Focus

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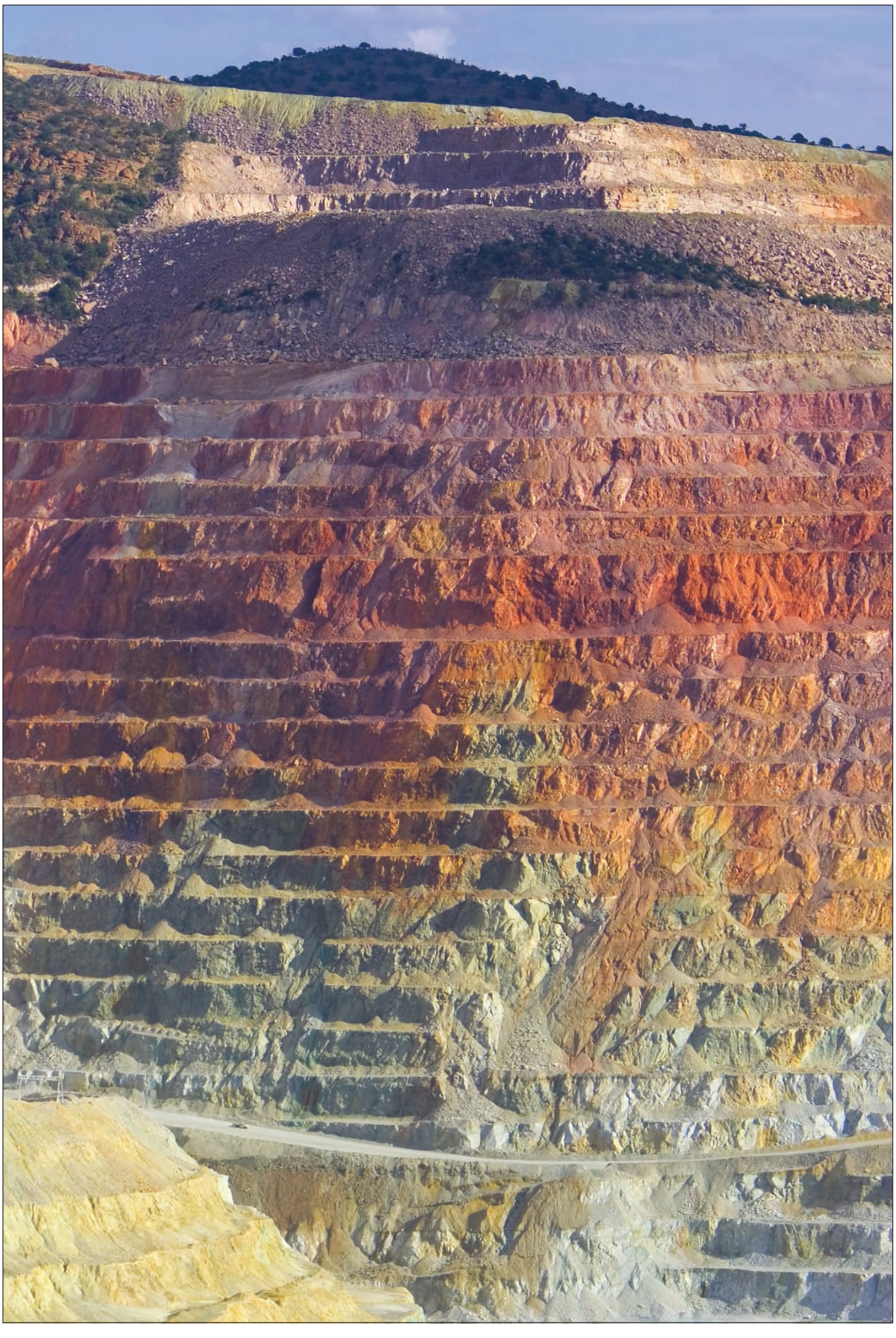
Mining

INSIDE



Exploration phase of ambitious potash mining operation nearly complete on Sevier Dry Lake

By Andrew Haley
The Enterprise

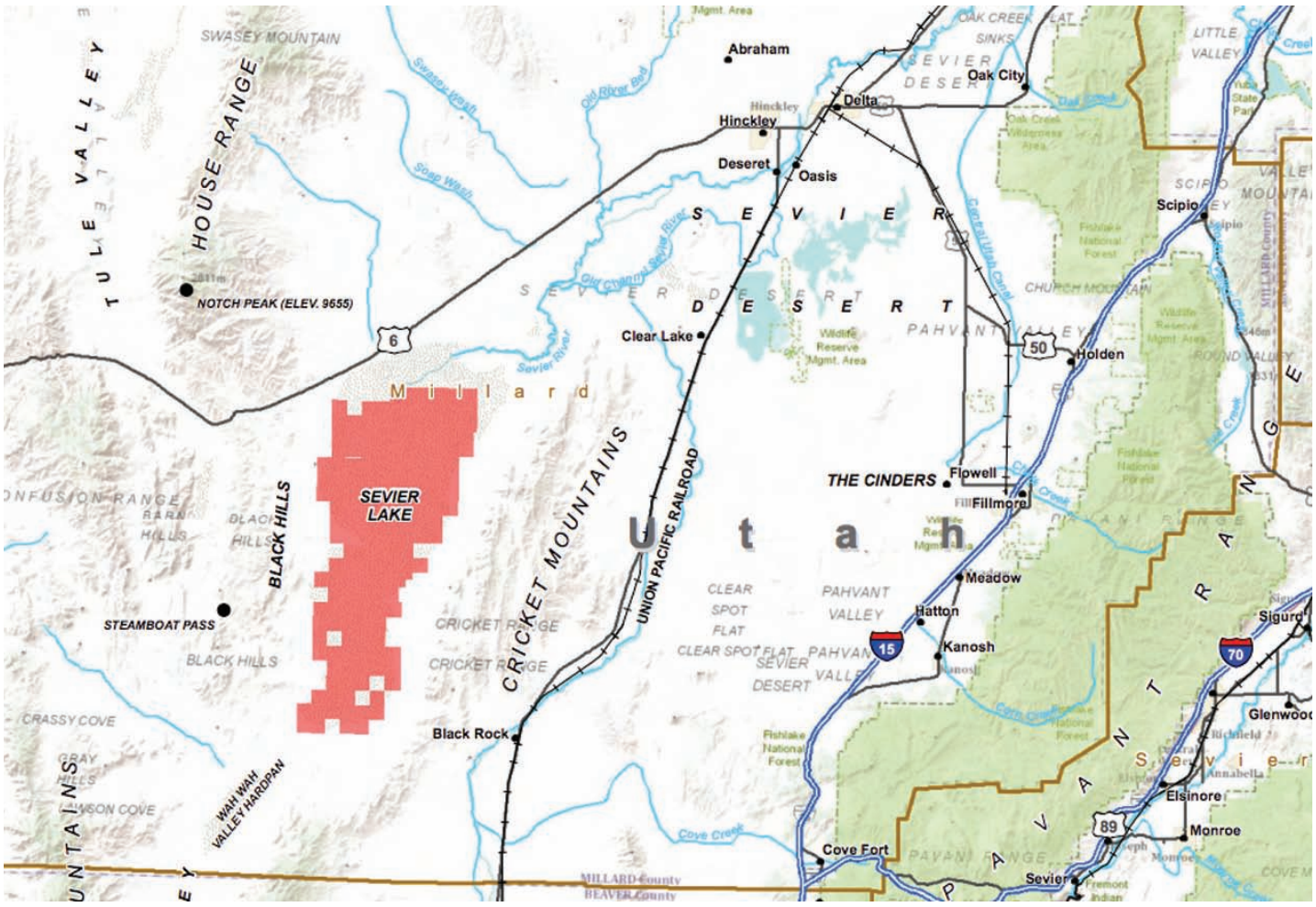
The exploration phase of an ambitious potash mining operation on the Sevier Dry Lake is nearly complete, according to Emerald Peak Minerals Mining Ventures Inc. (EPM).

