

SME

**28th Annual
Professional Engineers in Mining
Seminar**

**Changing MINDS about MINES in
America and the World**

**Steve Gardner, PE, SME-RM
2015 President**

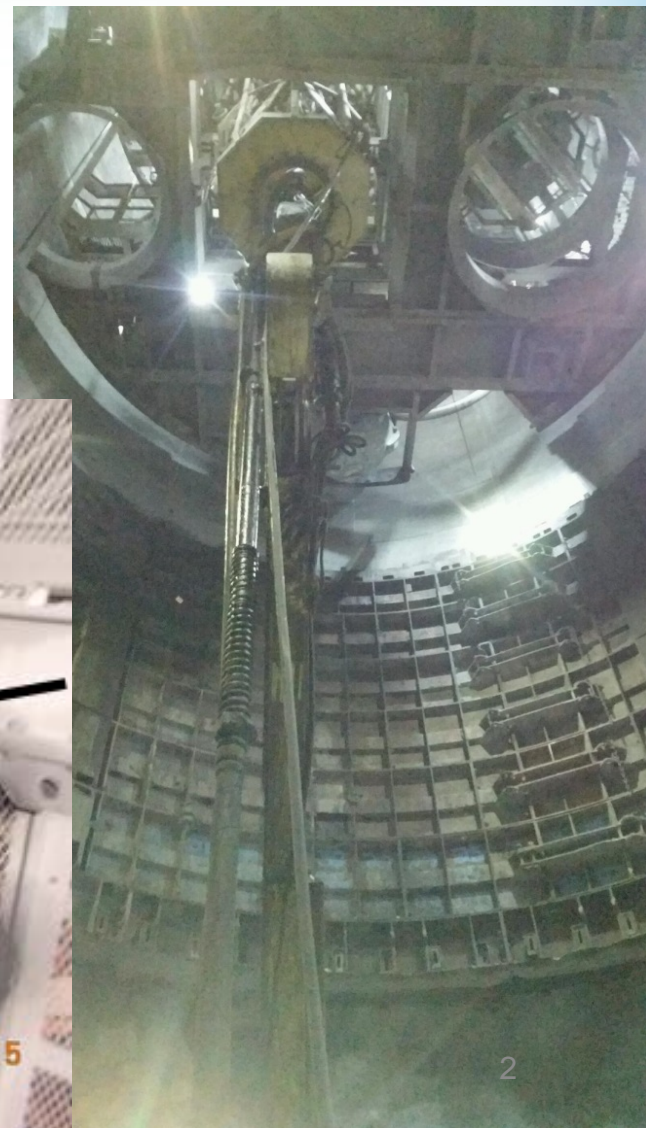
Society for Mining, Metallurgy & Exploration



SAFETY SHARE

Contract worker employed by Cementation Inc.
killed at Newmont gold mine in NV Jan. 11, '15

**SAFETY TAKE AWAY:
ALWAYS BE AWARE OF
YOUR SURROUNDINGS**



SME

SAFETY – IT'S PERSONAL



SME

Who we are
Society for Mining, Metallurgy & Exploration





Who we are

- Membership – 15,188 Engineers, Scientists and Mining Professionals across the world
- Student Chapters Worldwide
- Financially Strong -Assets \$31M & Debt FREE!
- Technical Information and bridge between Academia, Industry & Government
- Underground Construction Association

