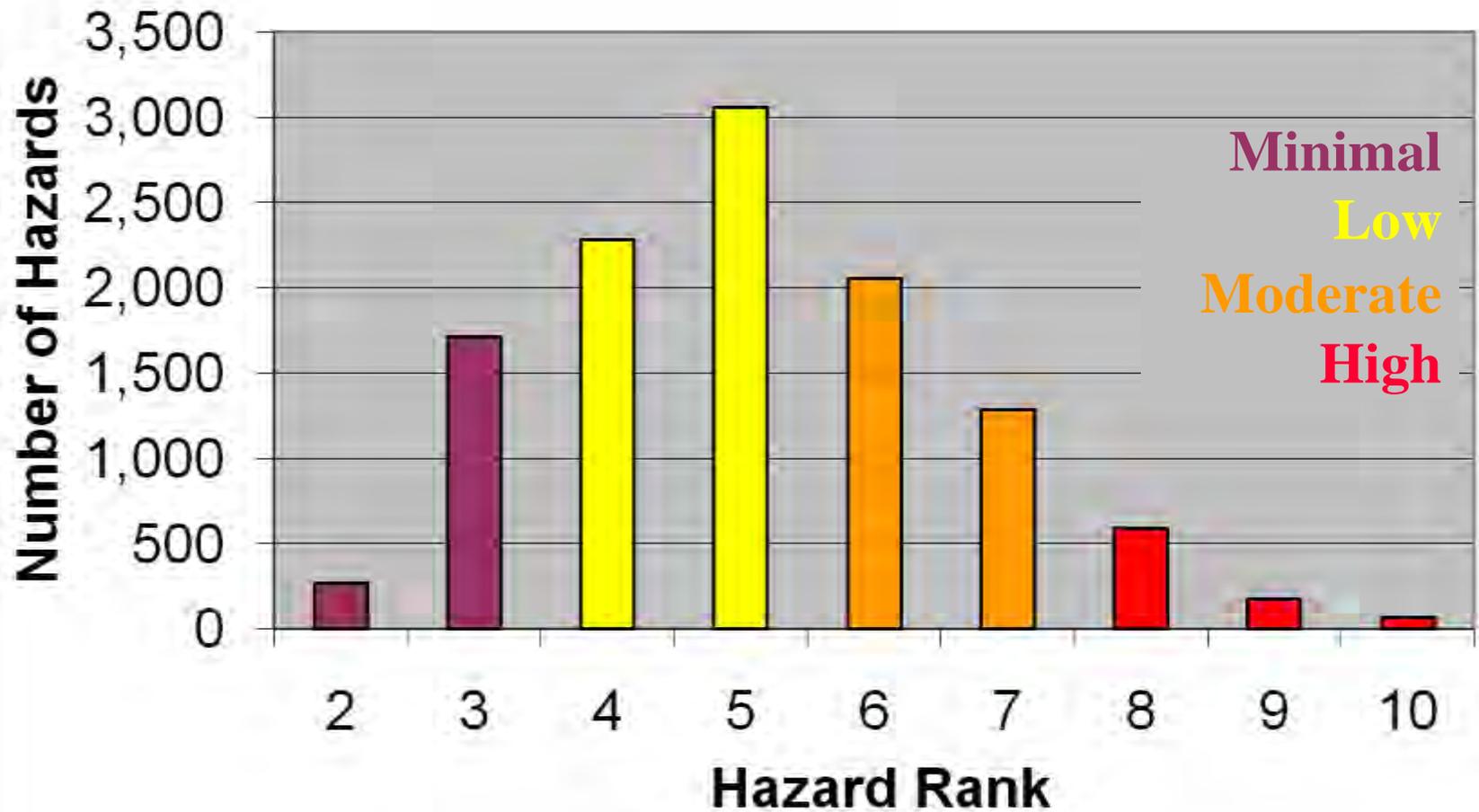


ES-1556  
6-4-07  
Logged  
Looking N

06/04/2007