EPM, through its wholly owned subsidiary Peak Minerals Inc., picked up all 64 parcels offered at an April 5, 2011, Bureau of Land Management (BLM) auction, bidding $203.57 per acre for 125,761.76 acres, an area covering virtually the entire lakebed. Peak easily outbid three other companies, Great Salt Lake Minerals Corp., Luke Kline and Matthew Eggers, and Bro Energy LLC, which bid between $25 and $82 per acre for some of the parcels.

Due to federal caps of 96,000 acres of potash lease holdings for one entity in one state, Peak controls just over 95,000 acres, with agreements to operate a remaining 28,000 acres. As of Jan. 18, EPM had completed drilling 252 of 390 planned holes, or 65 percent of its planned drilling program, the company announced in a press release. The exploratory drilling program is taking brine samples from the desiccated lakebed to determine extant quantities of sulfate of potash (SOP), a fertilizer used primarily for high-value crops like soybeans.

EPM CEO Lance D'Ambrosio said in a press release, "We are very pleased with the progress we have made thus far. Our exploration program and assay program continue on schedule."

EPM is moving south to north, using airboats, barges and tracked vehicles to drill holes for brine samples on a total of about 102,000 acres, the company reported. Most holes are between 40 and 50 feet deep, though some holes are between 90 and 497 feet deep. EPM sends brine samples collected from its exploratory program to an independent lab for analysis.



The BLM estimates there are enough potash reserves at the Sevier Dry Lake site to enable production of 400,000 tons of SOP per year for 6.5 years, given a projected 50 percent recovery rate, after an initial two to three years of development.

While global potash prices fell during the economic downturn, prices are expected to rise over the coming decades as growing demand for food leads to an increased demand for the high-grade fertilizer. Increased meat consumption by China's growing middle class is driving growth, as larger soybean and other feed crops are required to keep pace with increasing meat production. Bloomberg Businessweek estimates that potash prices in the U.S. could increase 4.5 percent this year to $521 per ton, with SOP usually trading at 30 percent premium, meaning Sevier Dry Lake could contain more than $1.5 billion in SOP, if the BLM's production estimates are correct and prices remain stable.

If EPM goes ahead with production, it will develop a cost-effective solar evaporation system to produce SOP. A series of shallow canals will divert SOP-rich brines into a group of increasingly mineral-heavy evaporation ponds. The sun-dried potassium salt will then be milled to maximize purity.

Potash has long been used as a fertilizer to increase crop yields and help develop drought resistance in plants. Potash fertilizers come in two forms: muriate of potash, or potassium chloride, and the higher-grade sulfate of potash, or potassium sulfate. Both provide potassium, an element necessary for plant and animal life.

SOP occurs naturally in only four locations on the globe: Chile's Atacama Desert, Western China's remote Xinjiang

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State program may have fully extinguished underground mine fire that has been smoldering for 66 years

By Andrew Haley
The Enterprise

Utah's Abandoned Mine Reclamation Program (UAMR) may have finally squelched an underground fire burning for 66 years.

The fire has been smoldering in the Maclean Coal Mine since 1946, despite previous attempts to extinguish it. Working in areas unaffected by the fire, mining continued at Maclean, located in once-prosperous Spring Canyon, a ghost town several miles west of Helper, until 1966, when it was finally abandoned.

Extreme heat from the underground fire has denuded the surface above the mine, leaving nothing but bare rock, UAMR program administrator Luci Malin said. She said the heat had caused rocks to split and that glowing coals were visible in the fissures. UAMR personnel had measured surface temperatures as high as 700 degrees Fahrenheit, she said.

"We've been working on the site some 20 years," Malin said.

Traditional methods of fighting underground coal fires involve scraping off the overburden, or earth above the mine, spreading out burning coal in a thin layer and dowsing it with earth and water. In 1983, the Department of the Interior used just such a method to extinguish the Bluebell Mine fire nine miles northeast of Vernal, though Malin said there were recent reports that fire was still burning. Unlike the Bluebell Mine, the Maclean Mine lies under very steep terrain and its coal is intermixed in sandstone, making traditional firefighting methods unfeasible.

"There's no way really to get to [Maclean]. Bluebell you can drive to," Malin said.

But technology developed by Maryland-based geotechnical contractor Hayward Baker may have finally snuffed the Maclean fire.