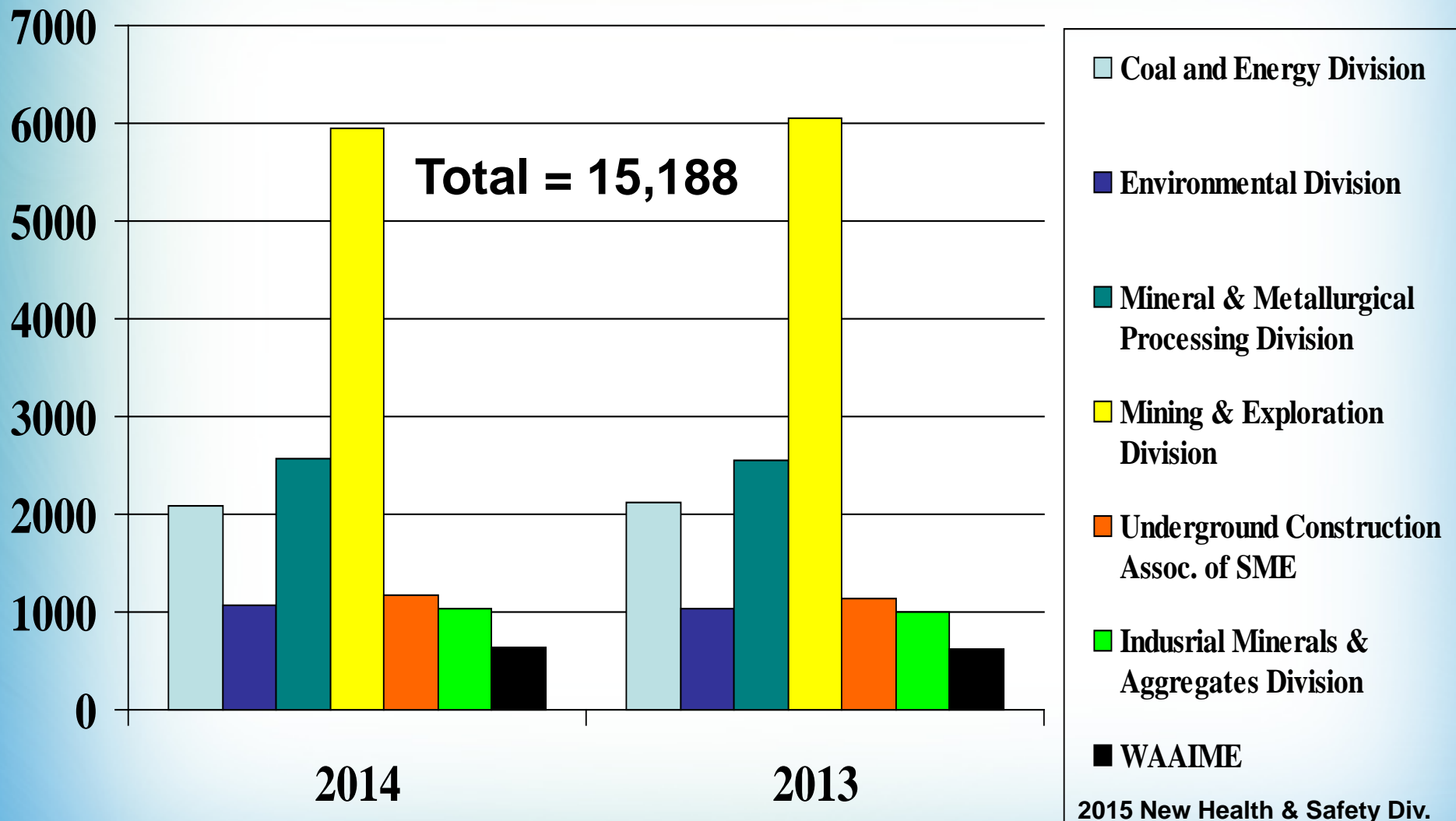


Who we are

- Record Attendance for Annual Meetings –
6,723 in 2014 and 7,800 in 2015 (906 booths)
- Successful SME Regional Conferences
- International Presence-GMPA and OneMine.org
- Active Government and Public Affairs Committee
- Minerals Education Coalition = (GEM + Mii)

Membership By Division

(*new AMS 2015)





SME Student Membership

- 41 Student Chapters - New in 2014:
 - Tehran Polytechnic, Amirkabir, Iran
 - National University of Apurmac – Micaela Bastidas, Apurmac, Peru
 - The Universidad Nacional De Ingenieria in Lima, Peru
 - Federal Univesity of Technology, Akure, Nigeria
 - The Universidad Nacional de Altiplano, Puno, Peru
 - Stockton College of New Jersey
- 2015 – Several more.....

SME



Mining Business Trends

SME

Deloitte's Top 10 Global Issues Facing Mining Companies in 2015

- **Back to basics - pursuing operational excellence**
- **Innovation key to survival- More than cost control**
- **New energy paradigm - Reducing power project costs**
- **Dwindling projects – the supply/demand tightrope**
- **Financing's disappearing – implications across market**
- **Survival of the juniors - Navigating troubled waters**
- **Seeking new skillsets - new generation of talent**
- **Geopolitical uncertainty best guess to uncertainty**
- **Stakeholder engagement - balance competing interests**
- **Engaging government – Find new ways to communicate & collaborate**

Vision

To be the premier resource and advocate for the mining community we serve.

Mission

SME serves professionals in the mining community and supports the advancement of the industry.

