

2007 Summary of Mineral Activity in Utah

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SUMMARY

The gross value of all energy and mineral commodities produced in Utah in 2007 is about \$7.71 billion, slightly less than the record high of \$7.88 billion reached in 2006 (figure 1). The 2007 value is largely due to the lower production of metals despite higher prices for crude oil and a record value for industrial minerals.

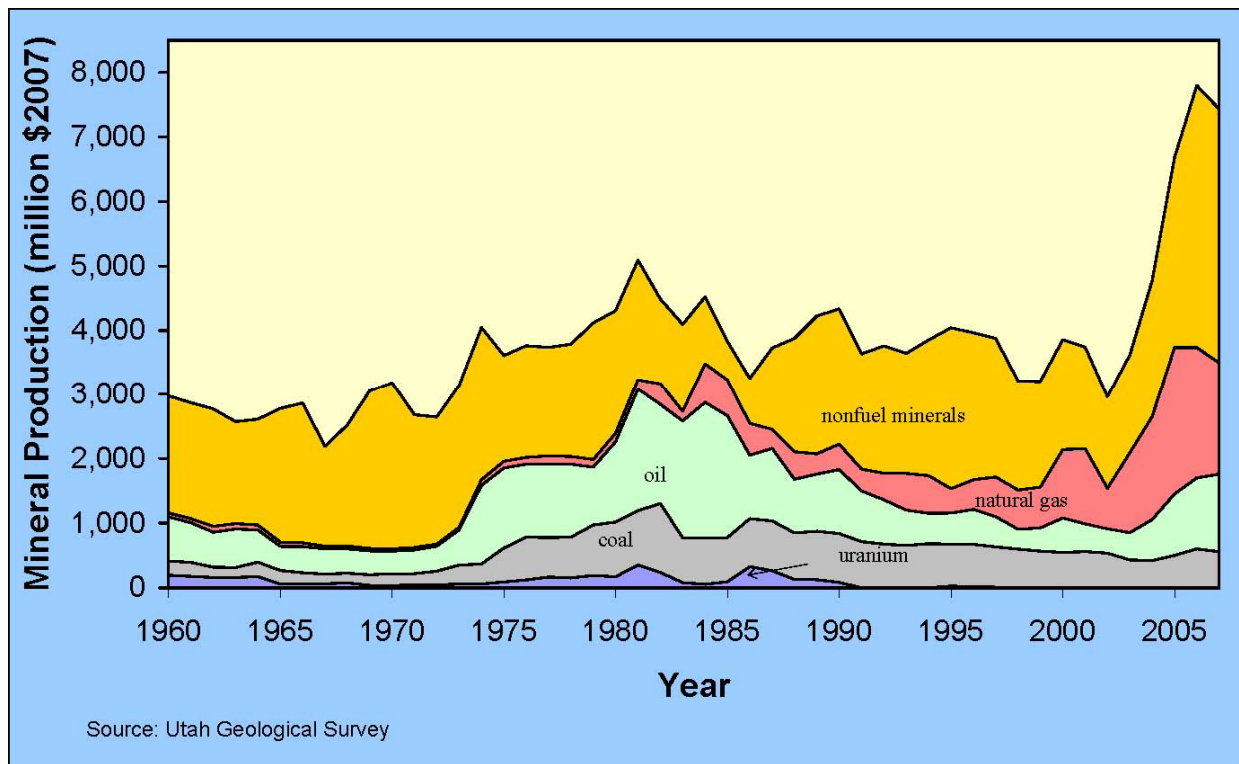


Figure 1. Total annual value of Utah's energy and mineral production 1960 - 2006, inflation adjusted to 2007.

The value of Utah's mineral production (including coal) in 2007 is estimated at a near-record \$4.64 billion (figure 2), \$40 million (less than 1%) lower than the revised value of \$4.68 billion for 2006. The only segment of Utah's mineral industry to show an increase in value was industrial minerals. Contributions from each of the mineral segments were as follows: base metals, \$2.83 billion (61% of total); industrial minerals, \$921 million (20% of total); coal, \$574 million (12% of total); and precious metals, \$322 million (7% of total) (figure 2; table 1). Compared to 2006, the 2007 values of (1) base metals decreased \$58.1 million (2%), (2) industrial minerals increased \$111 million (14%), (3) coal decreased \$13.8 million (2%), and (4) precious metals decreased \$79 million (20%).