"They drilled 12 different holes in the overburden to the coal seam and pumped in this material that's like cement, or foaming mud, that gets to where it's going and then expands. It's almost like shampoo. The chemicals in it allow it to flow in, set, and expand," Malin said.

Since UAMR contractors deployed the new technology in November and December of last year, recent surface temperature measurements taken with infrared cameras show surface temperatures have fallen to 70 degrees F.

UAMR first began trying to put out the Maclean fire two decades ago when trees above the mine burst into flames. All later efforts to put out the fire ended in failure. A few years ago, UAMR tried a method similar to Hayward Baker's technique, but that too was unsuccessful.

In 1992, a coal mine fire in an anthracite coal seam below Centralia, Penn., forced the entire town to be seized by the Commonwealth of Pennsylvania under eminent domain and its citizens forcibly removed. It is believed the fire was accidentally set in 1962 during the improper burning of garbage in the town dump.

Malin said between 10 and 12 underground coal fires are currently burning in the state of Utah.

"They burn for a long time," Malin said.

According to its website, in addition to extinguishing the fire, UAMR will reclaim roads built to move drilling equipment into position, will stabilize steep slopes in the area, and will regrade and revegetate disturbed terrain in the area of the mine.

Coal was first mined at Maclean in 1922, several miles west of Helper. UAMR falls under the administration of the Division of Oil, Gas and Mining in the state's Department of Natural Resources.

Milton E. Wadsworth Endowed Fund created at U of U's College of Mines and Earth Sciences

Frank Brown, dean of the College of Mines and Earth Sciences at the University of Utah, announced the creation of the Milton E. Wadsworth Endowed Fund on Feb. 12. Brown presented the endowment at Wadsworth's 90 birthday celebration at the Fort Douglas Officers Club. Wadsworth, a distinguished professor emeritus of metallurgy at the University of Utah, preceded Brown as dean from 1983 to 1991.

"The purpose of the fund is simple — to support students and faculty in the Department of Metallurgical Engineering, the department in which Dr. Wadsworth taught for some 48 years, and which benefitted greatly not only from his marvelous ability to convey information to students, but for his keen intellect applied to fundamental processes of import to metallurgy," Brown said.

Brown said Wadsworth "touched on many areas of metallurgy" including hydrometallurgy, flotation, cementation, oxidation, electrochemistry, thermodynamics and kinetics. He said Wadsworth "won every campus-wide prize available" and was appointed a distinguished professor in 1983. Wadsworth was the University's first professor to win both the Distinguished Research Award and Distinguished Teaching Award, and also received the Rosenblatt Prize for outstanding achievement in teaching, research and administration.

"Dr. Wadsworth also brought great prestige to the university through a string of awards from professional societies beginning in 1957, sometimes shared with others, nearly all of whom have contributed to the endowed fund in his name. He is a fellow of most professional societies, holds two honorary doctorates, and in 1979 he was elected to the National Academy of Engineering," Brown said.

"The University of Utah has been fortunate to number such an accomplished person amongst its members," he said.

Several of Wadsworth's former graduate students, many of them now retired, spoke at the event and contributed to the endowment. Brown said efforts to establish the endowment originally focused on raising the minimum $25,000 necessary for the university to the accept creation of the fund, but that that goal was quickly surpassed. The fund stands currently at over $60,000, he said.

Brown called Wadsworth a dedicated teacher and generous colleague. He said, "despite all the awards and honors heaped upon him, Dr. Wadsworth did not flaunt them, preferring to remain in the background, working on his lectures and his research projects."

Those interested in contributing to the Milton E Wadsworth Endowed Fund are invited to contact the College of Mines and Earth Sciences.

POTASH

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Province, and Utah's Great Salt Lake and Sevier Lake. On its website, EPM said additional byproducts of its Sevier Lake solar evaporation process could include sodium chloride, or table salt; magnesium sulfate, used in gardening and in bath salts; and magnesium chloride, used in medicine and for dust control. EPM's projected Sevier Lake operation would require limited amounts of additional fresh water and heat generation to produce commodity-grade SOP the company projects to be certified organic.

According to EPM's website, development of Sevier Lake's potash mining capability began in the 1970s, when Utah geologist Murray Godbe began assaying the lake surface with financial backing from Texan financier W.D. Hayden. Godbe and Hayden secured leases for most of the lakebed and took brine samples from hundreds of wells before Hayden and Godbe both died, shortly before the project entered production. After a brief effort to attract investors, both men's heirs abandoned the project and the Sevier Lake leases returned to federal and state agencies until EPM began pursuing the project in 2008.

UMA presents safety awards to 15 companies

The Utah Mining Association (UMA) presented 15 awards to individual companies for demonstrating exemplary and outstanding safety performances during the previous year at the 96th Annual Utah Mining Association Convention held last month in Park City. The vast majority of the companies presented with awards worked throughout all of 2010 without a single accident or incident in their respective mines.

The winners were Graymont Western for its Cricket Mountain Plant; Canyon Fuel Co. for its SUFCO Mine, Skyline Mine and Dugout Canyon Mine; Rio Tinto/Kennecott Utah Copper Refinery for their Bingham Canyon Mine, Copperton Concentrator, tailing and water services and power plant operations; Materion Natural Resources; Simplot Phosphates; Denison Mines for its White Mesa Mill; Norwest Corp.; The Brahma Group; Joy Mining Machinery; Terra Engineering & Construction and Ames Construction.

U.S. mining has made significant advances in improving the health and safety of its workforce. In 2009, 87 percent of the nation's mines operated without a lost-time injury. Utah consistently ranks higher than the national average in terms of safety. Over the last three years, more than $800 million has been invested in new safety technology and training at U.S. mines.

In an effort to demonstrate that meeting the national average does not merit award, companies recognized for safety achievements by the UMA this past year were required to have an incident rate of at least half the national average, meaning Utah's companies awarded are twice as safe as the national average for mining companies in the various mining categories.

Kennecott adds crystallizer to $340 million molybdenum facility at Bingham Canyon Mine

By Andrew Haley
The Enterprise

With the arrival of a massive crystallizer in late February, Kennecott Utah Copper (KUC) reached a major milestone in the ongoing construction of a $340 million Molybdenum Autoclave Process (MAP) facility in Magna.