Strengths/Weaknesses

STRENGTHS

- Technical information sharing
- Staff capability
- Volunteer commitment
- Financial strength
- Diverse organization
- Strong student chapters
- Good relationships with universities
- Professional networking
- Meetings
- Publications
- Professional accreditation

WEAKNESSES

- **Connection between SME and local chapters**
- US and English centric
- Not identifying and developing leaders
- “Good ole boy” perception
- Branding (internal and external)
- Marketing

Opportunity/Threats

OPPORTUNITIES

- International member growth
- Growth among US members both traditional and non-traditional
- Explain the social economic value of mining
- Transition students to full membership
- Use technology to reach international members
- Globalization (Automated language translations)
- Growing demand for peer review
- Consolidation of societies and associations
- Corporate membership

THREATS

- **Negative perception of mining profession**
- Growing regulation
- Demographics (fewer people in the industry)
- Industry cycles
- Pressure on mining schools
- Loss of specific expertise in industry due to retirements
- Competition among associations for members
- Younger generation interact differently

SME



***SME - Changing MINDS about MINES in America
and the World***

And Why is it Important?

SME

It's Elemental

Periodic Table of the Elements

Symbol

1
1.0079
H

Atomic number

Atomic weight

VIIIA

2
4.0026
He

III A IV A V A VI A VII A

5 10.811 B	6 12.011 C	7 14.007 N	8 15.999 O	9 18.998 F	10 20.179 Ne
------------------	------------------	------------------	------------------	------------------	--------------------

13 26.982 Al	14 28.086 Si	15 30.974 P	16 32.066 S	17 35.453 Cl	18 39.948 Ar
--------------------	--------------------	-------------------	-------------------	--------------------	--------------------

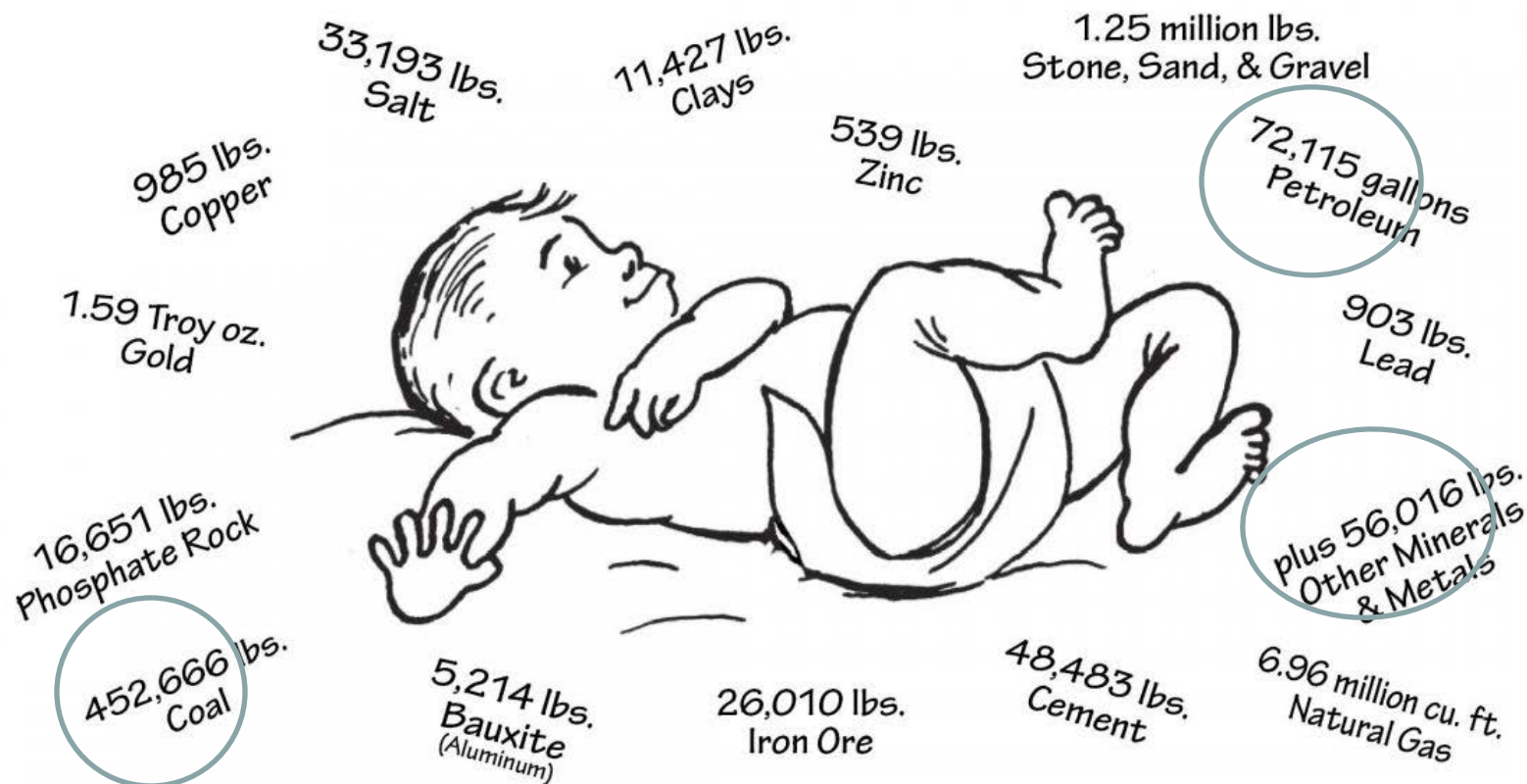
IA 1 1.0079 H	I A
3 6.941 Li	4 9.0122 Be
11 22.990 Na	12 24.305 Mg
19 39.098 K	20 40.078 Ca
37 85.468 Rb	38 87.62 Sr
55 132.91 Cs	56 137.33 Ba
87 *223.02 Fr	88 *226.03 Ra