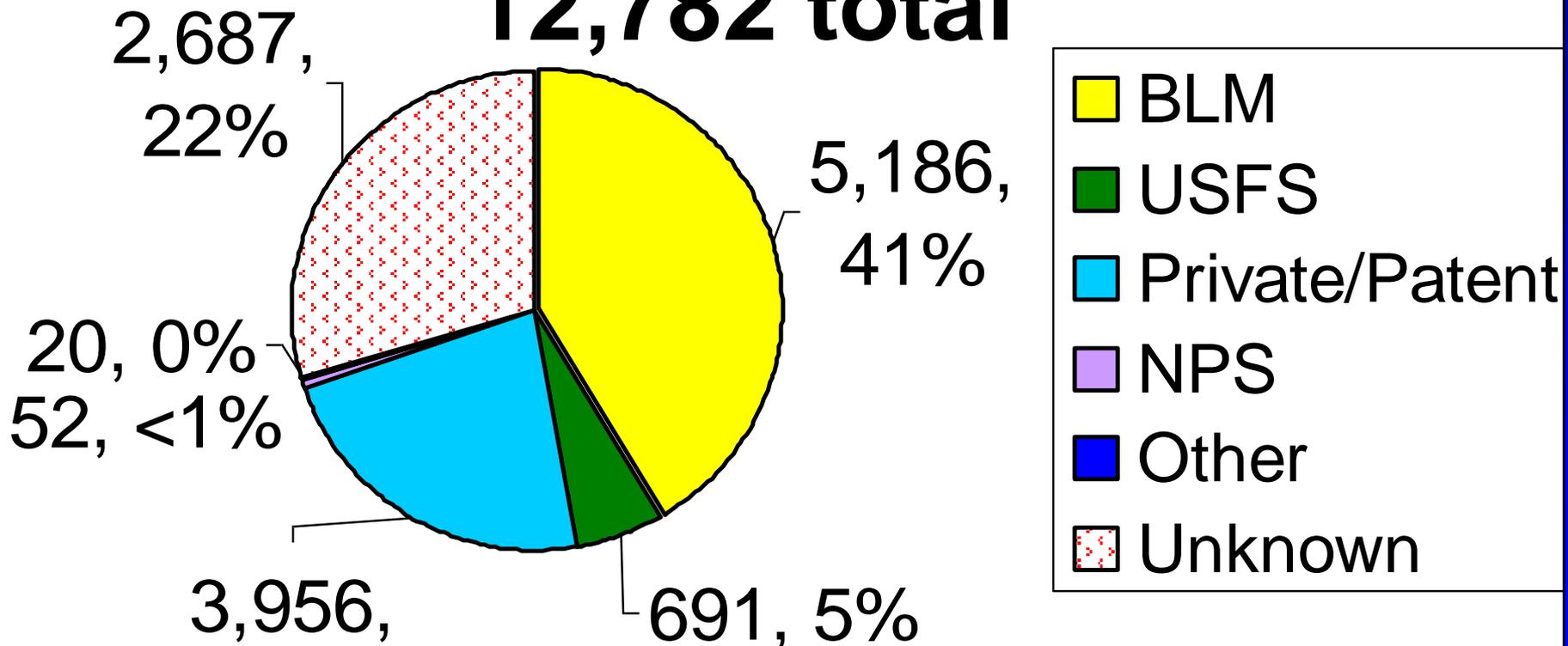
# Hazard Rank Distribution

(as of 5/14/08)