The addition of the crystallizer means construction at the MAP facility is approximately 30 percent complete, said Doug Stauffer, MAP project director. Once finished, MAP will enable the mining giant to more efficiently produce molybdenum, a byproduct of its copper production, and to become a fully integrated producer of the rare element rhenium.

Stauffer said the crystallizer, custom-built offsite by Jacobs Engineering, is 19 feet in diameter and 56 feet long.

"It is equipment that converts this material back into a solid. Essentially what a crystallizer does is it's an evaporator," Stauffer said.

KUC began producing molybdenum from the Bingham Canyon Mine in 1936. Its new MAP facility will improve molybdenum recovery and allow for more efficient processing of lower-grade molybdenum concentrate, and for the first time will permit KUC to recover and produce rhenium on-site, enabling the production of both rhenium and molybdenum as final, salable commodities. Previously, the company contracted the production of rhenium to third party roasters and shipped molybdenum concentrate to plants in Belgium and Mexico for additional concentration into a finished product.

"This plant allows us to get a greater [molybdenum] recovery than we can with current processing methods, so it allows us to recover more," Stauffer said.

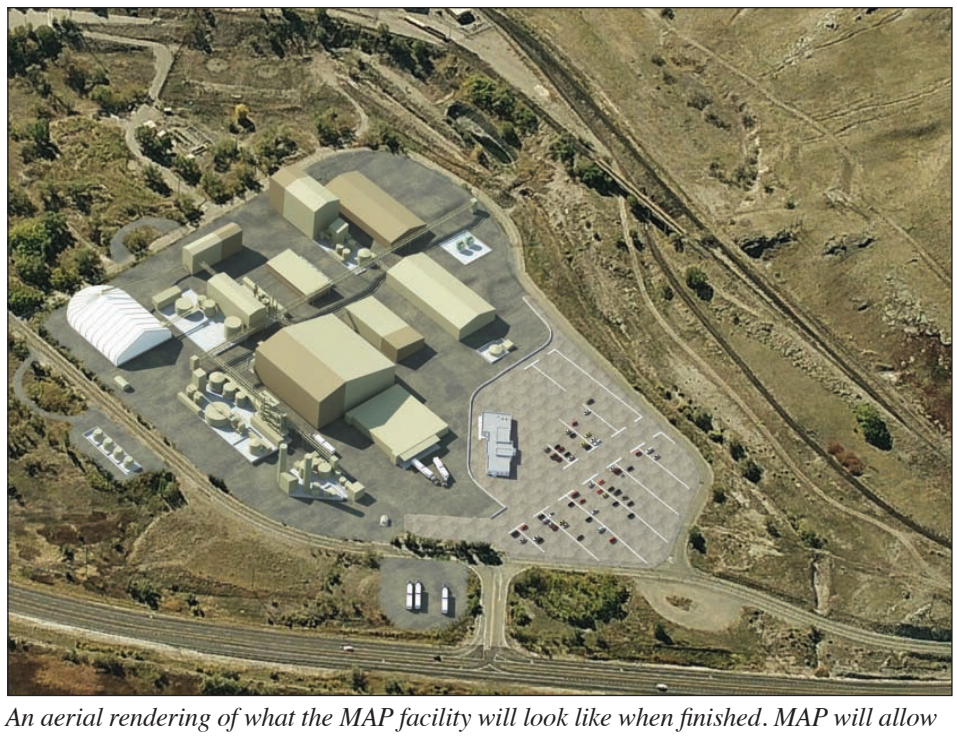
Molybdenum is used to make steel and other metal alloys and is vital to the production of catalysts that remove sulfur from oil in oil refining. Rhenium, the last naturally occurring element to be discovered, is an extremely rare metal used in the manufacture of precision aircraft parts. Among other uses, it enhances the integrity of turbine blades in jet engines.

Kennecott's new crystallizer was manufactured offsite by Jacobs Engineering. Fifty-six feet long, its addition means construction at Kennecott's Molybdenum Autoclave Process facility in Magna is about 30 percent complete.

KUC has long harnessed gold and other byproducts of its mining operations to keep overall copper production costs low. KUC estimates its MAP facility will produce 30 million pounds per year of molybdenum by the end of the year, once it completes the first phase of construction. Completion of a second phase, which the company anticipates in the first quarter of 2015, will ramp up production to 60 million pounds per year.

"The outlook for molybdenum demand is very strong, driven by the rapid urbanization and industrialization of China and India. The production of molybdenum and gold make KUC one of the world's lowest cost producers of copper," Kelly Sanders, president and CEO of Kennecott Utah Copper, said in a press release.

The $340 million capitalization effort is an endeavor on the part of KUC parent company Rio Tinto to extend the life of the Bingham Canyon Mine, where existing copper porphyry deposits are dwindling. The 2008 discovery of a major molybdenum deposit pushed back the eventual obsolescence of the mine. Construction of MAP complements expanded molybdenum mining announced as part of KUC's Cornerstone Project, an ambitious plan to push back the mine's south wall 1,000 feet and deepen the half-mile deep pit another 300 feet in order to access high-grade copper and molybdenum deposits that KUC estimates will extend the life of the mine to at least 2028.



An aerial rendering of what the MAP facility will look like when finished. MAP will allow Kennecott to become one of the world's largest producers of rhenium.

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Cornerstone requires KUC to obtain or update numerous air, land and water permits. In order to facilitate the permitting process, and to better the image of Kennecott Land, its ambitious and burgeoning real estate division, KUC and Rio Tinto have taken major steps towards improving the mine's environmental image. In addition to marketing efforts, such as funding the new Natural History Museum of Utah, highly touted for its green design, KUC had undertaken significant capitalization efforts to improve the environmental footprint of its gargantuan mining operation.

KUC has received permits to convert three of four boilers at its 175-megawatt coal-fired power plant to natural gas, said company spokesperson Kyle Bennett. Additionally, the new molybdenum facility was designed with energy efficiency in mind. MAP will employ a natural gas-powered combined heat and power (CHP) system to co-produce the facilities heat and electricity needs, enabling KUC to harness 6.5 megawatts it otherwise would have to purchase from the coal-produced electricity grid.