II B	IV B	V B	V I B	V II B	V III B		I B	II B	
21 44.956 Sc	22 47.88 Ti	23 50.942 V	24 51.996 Cr	25 54.938 Mn	26 55.847 Fe	27 58.933 Co	28 58.69 Ni	29 63.546 Cu	30 65.39 Zn
39 88.906 Y	40 91.224 Zr	41 92.906 Nb	42 95.94 Mo	43 *98.906 Tc	44 101.07 Ru	45 102.91 Rh	46 106.42 Pd	47 107.87 Ag	48 112.41 Cd
	72 178.49 Hf	73 180.95 Ta	74 183.85 W	75 186.2 Re	76 190.2 Os	77 192.22 Ir	78 195.08 Pt	79 196.97 Au	80 200.59 Hg

31 69.723 Ga	32 72.61 Ge	33 74.922 As	34 78.96 Se	35 79.904 Br	36 83.80 Kr
49 114.82 In	50 118.71 Sn	51 121.75 Sb	52 127.60 Te	53 126.90 I	54 131.29 Xe
81 204.38 Tl	82 207.2 Pb	83 208.98 Bi	84 *208.98 Po	85 *209.99 At	86 *222.02 Rn

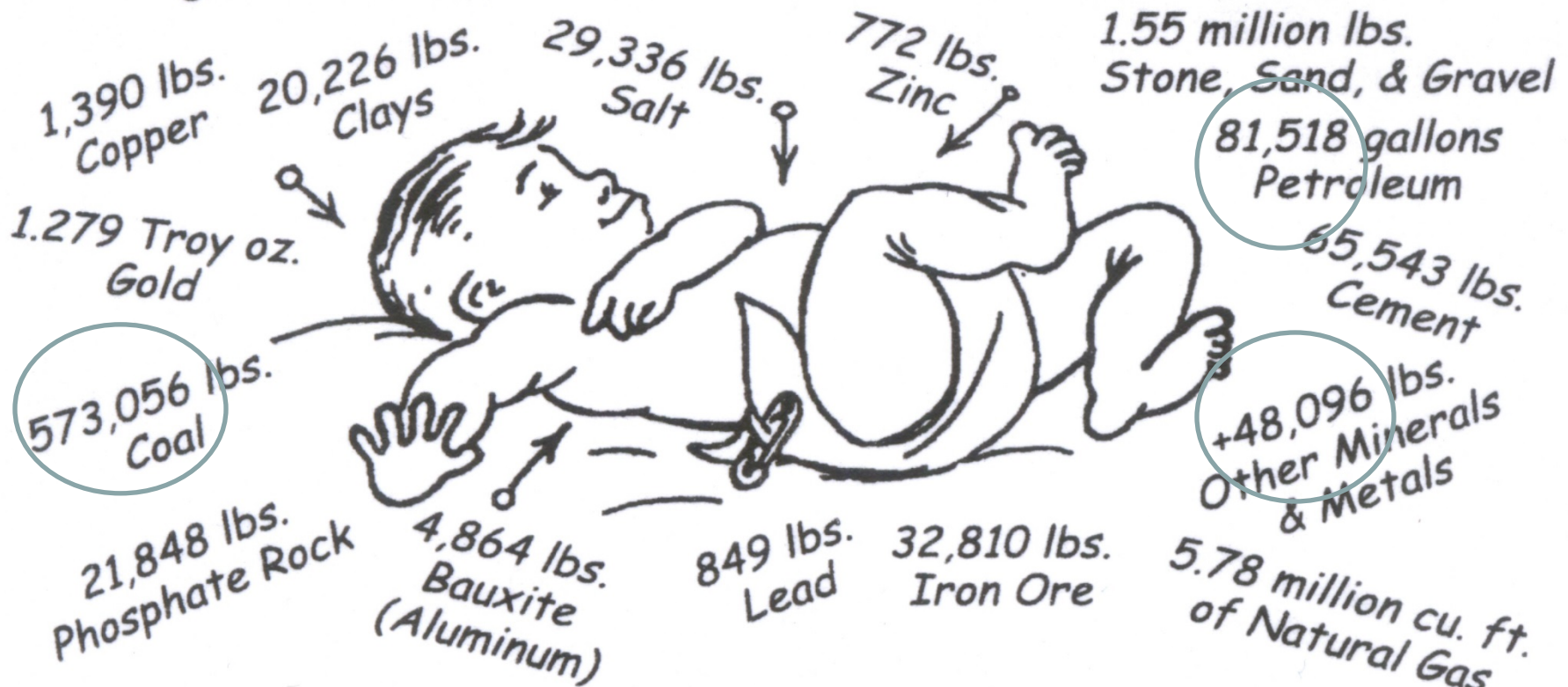
57 138.91 La	58 140.12 Ce	58 140.91 Pr	60 144.24 Nd	61 *146.92 Pm	62 150.36 Sm	63 151.97 Eu	64 157.25 Gd	65 158.93 Tb	66 162.50 Dy	67 164.93 Ho	68 167.26 Er	69 168.93 Tm	70 173.04 Yb	71 174.97 Lu
89 *227.03 Ac	90 *232.04 Th	91 *231.04 Pa	92 *238.03 U	93 *237.05 Np	94 *244.06 Pu	95 *243.06 Am	96 *247.07 Cm	97 *247.07 Bk	98 *251.08 Cf	99 *252.08 Es	100 *257.10 Fm	101 *258.10 Md	102 *259.10 No	103 *260.11 Lr