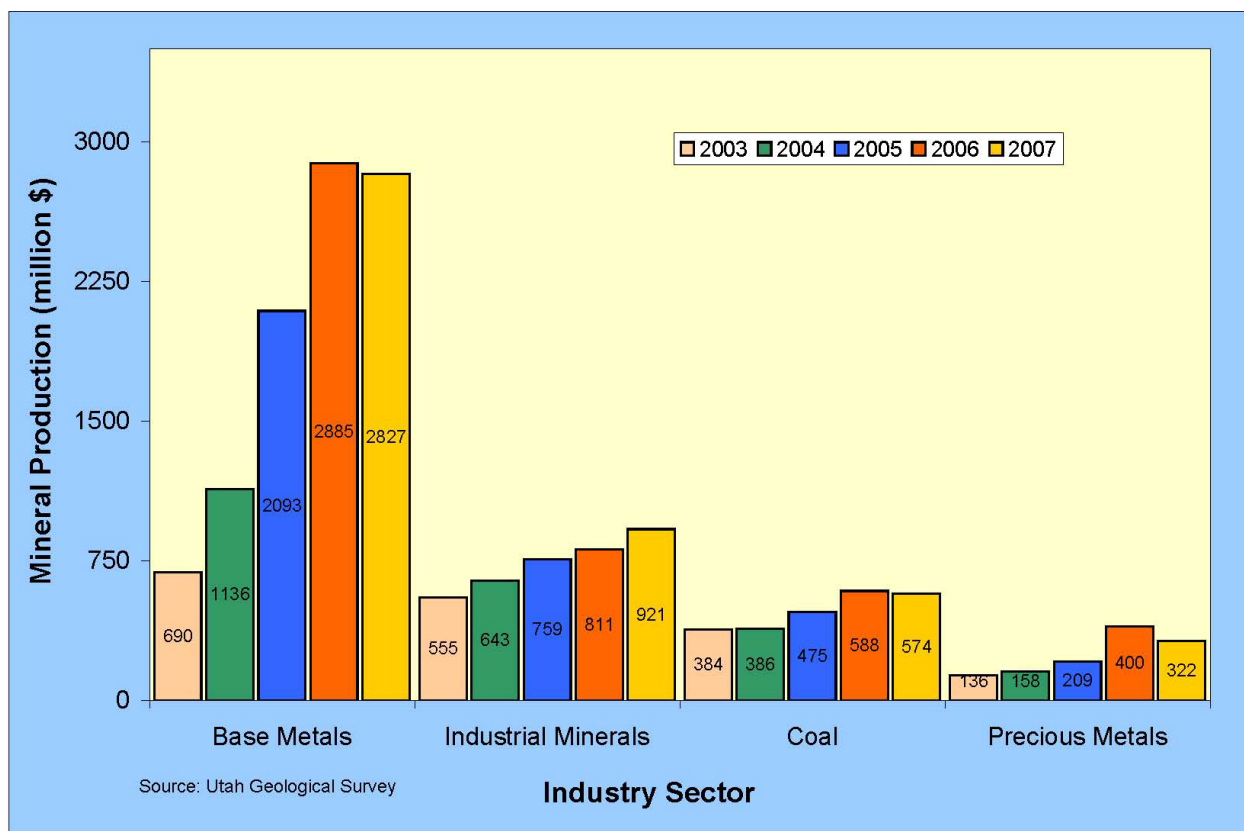


Figure 2. Value of Utah's annual mineral production, by sector, from 2003 through 2007.

Preliminary estimates from the U.S. Geological Survey (USGS) rank Utah 4th nationally in the value of nonfuel minerals produced in 2007, and Utah accounted for about 5.8% of the total U.S. nonfuel mineral production value (USGS, 2008). Utah ranked 12th (up from 15th in 2005) in coal production in 2006 (Energy Information Administration, 2007), and will likely retain the same ranking for 2007.

Metal prices reached near-historic highs in 2007, climbing from the record lows reached in 2001-02. This increase has led to substantially increased mineral exploration and development in Utah. In addition to the initiation of mining at the Lisbon Valley copper mine and the Pandora uranium mine, both in San Juan County, advanced-stage exploration and development is ongoing in the Iron Springs (Fe) and Rocky Range-Beaver Lake (Cu-Au) mining districts.