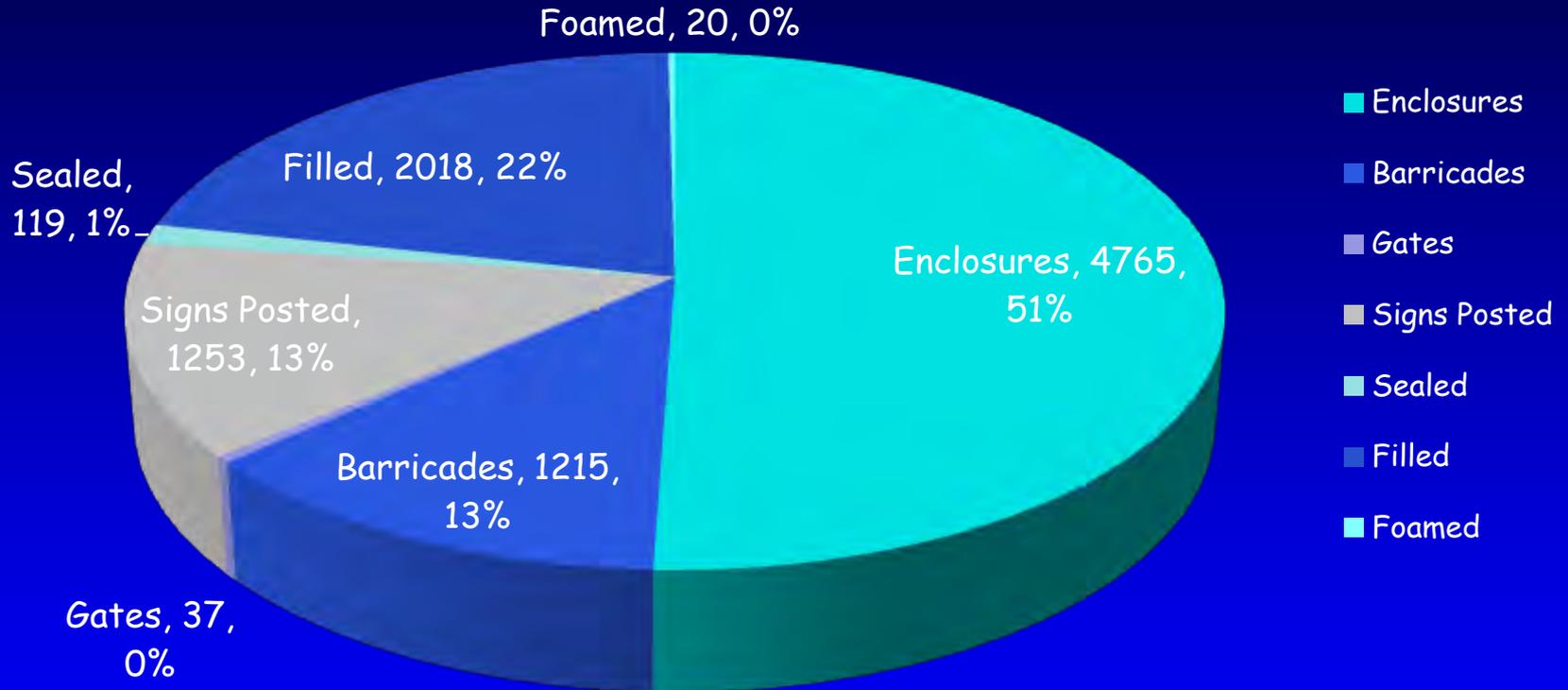


# Land Status of Inventoried Abandoned Mine Hazards in Nevada (as of 5/14/08) –

**12,782 total**



# Breakdown of Securing Methods



# AML DATABASE STATISTICS (5/14/2008)

<b>COUNTY</b>	<b>HAZARDS DISCOVERED</b>	<b>HAZARDS SECURED</b>
<b>Carson City</b>	<b>74</b>	<b>72</b>
<b>Churchill</b>	<b>446</b>	<b>372</b>
<b>Clark</b>	<b>2039</b>	<b>1355</b>
<b>Douglas</b>	<b>170</b>	<b>137</b>
<b>Elko</b>	<b>382</b>	<b>296</b>
<b>Esmeralda</b>	<b>1732</b>	<b>1190</b>
<b>Eureka</b>	<b>672</b>	<b>583</b>
<b>Humboldt</b>	<b>483</b>	<b>421</b>
<b>Lander</b>	<b>420</b>	<b>309</b>
<b>Lincoln</b>	<b>594</b>	<b>473</b>
<b>Lyon</b>	<b>827</b>	<b>660</b>
<b>Mineral</b>	<b>1165</b>	<b>1027</b>
<b>Nye</b>	<b>1557</b>	<b>1005</b>
<b>Pershing</b>	<b>947</b>	<b>677</b>
<b>Storey</b>	<b>160</b>	<b>142</b>
<b>Washoe</b>	<b>360</b>	<b>329</b>
<b>White Pine</b>	<b>762</b>	<b>379</b>
<b>TOTAL</b>	<b>12790</b>	<b>9427</b>