Every American Born Will Need...



3.11 million pounds of minerals, metals, and fuels in their lifetime

Every American Born Will Need . . .



3.5 million pounds of minerals, metals, and fuels in a lifetime

SME



Changing Minds – **HOW?**

DEFINING THE OPPOSITION **A PERSPECTIVE**

Courtesy of Bill Bissett, President, Kentucky Coal Association

SME

Atlanta EPA Hearing – 7/29/14



Courtesy of Bill Bissett, President, Kentucky Coal Association

SME

PNC Joins Banks Not Financing Mountaintop Coal Removal





“Something’s just not right—our air is clean, our water is pure, we all get plenty of exercise, everything we eat is organic and free-range, and yet nobody lives past thirty.”

SME



MINING TRUTH

Know the truth. Make your choice.



THIS is what the **GOLD STANDARD** in **SULFIDE MINING LOOKS LIKE**

THEIR CLAIM

"It's not about trading one resource for another, it's about mining and fisheries coexisting."

— Mining Industry Marketing Video Touting Mt. Polley Mine



THE REALITY

MOUNT POLLEY MINE

August 4, 2014: A partial dam breach released **1.3 BILLION GALLONS** of contaminated tailings into nearby creeks and lakes.

"WORST DISASTER IN CANADIAN MINING HISTORY"



MINNESOTA'S FUTURE

Now many of the same firms that built Mt. Polley want to **BRING SULFIDE MINING TO THE PRISTINE FORESTS AND LAKES OF NORTHERN MINNESOTA**. They're making the same promises, but independent investigators have called their designs **"A LOADED GUN."**

Paid for by Mining Truth.

KNOW THE TRUTH AND MAKE YOUR CHOICE AT MININGTRUTH.ORG.

SME

Pebble Project, Alaska

EPA
OPPOSING
PROJECT
BEFORE
PERMITS
SUBMITTED



The Pebble Project is located in the Bristol Bay Region in south-west Alaska, approximately 200 miles from Anchorage.

It is a green field project based on a copper-gold-molybdenum porphyry deposit, which is considered to be the largest deposit of its kind in the world.

SME

Future Pebble Mine Site or America's Fishing Legacy?

[\(learn more\)](#)



PHOTO BY COREY ARNOLD, COREYFISHES.COM

HELP ORVIS & TROUT UNLIMITED SAVE BRISTOL BAY

DONATE TODAY
AND ORVIS WILL MATCH
CONTRIBUTIONS UP TO **\$50,000**



MEET OUR SUPPORTERS

Check out the hundreds of groups,
businesses and organizations across
the country who oppose Pebble Mine

TIFFANY & CO.

EXOFFICIO

ORVIS
SPORTING TRADITIONS
Since 1866

Bull Moose
SPORTSMEN'S ALLIANCE



SME

Sierra Club



SIERRA
CLUB

FOUNDED 1892

- 2.4 million members.
- “... is the oldest, largest, and most influential grassroots environmental organization in the United States.”
- **Sierra Club’s *Beyond Coal* Campaign**
- **Coal plant countdown**

- **Now *Beyond Oil & Natural Gas* Campaigns**

SME

Coal - 454 businesses drop support for WildEarth Guardians after New Belgium debacle in Craig

Some businesses listed said they never gave anything to the group responsible for a lawsuit that put Colowyo Coal Mine at risk of closing.