Mineral exploration statewide increased in 2007. During 2007, the Utah Division of Oil, Gas and Mining (DOGM) approved 10 Large Mine permit applications (2 ha [5 acres] and larger disturbance) and 34 new Small Mine permit applications (less than 2 ha [5 acres] disturbance). Thirty-seven Notices of Intent to explore on public lands were filed with DOGM in 2007, compared to 35 in 2006 and 27 in 2005. More than 15,000 new federal unpatented mining claims were recorded in Utah in 2007, more than double the 6000 claims recorded in 2006. The Utah School and Institutional Trust Lands Administration generated record revenues in fiscal year 2007, as it had in 2006.

Utah was again rated as the fourth-best regulatory environment for mining as reported in the 2007/2008 Fraser Institute Survey of Mining Company's Policy Potential Index. The Fraser survey compares the favorability of the political environment in 14 U.S. states, 12 Canadian provinces and territories, and 39 countries.

The outlook for 2008 is for a moderate increase in the value of nonfuel mineral production based largely on projections for higher production of base and precious metals coupled with higher base- and precious-metal prices. Industrial-mineral prices should remain near their current levels as Utah's economic expansion continues, although the downturn in residential construction could affect the overall demand for several commodities. Coal prices and production are projected to increase as new coal contracts are being negotiated at significantly higher prices and demand for coal continues to increase. The boom in uranium exploration and the reopening of several mines and a second uranium mill will add significantly to Utah's energy sector in the coming years. The construction of a titanium sponge plant adjacent to U.S. Magnesium's magnesium facility on the west shore of Great Salt Lake will add incremental demand for magnesium and begin a new era in metal processing in the state.

NATIONAL RANKINGS

The USGS's 2007 preliminary data ranks Utah 4th in the nation in the value of nonfuel mineral production, unchanged from 2006. USGS data show that Utah accounted for 5.8% of the total U.S. nonfuel mineral production value (USGS, 2008), compared to 6.2% in 2006. For 2007, USGS preliminary data show that Utah remained the only state that produced beryllium concentrates and magnesium metal. Additionally, Utah continued to be 2nd in the quantity of copper, molybdenum concentrates (1st in 2006), potash, and magnesium compounds produced (in descending order of value); 3rd in gold (2nd in 2006); 4th in phosphate rock and silver; and 5th in salt. The State was also a significant producer of Portland cement, construction sand and gravel, lime, common clays, and gemstones (Arnold Tanner, USGS, written correspondence 2008).

The USGS's preliminary estimate of the value of nonfuel mineral production for 2007 is \$3.94 billion (Arnold Tanner, USGS, written correspondence, 2008), about \$30 million (1%) less than in 2006. USGS data show that between 2002 and 2007 the value of nonfuel mineral production in Utah increased from \$1.24 billion (a 10-year low) in 2002 to a record high \$3.97 billion in 2006 (figure 3). The Utah Geological Survey's (UGS) estimate for the value of nonfuel mineral production for 2007 is \$4.07 billion, compared to \$4.10 billion for 2006.

A summary of estimated mineral values by the UGS from 1998 through 2007 is shown in table 1.

Table 1. Utah estimated mineral production values in nominal dollars by industry segment from 1998 through 2007, value is in millions. Note that totals may not equal the sum of individual parts due to rounding.

<u>Year</u>	<u>Base Metals</u>	<u>Industrial Minerals</u>	<u>Coal</u>	<u>Precious Metals</u>	<u>Total Value</u>
1998	\$688	\$534	\$474	\$154	\$1,850
1999	\$626	\$583	\$460	\$153	\$1,822
2000	\$749	\$500	\$456	\$212	\$1,916
2001	\$693	\$538	\$480	\$240	\$1,951
2002	\$612	\$565	\$467	\$172	\$1,815
2003	\$690	\$555	\$384	\$136	\$1,765
2004	\$1,136	\$643	\$386	\$158	\$2,324
2005	\$2,093	\$759	\$475	\$209	\$3,536
2006	\$2,885	\$811	\$588	\$400	\$4,684
2007	\$2,827	\$921	\$574	\$322	\$4,644