"The heat recovery systems capture heat from the autoclave and transfer it downstream to the crystallizer," Stauffer said.

KUC holds the patent on the process to be used in its MAP facility.

In an effort to highlight MAP's environmental as well as economical benefits, Bennett noted that vertical integration of molybdenum and rhenium production will decrease fuel consumption in the transportation of both to third party facilities. Additionally, Rio Tinto's MAP brochure notes that its hydrometallurgical autoclave process releases fewer emissions and uses less energy than traditional roasting technologies.

MAP construction currently employs 400 workers, with 200 more expected to join the ranks later this year, and will provide 50 permanent jobs once completed.

While industrialization in India and China is driving molybdenum demand, Stauffer said molybdenum prices have held "pretty steady for the last few years" at approximately $14 per pound. According to metalprices.com, rhenium is currently trading just shy of $2,000 a pound. When MAP is completed, KUC will become one of the world's leading rhenium producers.

Fast facts about coal

U.S. Demand

• Total demand for U.S. coal reached 1.05 billion tons in 2010.

• Nearly half of U.S. electricity is generated from coal.

• Nine out of every 10 tons of coal mined each year in the U.S. is used for domestic electricity generation.

• Each person in the U.S. uses 3.4 tons of coal annually.

• Coal is the most affordable source of power fuel per million Btu, historically averaging less than one-quarter the price of petroleum and natural gas.

• There are approximately 600 coal generating facilities (1,470 generating units) and 1,100 manufacturing facilities using coal in the U.S., according to the U.S. Energy Information Administration (EIA).

• EIA estimates that 73 percent of all coal-based generating capacity was 30 years or older at the end of 2010.

• Coal accounts for about 30 percent of U.S. total energy production and 21 percent of total energy consumption.

U.S. Coal Production

• Nearly 30 percent of U.S. mines are owned by public companies. Public companies produce approximately 75 percent of U.S. coal.

• The U.S. produces about 1 billion tons of coal annually.

• Approximately two-thirds of today's coal production results from surface, rather than underground, mining.

• Mountaintop mining in Appalachia contributes approximately 10 percent of all coal mined in the U.S. and is roughly 40 percent of the coal mined in West Virginia and Kentucky.

U.S. Reserves

• The U.S. has nearly 261 billion tons of recoverable coal reserves, according to the Energy Information Administration.

• That's a 235-year supply at current rates of use.

• Coal accounts for approximately 94 percent of the nation's fossil energy reserve.

• Coal is found in 38 states, under 458,600 square miles — or about 13 percent of the nation's land area.

U.S. Coal Mining Employment

• U.S. coal mining directly employs nearly 136,000 people.

• For each coal mining job, an additional 3.5 jobs are created elsewhere in the economy.

• The National Mining Association estimates 50,000 new employees will be needed in coal mining over the next 10 years to meet increasing demand and to replace retiring workers.

• The average coal miner makes $73,000 per year in wages.

U.S. Coal and the Environment

• Power plants being built today emit 90 percent less pollutants (SO2, NOx, Particulates, mercury) than the plants they replace from the 1970s, according the National Energy Technology Laboratory.

• Coal plants in the 21st century emit 40 percent less CO2 than the average 20th century coal plant, according to the World Coal Institute.

• Regulated emissions from coal-based electricity generation have decreased overall by over 50 percent since the 1970s while coal use has tripled, according to government statistics.

• U.S. coal operations have reclaimed more than 2.3 million acres of mined land over the past 25 years.

• Since 1978, U.S. coal mines have paid more than $7 billion to reclaim mines that were abandoned prior to laws requiring reclamation.

• Approximately five million acres of land have been mined in the U.S. to produce coal; and most of the land not under active mining has been or is being reclaimed to the standards set by law.

U.S. Coal Transportation

• Railroads move about two-thirds of U.S. coal shipments annually.

• Nearly all coal shipped by railroads is transported by unit trains, and the weighted average number of cars in a coal unit train was 117, according to the 2009 Waybill Statistics.

• Coal is the largest freight commodity moved by barges on the nation's inland waterways.

Four Basic Varieties of Coal

• **Anthracite:** Sometimes also called "hard coal," anthracite was formed from bituminous coal when great pressures developed in folded rock strata during the creation of mountain ranges. Anthracite has the highest energy content of all coals and is used for space heating and generating electricity. Anthracite averages 25 million Btu per ton.

• **Bituminous:** Bituminous or "soft" coal formed when greater pressure was applied to subbituminous coal. This is the type most commonly used for electric power generation in the U.S.. It has a higher heating value than either lignite or subbituminous, but less than that of anthracite. Bituminous coal averages 24 million Btu per ton.

• **Subbituminous:** Subbituminous coal formed from lignite when it came under higher pressure. This coal is a combustible mineral formed from the remains of trees, ferns and other plants that existed and died during the time of the dinosaurs. A dull black coal with a higher heating value than lignite that is used primarily for generating electricity and for space heating. Subbituminous coal averages 18 million Btu per ton.

• **Lignite:** Increased pressures and heat from overlying strata caused buried peat to dry and harden into lignite. Lignite is a brownish-black coal with generally high moisture and ash content and lower heating value. However, it is an important form of energy for generating electricity, particularly in the American Southwest. Lignite averages 14 million Btu per ton.

(Source: National Mining Association)

Fast facts about minerals

U.S. Demand

• Every American uses an average of nearly 40,000 pounds of newly mined materials each year.

• Telephones are made from as many as 42 different minerals, including aluminum, beryllium, coal, copper, gold, iron, limestone, silica, silver, talc and wollastonite. Without boron, copper, gold and quartz, your digital alarm clock would not work.

• A television requires 35 different minerals, and more than 30 minerals are needed to make a computer.

• The construction industry accounts for approximately 51 percent of U.S. copper demand.

• Silver's largest market use is for industrial applications, particularly as an electrical connector. Jewelry is the second largest use of silver.

• The Toyota Prius plug-in-hybrid requires about 50 pounds of rare earth metals for its motor and battery.