The Craig Daily Press published its first story about local liquor stores and restaurants pulling New Belgium and Breckenridge Brewery beer on June 8, and shortly thereafter, WildEarth Guardians staff deleted its webpage called “Businesses for Guardians.”



Public hearing held in Lexington to discuss proposed Stream Protection Rule



Thursday, September 10, 2015
St. Louis, MO

Tuesday, September 15, 2015
Big Stone Gap, VA



Thursday, September 10, 2015
Pittsburgh, PA

Thursday, September 17, 2015
Charleston, WV

SME

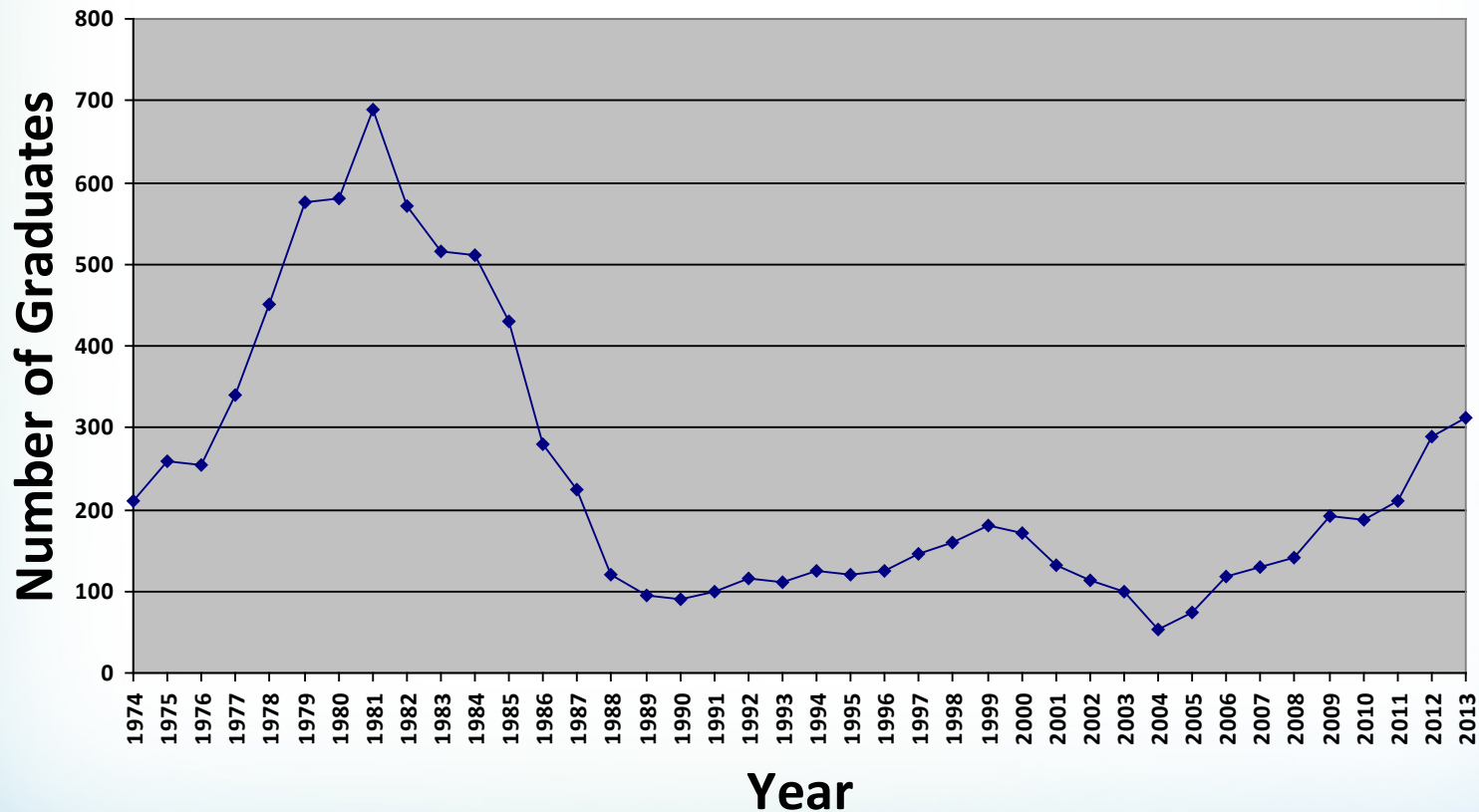


So.....

How can SME Help?