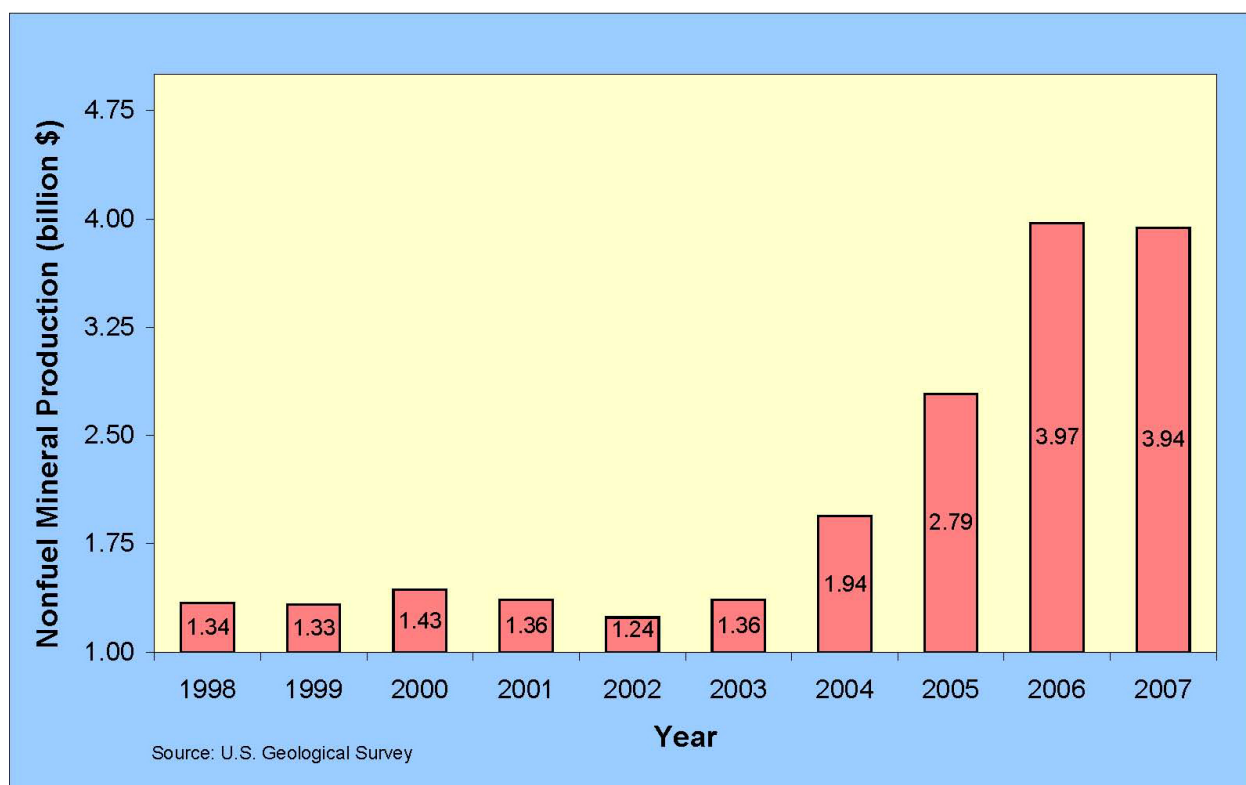


Figure 3. Total annual value of Utah's nonfuel mineral production from 1998 through 2007.

BASE- AND PRECIOUS-METAL PRODUCTION

Base-metal production, with an estimated value of \$2.83 billion, was the largest contributor to the value of minerals produced in 2007 (figure 2; table 1). In descending order of value, those metals were copper, molybdenum, magnesium, and beryllium. The 2007 base-metal value was about \$58 million (2%) less than 2006, and is the first decrease in base-metal value since 2002. Precious-metal production, valued at \$322 million (figure 2; table 1), includes gold (85% of total value) and silver (15% of total value). Precious-metal values in 2007 were \$79 million (20%) lower than in 2006 - the first decrease in precious-metal value since 2003.

Kennecott Utah Copper Corporation's (KUC) Bingham Canyon mine, located about 32 km (20 mi) southwest of Salt Lake City in Salt Lake County, is the state's major producer of copper, gold, and silver, and its sole producer of molybdenum. The combined value of minerals produced from the Bingham Canyon mine in 2007 was about 63% of the total value of all minerals produced statewide. KUC is in the fourth year of an aggressive mine life extension program.

Copper

Copper was the largest contributor to the value of nonfuel minerals in Utah. Substantial price increases, which began in 2003, raised the value of copper produced to a near all-time high, and the value of base-metal production statewide to nearly \$2.83 billion. The Bingham Canyon mine produced about 211,000 mt (233,000 st) of copper in 2007, compared to the 268,000 mt (296,000 st) produced in 2006. However, Rio Tinto stated that smelter and refinery production was 21% higher in 2007 compared to 2006 when major scheduled maintenance was undertaken on the smelter (Rio Tinto, 2008).