U.S. Mineral Production

• The United States produced about 6 percent of the world's nonfuel nonferrous minerals in 2010.

• Processed materials of mineral origin account for about 4 percent of U.S. gross domestic product.

• The United States is the world's third-largest producer of gold, which in addition to jewelry, is used to make computer circuitry.

The total direct and indirect impact of U.S. mining is valued at $1.9 trillion — mining produced $80 billion of finished mineral, metal and fuel products that were then transformed by consumer industries into goods creating an additional $1.8 trillion in value added.

• America's copper mines rank third to Chile and Peru in production.

• The United States is the world's leading producer of beryllium, soda ash and sulphur.

U.S. Minerals Mining Employment

• The National Mining Association estimates that in the next 5-10 years, the mining industry will need approximately 55,000 new miners across the U.S. to meet demand and to replace retiring mine employees. In addition, according to the Society for Mining Metallurgy & Exploration, at least 300 new mining and minerals engineering graduates are needed annually to keep up with projected growth.

• Nearly 500,000 people work directly in mining throughout the United States. Employment in industries that support mining, including manufacturing, engineer, environmental and geological consultants, accounts for nearly 1.8 million jobs.

• The average miner makes $64,000 per year in salary, not including overtime, bonuses and benefits.

• U.S. metal/nonmetal miners report 3.2 non-fatal injuries per 100 workers in 2009, a lower rate of occupational injuries than agriculture, forestry & fishing, construction, manufacturing, transportation, and retail trade.

U.S. Minerals Mining Economic Impact

• In 2008, the mining industry paid approximately $45 billion in taxes, royalties and fees to federal, state and local governments combined. Nearly $107 billion was paid to mining industry employees in direct and indirect wages and benefits.

• The total direct and indirect impact of U.S. mining is valued at $1.9 trillion — mining produced $80 billion of finished mineral, metal and fuel products that were then transformed by consumer industries into goods creating an additional $1.8 trillion in value added.

• According to U.S. Geological Survey analysis, the value added to U.S. GDP by major industries that consume processed mineral materials was an estimated $2.1 trillion in 2010, 14 percent of U.S. GDP.

• Minerals and materials processed from minerals account for exports worth as much as $87 billion per year (USGS).

U.S. Minerals and the Environment

• Mining has touched less than one-half of 1 percent of all the land in the United States.

• Only 3 million acres of public land have gone into private ownership from mining, while 94 million acres have been granted to railroads and 288 million acres privatized as agricultural homesteads (BLM).

• Since 1978, more than 2.6 million acres of mined lands have been restored to their original or better condition, as well as more than 285,000 acres of coal mines abandoned long ago.

(Source: National Mining Association)

Proposed expansion of Alton coal mine sparks turf war

By Andrew Haley
The Enterprise

The proposed expansion of the Coal Hollow Mine into the Alton Coal Tract near Bryce Canyon has sparked a turf war inside the Department of the Interior, with the Fish and Wildlife Service and the National Park Service recommending the Bureau of Land Management reject the Alton Coal Development Co.'s lease proposal in memos that find fault with the BLM's draft economic impact statement (DEIS). The BLM, Fish and Wildlife and the Park Service all fall under Interior's purview. Pointed memos from both services find significant faults with both development proposals, or "action alternatives," in the DEIS.

In a Jan. 27 memo to the BLM, Fish and Wildlife Utah field supervisor Larry Crist wrote, "We recommend that you reject the lease application and withdraw the tract for sale." The memo said either of the proposed mining activity options presented in the DEIS would wipe out Alton greater sage-grouse, a bird Fish and Wildlife would list as an endangered species if it had adequate funding to do so. In addition to the "extirpation" of the greater sage-grouse, Fish and Wildlife said expanded mining activity would cause "direct adverse effects" to migratory birds that use the Alton area for winter habitat.

A National Park Service memo sent to the BLM on Jan. 26 said, "[Bryce Canyon National Park] has determined that both DEIS action alternatives (B and C), as they are currently proposed, would contribute to environmental degradation not only within the tract itself, but would result in adverse effects on surrounding communities, the tourism industry of southern Utah, air quality standards, dark skies conservation, and regional wildlife." The memo went on to address "inconsistencies and nonconformance in BLM planning and guidance" procedures the Park Service found terminally fatal to the DEIS. The Park Service said both of the BLM's proposed plans violate seven of the BLM's own land-use rules.

Beverly Gorny, an external affairs spokesperson for the BLM, downplayed the situation, saying it is a normal part of the BLM's public comment period in the lead-up to its issuing of a final environmental impact statement. Calling the exchange "just one portion of the process," she said, "Fish and Wildlife and the Park Service have been working with us." Gorny said it the BLM's mission to be "good stewards" of public land.

Amy Defreese, an ecologist at Fish and Wildlife's Utah Field Office, also downplayed insinuations of conflict between the bureau and the service, saying, "We are having discussions with the BLM to move forward." She said those discussions did not amount to a negotiated compromise, but that Fish and Wildlife wanted to make sure the BLM understood its concerns and that a mutual understanding of their respective positions was important to both. "I don't know what the outcome will be," Defreese said.

The existing 635-acre Coal Hollow Mine lies on private land, but Alton Coal is seeking a massive expansion onto nearby public lands some 10 miles from Bryce Canyon National Park. Conflict over the proposed mine expansion has pitted advocates for natural resource development against those of the tourist industry, with the former touting the economic benefits of a larger mine and the latter warning that round-the-clock traffic of heavy-duty mining trucks on remote stretches of US-89, and light pollution from night-time mining operations, would drive tourists away from the area.

Gorny said the BLM received more than 77,000 comments, the majority of them form letters, during its recently closed public comment period. She said the bureau was targeting a date of January 2013 for release of its final environmental impact statement. "We are on track and hoping to meet that goal," she said.