Current Initiatives
examples

Mining Engineers - BS/MS Graduate Count from Accredited U.S. Program (1974-2013)




Source: SME Guide to Mineral and Material Schools, 2013

The proposed actions are two-fold:

1. 4-year graduate fellowship for Ph.D. students (\$60K/yr)
2. Career Grants intended to assist new faculty. (\$100k/yr)



Current Initiatives: Health & Safety

- Board started H&S Committee under the 2013 presidency of Dr. Jessica Elzea Kogel
- Committee's core purpose is to be the primary resource and advocate for mine safety and health.
- Endorsed NMA's  program
- 2015 SME created **Health and Safety Division** to increase emphasis & develop programming



World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs



**Mining and Sustainable Development
Capacity Building Seminar Workshop**



World Federation
of Engineering
Organizations

- Moderated Panel, SDIMI Conference, Vancouver, Canada, July 2015

Government Relations and Public Affairs Committee

- Goal appropriate, accurate, timely, fact-based technical information
- Provide **peer reviewed** technical briefing papers
- Panel over 500 experts – ***SCIENTIFIC INTEGRITY***
- ***Academics, Industry, Consultants, Government***
- **Congressional testimony** from unbiased experts
- Influenced SEC to revise IG-7
- Encourage local government interaction by members

SME's Board approved funding for a Congressional Fellowship for Mining to be located in Washington, D.C. 2014-'15

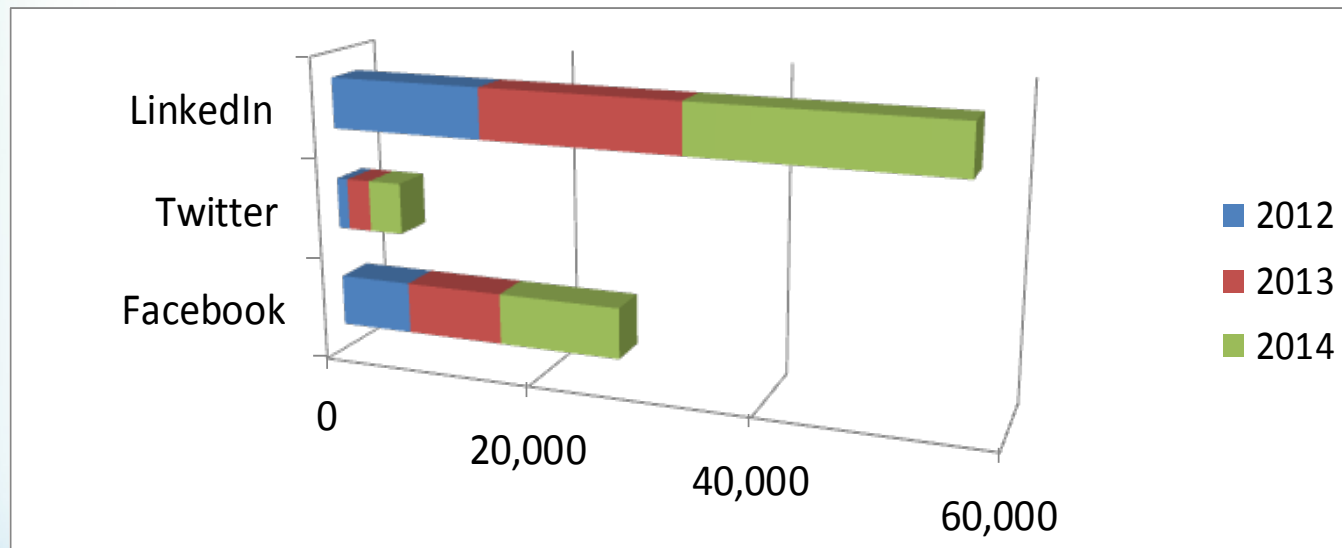
- Only mining-related Fellow in D.C.
- Dr. Josh Hoffman, P.E. - University of Kentucky
- House Natural Resources Committee's Subcommittee on Energy and Mineral Resources
- Kevin Ashley, P.E. selected for next year



Regional and Topical Conferences

- **MINNESOTA AND FLORIDA SECTION MEETINGS
TO BE MANAGED BY SME STAFF IN 2015**
- **CURRENT TRENDS IN MINING FINANCE SYMPOSIUM - NYC**
- **FOX CONFERENCE FOR TUNNELING PROFESSIONALS - NYC**
- **NORTH AMERICAN TUNNELING CONFERENCE (NAT)**
- **APPALACHIAN RESEARCH INITIATIVE FOR ENVIRONMENTAL
SCIENCE (ARIES) PITTSBURGH SEPT**
- **WORLD TUNNELING CONGRESS (WTC) SAN FRANCISCO, APRIL
24-28, 2016 – 3000 EXPECTED**

- Twitter @smecommunity
- Facebook
- LinkedIn



SME



SME Foundation Update

- Creating Global Prosperity: The Campaign for Mining - \$1.6 Million in Annual Gifts
- Foundation Assets have over \$4.0 Million 2014
- 84 Engineers Took the PE Exam in 2013
- MEC Completed 12 Outreach Events
- Mining in Society Merit Badge

SME

Boy Scout Mining in Society Merit Badge

2013 Jamboree Bechtel Summit Reserve, WV



First 49 recipients at SME Annual Meeting Feb. 26, 2014

3519 in 2014



SME

Boy Scout Jamboree Site The Summit (What's Next?)