The Lisbon Valley Copper mine, located 72 km (45 mi) southeast of Moab in San Juan County, began operating in December 2005, but the solvent extraction – electrowinning (SX-EW) circuits did not start up until April 2006. The plant produced about 9,100 mt (10,000 st) of copper in 2007. Production will likely decrease in 2008 as the mine strives to reduce costs. Mining has been curtailed, but leaching will continue until the ore pad has been depleted.

Molybdenum

Molybdenum was the second-largest contributor to the value of Utah's base-metal production in 2007. Kennecott's Bingham Canyon mine produced about 14,900 mt (16,400 st) of co-product molybdenum in 2007, compared to 16,000 mt (18,000 st) produced in 2006. Rio Tinto reported that production of molybdenum was 11% lower than 2006 as a result of lower ore grade and high limestone levels in the ore body (Rio Tinto, 2008). The decreased production of molybdenum was largely offset by a 26% increase in molybdenum metal prices during the year. The USGS reports that the Bingham Canyon mine was one of five domestic copper mines to recover molybdenum as a byproduct. The USGS also reports that the total U.S. mine output of molybdenum in concentrate decreased slightly in 2007 (Magyar, 2008).

Gold and Silver

Gold production in 2007 is estimated to be about 400,000 troy ounces (oz), about 100,000 oz less than in 2006. Gold is produced from two surface mines owned by Kennecott Corporation: one primary producer (Barneys Canyon mine) and one byproduct operation (Bingham Canyon mine), both located in Salt Lake County. Several other small mines in the state are known to produce minor amounts of gold and silver, but production is not reported nor included in the above totals. The Barneys Canyon mine exhausted its economic ore reserves in late 2001 and ceased mining, but will continue to produce gold from its heap-leach pads at a much-reduced rate into mid-2008, when those pads will be depleted. Silver is also a by-product metal from the Bingham Canyon mine. Silver production was about 3.6 million oz in 2007 compared to more than 4.2 million oz in 2006.

Magnesium

Magnesium metal was the third-largest contributor to the value of base metals in 2007. Magnesium metal is produced from Great Salt Lake brines by US Magnesium, LLC at its electrolytic plant at Rowley in Tooele County. The plant's annual capacity is 43,000 mt (47,000 st) of magnesium metal (99.8% purity). It is the only active primary magnesium processing facility in the U.S. Magnesium production in 2007 was moderately higher than in 2006. Average magnesium metal prices increased from \$3.09/kg (\$1.40/lb) in 2006 to \$4.41/kg (\$2.00/lb) in 2007 (Kramer, 2008).

Beryllium

Utah continues to be the nation's sole producer of beryllium concentrates. Brush Resources has a beryllium (bertrandite) mine in Juab County. Ore and imported beryl can both be processed through parallel circuits at the company's plant a few miles north of Delta in

Millard County. The product (beryllium hydroxide) is then sent to the company-owned refinery and finishing plant in Elmore, Ohio, where it is converted into beryllium metal, alloys, and oxide. The company reported mining approximately 58,000 mt (64,000 st) in 2007, in addition to processing about 1100 mt (1200 st) of imported beryl ore. The company's Monitor pit will close in 2008 and production will begin at the new Fluro-Roadside pit.

In 2005, Brush Engineered Materials, Inc. (the parent company) was awarded a \$9 million contract under the Department of Defense's Defense Production Act, Title III Program. The contract is for the engineering and design of a new facility for the production of primary beryllium, the feedstock material used to produce beryllium metal products. The new facility, to be owned and operated by Brush Engineered Materials, will be located at an existing plant site in Elmore, Ohio. The company anticipates that the design and engineering will be completed and construction could begin in 2008. Additional funding will be required prior to construction, which will take two to three years (Brush Engineered Materials, 2008). Shedd (2008) estimated that about 50% of beryllium use is in computer and telecommunications products, and the remainder is used in aerospace and defense applications, appliances, automotive electronics, industrial components, and other applications.