Mining Industry Briefs

• U.K.-based e2v, a global provider of technology solutions for high performance systems, has signed a memorandum of understanding with Rio Tinto, the leading international mining group, to develop large-scale ProWave microwave and radio frequency generators for use in world-leading mineral recovery. Rio Tinto will partner with e2v to develop machines to improve the efficiency of mineral recovery from previously discarded ore. The partnership will enable Rio Tinto to scale up its mineral recovery platforms such as the Copper NuWave technology that is expected to be trialled later this year at Kennecott Utah Copper in Magna. John McGagh, Rio Tinto head of innovation, said Rio Tinto's Copper NuWave program will enable e2v to work with Rio Tinto to build microwave generators of a scale not previously seen in industrial application that are safe, reliable and that can be deployed commercially. This will provide Rio Tinto with highly efficient microwave power and help it achieve its goal to recover ore from previously mined material that would normally have been discarded.

• South Jordan-based Boart Longyear, the world's leading integrated drilling products and services provider, was voted the winner of the 2012 *Mining* magazine Exploration Award for its Ultramatrix (UMX) diamond coring bits. The *Mining* awards are held annually to celebrate the top new technologies and innovative applications in the mining sector. The awards are voted on by the readers of *Mining*, and the UMX bits were chosen as the breakthrough product for the exploration sector this year. UMX bits are engineered to drill faster, last longer and outperform existing bit technology in a wide range of drilling conditions and ground formations. The UMX uses advanced metallurgical formulas with larger impregnated diamonds to provide increased penetration capabilities, turning easily from one ground formation to another. The all-in-one quality of the UMX translates to less tripping and increased productivity.

• inthinc Technology Solutions Inc., a West Valley City-based telematics company centered on fleet management and driver safety solutions, said it is the preferred telematics provider for the largest mining corporations in the world. The firm offers mining companies and their vendors with the ability to manage their fleets, improve safety and meet compliance requirements, even in the most rugged and remote conditions. With inthinc waySmart, billed by the company as the most comprehensive fleet management and driver safety solution on the market, fleet managers can monitor driver behavior with features such as GPS-based vehicle and trip tracking, in-cab verbal coaching alerts for speeding, idling, seat belt use, aggressive and fatigued driving. waySmart communicates via satellite or cellular signals allowing fleet managers to monitor vehicles around the world with real-time incident notification, regardless of how remote the service location may be. In addition, inthinc offers blastZones technology, allowing managers to create customized geo-zones around open pit blast areas and send real-time in-cab alerts to drivers. blastZones enables managers to verify the location of its vehicles through the inthinc portal and receive automated text or email alerts when drivers enter and exit a defined region, ensuring the blast area is cleared.

•Mesa Exploration Corp., based in Vancouver, B.C., acquired the 104 square mile Bounty potash project in the Great Salt Lake Desert of western Utah on Jan. 31. The project is 15 miles north of Intrepid Potash's Wendover operation, a potash mine which is chemically and physically analogous to the deposit at the Bounty project. The Wendover mine has been in production for 75 years utilizing a system of potash brine collection ditches and solar evaporation ponds, with potash and salt being processed in a simple flotation mill. The Wendover mine has annual production of 100,000 tons of potash and 200,000 tons of magnesium chloride, grossing $60 million per year. The Bounty project consists of 90 square miles of potash prospecting permit applications from the Bureau of Land Management and 14 square miles of potash leases from the State of Utah. The Bounty project area is a remnant of a regional Pleistocene lake which deposited a salt flat underlain by a potash brine aquifer at depths of 2 to 6 feet. The aquifer is contained in a bed of sand, silt and clay. Several potash brine mines in the area are operating on similar lake remnants, producing muriate of potassium (MOP) and sulphate of potassium (SOP), at operating costs of $180 per ton. MOP sells for $500 per ton and SOP for $650 per ton.

• In 2011, U.S. production of mined gold and silver ore reached its lowest point in almost 20 years, but the U.S. gold and silver ore mining industry achieved record-high revenue, according to a new report from IBISWorld, Los Angeles. This apparent contradiction reflects the power precious metal prices, which are traded on world financial markets, have on industry performance. Over the five years to 2012, gold prices and industry revenue are projected to climb at annualized rates of 19.5 and 17.4 percent, respectively. According to IBISWorld industry analyst Brian Bueno, "The increases have been driven by growing global demand from investors seeking a safe investment after the recent economic downturn." In 2012, revenue is expected to jump an additional 11.8 percent to $14.8 billion as prices climb due to recessionary conditions in Europe and continued disappointment in the US economic recovery. On the other hand, demand from jewelry manufacturing, the gold and silver ore mining industry's primary domestic market segment, has decreased in recent years because of price increases and declining consumer demand.

Kennecott and winter inversions

By Cassady Kristensen
Senior Environmental Engineer, Kennecott Utah Copper

As Kennecott's engineer responsible for air permitting, I want the community to know we are serious about the environment. My job is to minimize the negative environmental impacts from our operation. We agree that the "gunk" caused by fine particulate matter, or PM2.5 during wintertime inversions, is unhealthy. We applaud air quality advocates for doing an effective job of highlighting Utah's air quality problems; however, we believe their focus on Kennecott is misdirected. Kennecott complies with air quality regulations all year but especially during the winter months when specific and preventative measures are in place to ensure our operations have zero impact on the inversion problem we all live with.

Kennecott complies with air quality regulations all year but especially during the winter months when specific and preventative measures are in place to ensure our operations have zero impact on the inversion problem we all live with.

In an inversion, warm air forms a lid over cold air near the ground preventing valley air from mixing and trapping air pollution below the lid. With this lid and virtually no wind, Kennecott contributes little to the valley's poor air quality during inversions. Four examples illustrate my point.

First, while permitted to do so, we shut down our power plant during winter months, eliminating emissions from the plant. Second, we halt the construction of the tailings impoundment in the winter. With no construction and no wind during an inversion, emissions from the impoundment are essentially nothing. Third, our smelter stack is 1,200 feet above ground level. When an inversion sets in, the limited smelter emissions are released above the inversion lid and do not contribute to the valley's bad air. Fourth, the elevation of the mine's ridge is also above the inversion. Due to its size, the mine forms its own inversion lid and prevents emissions from entering the valley.