# EAGLE SCOUT SECURING PROJECT



**91 projects since 1992  
481 securings**

# AML BACKFILL PROJECTS



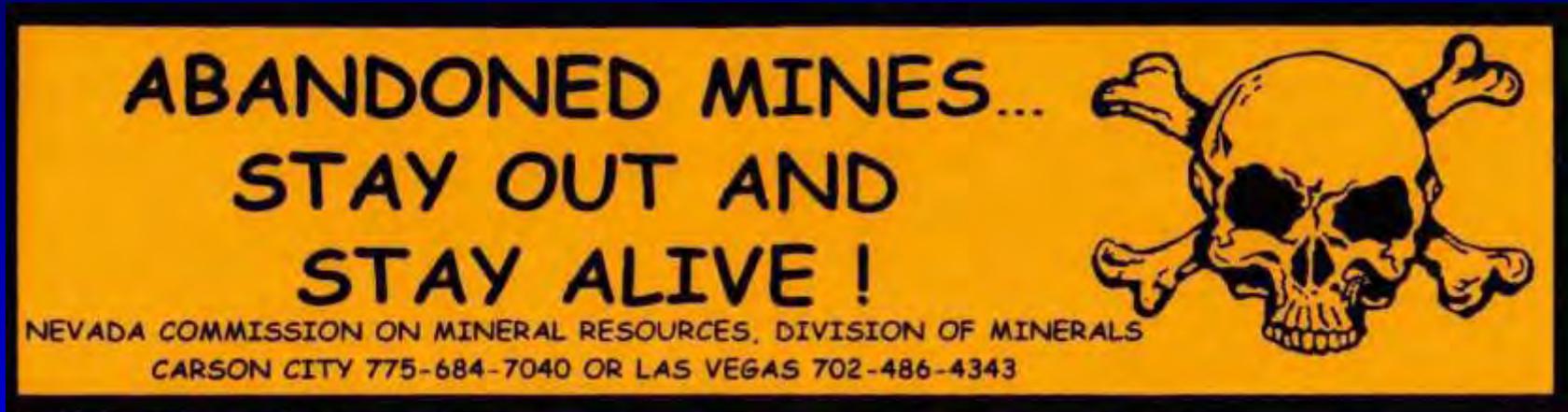
**108 hazards backfilled in 2007**

**Esmeralda, Douglas and Washoe counties  
cooperative effort between NDOM, BLM,  
and volunteers from NvMA**

**368**

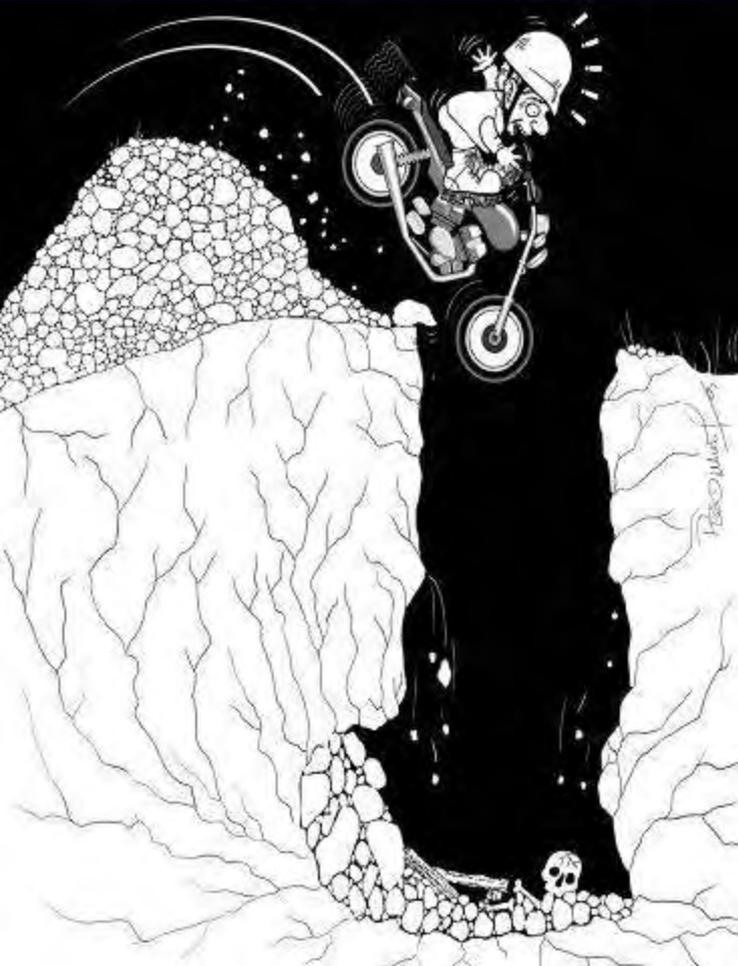
**BACKFILLS  
SINCE 2000**

# PUBLIC AWARENESS



**Brochures, bumper stickers,  
magnets, stickers, pencils,  
AND SQUEEZE BATS!**

# 2007 “Stay Out, Stay Alive” Campaign



- 1,700 AML educational mini-units and 74,000 AML brochures sent to 4<sup>th</sup> and 8<sup>th</sup> grade classrooms statewide
- Each school library has the AML companion video, with additional copies provided free upon request
- Over 100 AML presentations to more than 2,900 school children
- AML message given at public events to over 6,000 children and adults
- Public Service Announcement (co-produced with BLM) addressing hazards of OHV use in regions containing abandoned mines

# 2007 AML ACCOMPLISHMENTS



- 591 sites secured
- 965 new sites logged
- 3,100 non-hazards identified



- 156 by six summer interns
- 21 by Boy Scouts



- 108 sites backfilled thru multi-agency and industry volunteer efforts

# NAMLET

- **Formed to remediate environmental problems associated with AML**
- **11 Federal and State agencies**
- **Federal – BLM, USFS, USACE, EPA, USFWS, and USGS**
- **State – NDOM, DCNR/NDEP, NBMG, NDOW, and DRI**
- **MOU signed in 1999**

# **NAMLET (cont.)**

- **Prioritized a list of 33 sites with six sites recommend for priority funding**