INDUSTRIAL-MINERALS PRODUCTION

Industrial-minerals production, with an estimated value of \$921 million, an all-time high, was the second-largest contributor to the value of minerals produced in 2007 (figure 2; table 1) and was the only segment of Utah's mineral industry to show an increase in value. The value of industrial minerals has grown substantially over the past 10 years, increasing from \$534 million in 1998 to \$921 million this past year, a 72% increase. Commodities or commodity groups that have realized the majority of these gains include sand and gravel and crushed stone; Portland cement and lime; salines, including salt, magnesium chloride, potash (potassium chloride), and sulfate of potash (SOP); and phosphate rock. These commodities account for 89% of the total value of Utah's industrial minerals segment. Other commodities produced in Utah, in descending order of value, include gilsonite, expanded shale, gypsum, common clay, bentonite, and kaolinite. While the overall value of industrial minerals reached a record high, several commodity groups, including Portland cement, phosphate, expanded shale, clay, and bentonite experienced lower values due to lower production and/or lower commodity prices in 2007.

Sand and Gravel, and Crushed Stone

Sand and gravel, and crushed stone (including limestone and dolomite) were the largest contributors to the value of industrial minerals produced in Utah during 2007, with an estimated value of \$318 million, about \$99 million (45%) higher than in 2006. These materials are produced in nearly every county in Utah by commercial operators as well as county, state, and federal agencies. Due to the large number of operations (approximately 140 active pits and quarries), the UGS does not send production questionnaires to this group. However, production data are compiled by the USGS. Based on preliminary 2007 data (Tanner, 2008), the USGS estimated that 2007 production will be 41.3 million mt (45.5 million st) of sand and gravel with a value of \$211 million, and 16.0 million mt (17.6 million st) of crushed stone with a value of \$107 million. Crushed stone production includes raw materials for both lime and cement plants.

This is a 9% increase in sand and gravel production and a 63% increase in the production of crushed stone compared to 2006.

Salt, Magnesium Chloride, Potash (Potassium Chloride), and Sulfate of Potash

Brine-derived products, including salt, were the second-largest contributors to the value of industrial-mineral production in Utah during 2007, with a combined value of \$247 million, about \$14 million (6%) more than in 2006. In addition to salt, brine-derived products include magnesium chloride and potash (potassium chloride and potassium sulphate). One company (North Shore Limited Partnership) produces a small amount of concentrated magnesium brine that is used as an ingredient in mineral food supplements. The statewide production of salt and other brine-derived products, excluding magnesium metal, is estimated to be 3.26 million mt (3.59 million st) in 2007, slightly less than in 2006. Potash production (including SOP) is estimated to be about 0.36 million mt (0.40 million st) in 2007, approximately 0.20 million mt (0.22 million st) less than in 2006.

Salt production alone was estimated to be 2.49 million mt (2.75 million st) in 2007, about the same as 2006, with most of the production coming from three operators processing brine from Great Salt Lake. The three largest operators are, in descending order of production: (1) Great Salt Lake Minerals Corporation, (2) Cargill Salt Company, and (3) Morton International. In addition, three other companies produce salt and/or potash from operations not located on Great Salt Lake: (1) Reilly Chemical Company at Wendover in Tooele County (salt and potash), (2) Moab Salt, LLC near Moab in Grand County (salt and potash), and (3) Redmond Minerals, Inc. near Redmond in Sanpete County (rock salt). In the past five years, Redmond Minerals has increased production significantly as the result of an aggressive marketing campaign.

Portland Cement and Lime

Portland cement and lime were the third-largest contributors to the value of industrial minerals produced in 2007, with a combined value of \$236 million, about \$2 million (1%) less than in 2006. Two operators produce Portland cement in Utah: Holcim, Inc. and Ash Grove Cement Company. Holcim's Devils Slide plant and mine are located east of Morgan in Morgan County, and Ash Grove's Leamington plant and mine are east of Lynndyl in Juab County. The companies have a combined capacity of more than 1.4 million mt (1.5 million st) of cement annually. Both plants operated at or above capacity in 2007, with total production of about 1.5 million mt (1.7 million st). In addition to limestone, Ash Grove Cement mines a modest amount of shale and sandstone that are used in the manufacture of cement.

Lime production was about 5% higher in 2007 than in 2006, with an estimated production of about 853,000 mt (940,000 st). There are two suppliers of lime in Utah, with a combined capacity of more than 0.9 million mt (1.0 million st) per year: Graymont Western U.S., Inc., which produces dolomitic quick lime and high-calcium quick lime; and Chemical Lime of Arizona, Inc., which produces dolomitic quick lime and hydrated dolomitic lime. Both operations serve markets in Utah and surrounding states. Graymont Western's plant is in the Cricket Mountains, approximately 56 km (35 mi) southwest of Delta in Millard County, and is one of the 10 largest lime plants in the United States. The addition of a fifth kiln to Graymont's

Cricket Mountain plant will add about 500,000 mt (551,000 st) per year of capacity. Chemical Lime of Arizona's plant is about 13 km (8 mi) northwest of Grantsville in Tooele County.