So.....

How can YOU Help?

- Get engaged with outreach
- Use the SME tools
- Use Social Media
- Talk to your friends and neighbors
- Get involved Politically
- Leverage Free Publicity (use the Press)

SME

Tell the Story of Mining



SME

Another View – Possibilities Mining Creates

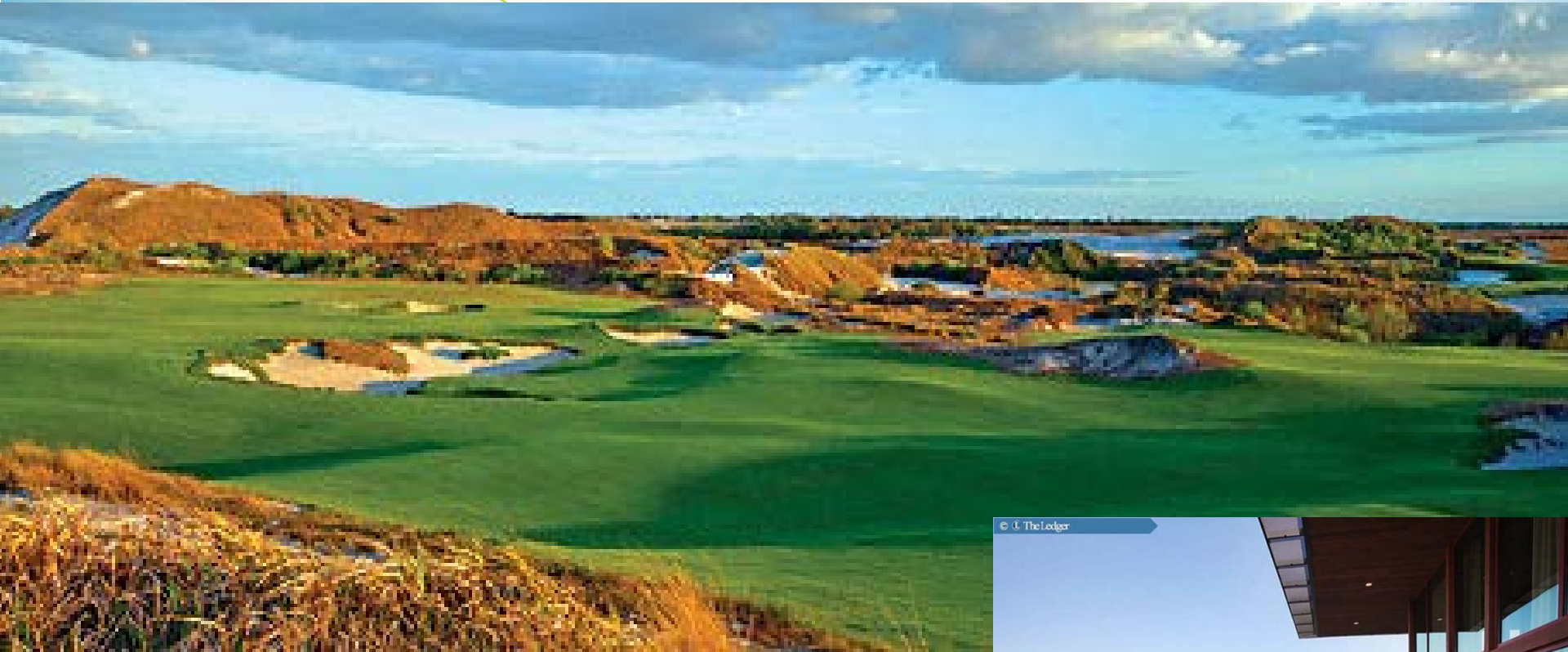


FL Phosphate Mines





Mosaic's Streamsong Golf & Conference Resort



What does your activism mean to you?

Activism is my rent for living on the planet.

—ALICE WALKER

SME

So, Who has their head in the sand?



Environmental Groups Snatch Defeat From The Jaws Of Victory Daily Caller 10/16/2014