Don't take my word for it. I invite you to visit the Division of Environmental Quality's (DEQ) website and look at the PM2.5 data.(www.airmonitoring.utah.gov/network/2011AirMonitoringNetworkPlan.PDF, p. 53, Figure 15.) The data will show that the closest air quality monitor to our operation, located in Magna, is the only monitor in the valley that averages below the PM2.5 standards. Two air quality monitors east of I-15 in Holladay and Salt Lake City consistently report the highest PM2.5 levels. The data also demonstrates that in the absence of wind, air quality impacts are primarily caused by low-level sources like cars, print shops, auto body repair shops and similar sources.

We recognize the nature of our business has an environmental impact. My job, along with my 2,400 co-workers, is to implement solutions that help our community breathe cleaner air. Though effective at calling attention to Utah's air quality problem, we believe that these advocates are misdirected about Kennecott's impact to air quality during inversions. I encourage you to take a closer look by visiting our website at Kennecott.com and clicking on the link under Kennecott and Clean Air.

Inaugural mining, manufacturing safety conference to be held April 13

The Utah Mining Association has partnered with the Utah Manufacturers Association to present the inaugural Mining and Manufacturing Safety Conference April 13 in Salt Lake City.

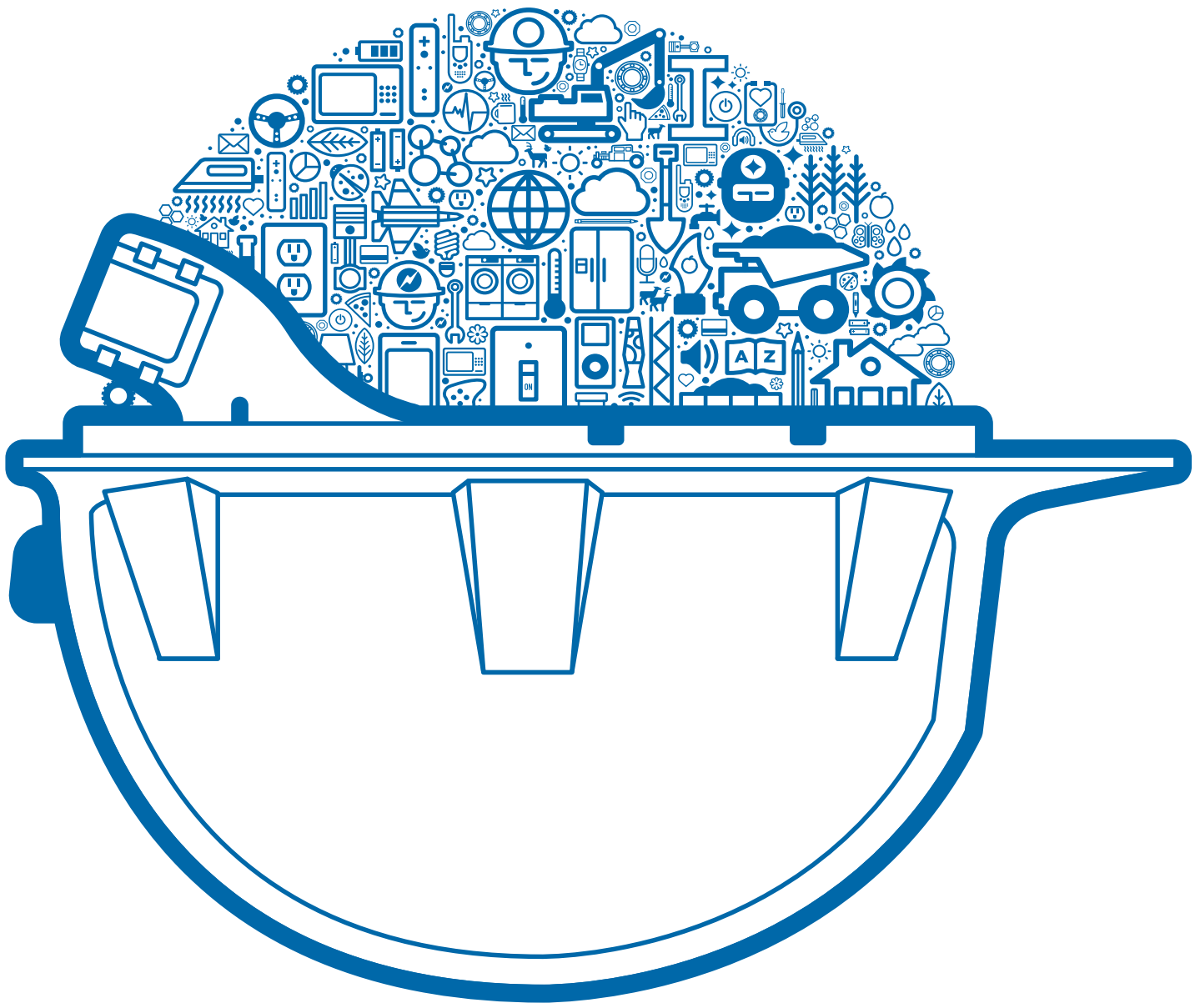

Hymas

Speaker Chad Hymas will tell his inspirational story of "How a Split Second Can Change Your Life" as well as "How Personal Responsibility is a Matter of Life and Death." In 2001, Hymas was involved in a serious accident that left him a quadriplegic. Last year, he spoke at more than 220 events and traveled 300,000 miles telling his story.

Breakout sessions will include the impact of opioid use in the workplace, back safety, hand safety, lockout tagout, noise exposure, "Don't Ask Me to Overlook a Safety Violation," and independent contractor training.

Location is Ballrooms A and B of the Little America Hotel, 500 S. Main St., Salt Lake City. The event begins at 8 a.m. with continental breakfast and registration. Cost is $75. Register at http://umaweb.org.

Putting positive energy to work in classrooms and communities.



At Arch Coal we believe the most powerful resources for influencing a better world exist in classrooms and communities. That's why we dig deep into education-related projects with our hearts, hands and sometimes our hard hats. Whether we're mentoring primary students, honoring Teacher Achievement Award recipients or hosting Earth Day school tours, we're passionate about doing our part to help create a promising future for ourselves, for our children and for the generations to come.

For information about Arch Coal, please visit archcoal.com and youtube.com/archcoalcares

ArchCoal™ FOUNDATION

Real power comes from **Skyline Mine** | **Sufco Mine** | **Dugout Canyon Mine**