Statewide, DOGM lists 34 active limestone operations including 18 Large Mine and 16 Small Mine permits. Total limestone production reported in 2007 was 5.1 million mt (5.6 million st). Other uses of limestone include construction as well as flue-gas desulfurization in coal-fired power plants. A small amount of limestone is also crushed to a fine powder and marketed as “rock dust” to the coal mining industry.

Phosphate

Simplot Phosphates, LLC is Utah's only phosphate producer. The company's phosphate operation is 18 km (11 mi) north of Vernal in Uintah County. The mine produces roughly 2.7 to 3.6 million mt (3 to 4 million st) of ore annually, which is processed into 0.9 to 1.8 million mt (1 to 2 million st) of phosphate concentrate. The concentrate is transported in slurry form to the company's Rock Springs, Wyoming, fertilizer plant via a 144-km (90-mile) underground pipeline. During 2007, the mine produced about 3.4 million mt (3.7 million st) of ore, slightly less than in 2006.

Gilsonite

Gilsonite production for 2007 is estimated to be about 77,000 mt (85,000 st), a slight increase over 2006. Gilsonite is an unusual solid hydrocarbon that has been mined in Utah for more than 100 years. Gilsonite is marketed worldwide for use in over 150 products ranging from printing inks to explosives. All of the gilsonite mines are located in southeastern Uintah County. The three companies that produce gilsonite, in descending order of production, are (1) American Gilsonite Company, (2) Lexco, Inc., and (3) Zeigler Chemical and Minerals Company. Gilsonite production has been increasing modestly over the past several years.

Expanded Shale and Perlite

Only one company, Utelite, Inc. produced lightweight “expanded” products from shale for use primarily in the construction and building industries. Mine production was about 181,000 mt (200,000 st) in 2007, a slight increase from 2006. Utelite's shale plant and mine is east of the town of Wanship in Summit County. Harborlite Mineral's perlite mine is about 40 km (25 mi) north and east of the town of Milford in Beaver County, and the plant is located in Milford. The plant and mine were shut down in mid-2006 and remain inactive. Harborlite's parent company, World Minerals, Inc., was sold to Imerys Group, a major worldwide industrial minerals company based in France, in 2005.

Common Clay, Bentonite, and High-Alumina Clay

More than 434,000 mt (478,000 st) of common clay and approximately 57,000 mt (63,000 st) of bentonite were produced by 10 companies in 2007. Statewide, there were 23 active mine permits held by common clay, bentonite, and high-alumina clay operators in 2007. Many of these mines operate intermittently. The two largest producers of common clay in 2007 were Interstate Brick Company and Interpace Industries (also a brick producer). Two companies

(Western Clay Company and Redmond Minerals, Inc.) produce bentonite from pits located in central Utah. Sandy Nell produces a high-alumina clay from a pit in Beaver County. More than 75% of all common clay is used in the manufacture of brick. Bentonite is used as a sealant in many civil engineering applications, as a pet-waste absorbent (litter-box filler), as a component of oil and gas drilling fluids, and as a binder in foundry molds. High-alumina clays are currently only being used in the manufacture of Portland cement.

Gypsum

Five companies produced about 370,000 mt (408,000 st) of gypsum in 2007, about 96,000 mt (106,000 st) less than in 2006. In descending order of production, the three largest producers were (1) U.S. Gypsum Company, (2) Sunroc Corporation (Clyde Companies), and (3) Georgia Pacific Gypsum. Georgia Pacific Gypsum and U.S. Gypsum operate the only two wallboard plants in Utah. Both plants are near the town of Sigurd in Sevier County. The Georgia Pacific plant, which closed in 2002, reopened in 2006 and is operating on a full-time basis. Statewide, there are 10 active gypsum mines; six reported production in 2007. Most gypsum produced in Utah is used for making wallboard, but several operators supply raw gypsum to regional cement companies where it is used as an additive to retard the setting time of cement, and to the agricultural industry for use as a soil conditioner. The decreased production of gypsum is likely related to the downturn of the housing industry.