- **Meets at least annually to review progress, revise list and make funding decisions**
- **Focus on “do-able” sites and funding from multiple agency sources**

# **USACE RAMS**

## **(Restoration of Abandoned Mine Sites)**

- **Originally authorized - Water Resources Development Act 1999, Section 560**
- **Language authored by Congressman Gibbons of Nevada (now Governor Gibbons)**
- **Program provides technical, planning, and design assistance to Federal, State, and Tribes**
- **Includes demonstration projects and database, but not construction**

# **USACE RAMS (cont.)**

- **Funded by congressional earmarks**
- **Provided \$7.5 M (\$5 M to Nevada) from 1999 to 2008**
- **Provided funding towards 11 of the 21 NAMLET field projects**
- **Provided funding for 3 database projects**
- **RAMS funding leverages other funds**

# **USACE RAMS (cont.)**

- **Multiple annual trips have been made to Washington DC to brief congressional staff on RAMS program and request funding and language amendments**
- **Program accomplishments on RAMS website; <https://www.nwo.usace.army.mil/html/rams/rams.html>**

# **USACE RAMS (cont.)**

- **RAMS involved in Southern Nevada Public Land Management Act (SNPLMA) projects totaling +\$4 million**
- **Includes logging and inventory of physical hazards, cultural and biological surveys, bat gates, foam and back fills**
- **Clark, Lincoln, and White Pine counties**



Round Mountain  
55 pounds  
@\$950/oz =  
\$760,000

05/18/2006

# Thank You!





**Gold, Round Mountain**

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**Opal, Virgin Valley**