ENERGY MINERALS PRODUCTION

Coal

Utah's coal operators produced 22.0 million mt (24.3 million st) of coal valued at \$574 million from 13 underground mines in 2007 (figures 2 and 4; table 1). This production was 1.7 million mt (1.9 million st), or 7% less than in 2006. All of the mines and coal-related facilities are located in east-central Utah (figure 5). Utah's synfuel plant, DTE Utah Synfuels, LLC, the only synfuel facility west of the Mississippi River, is located at the Castle Valley (CV) railroad spur southeast of Price. The plant operated full time in 2007, and processed slightly more than 1.8 million mt (2 million st) of high-ash coal purchased from several local coal operators. The DTE plant, which produces a solid synthetic product that is used in cogeneration, industrial, and traditional coal-fired power plants, closed in late December because of the loss of synfuel tax credits. Covol Technologies' Wellington air-spargers processing plant that began operating in December 2005 continued to process coal during 2007. Covol Technologies is a subsidiary of Headwaters, Inc., and the plant is rated at about 226 mt (250 st) per hour. The plant is located just south of the CV spur. Arch Coal Company's new (2006) Castle Valley coal preparation plant operated on an as-needed basis in 2007, and processed coal from the company's Skyline and Dugout mines. The plant is located along the CV spur and has the capacity to process up to 1.8 million mt (2.0 million st) of coal per year.

The largest coal producer was the Sufco mine, operated by Canyon Fuel Company, LLC, which produced 6.1 million mt (6.7 million st) of coal in 2007. In addition, the following four mines each produced in excess of 1.8 million mt (2.0 million st) of coal: (1) Aberdeen, operated by UtahAmerican Energy, Inc. (formerly Andalex Resources); (2) Deer Creek, operated by

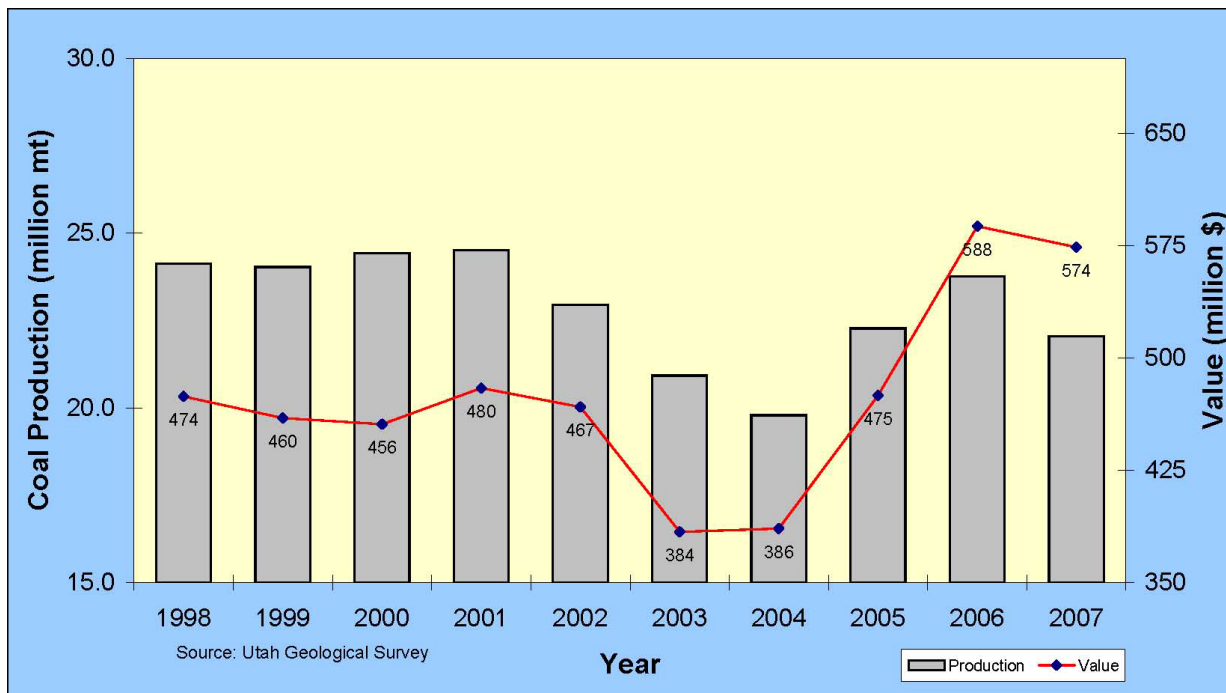


Figure 4. Utah's annual coal production and value from 1998 through 2007.

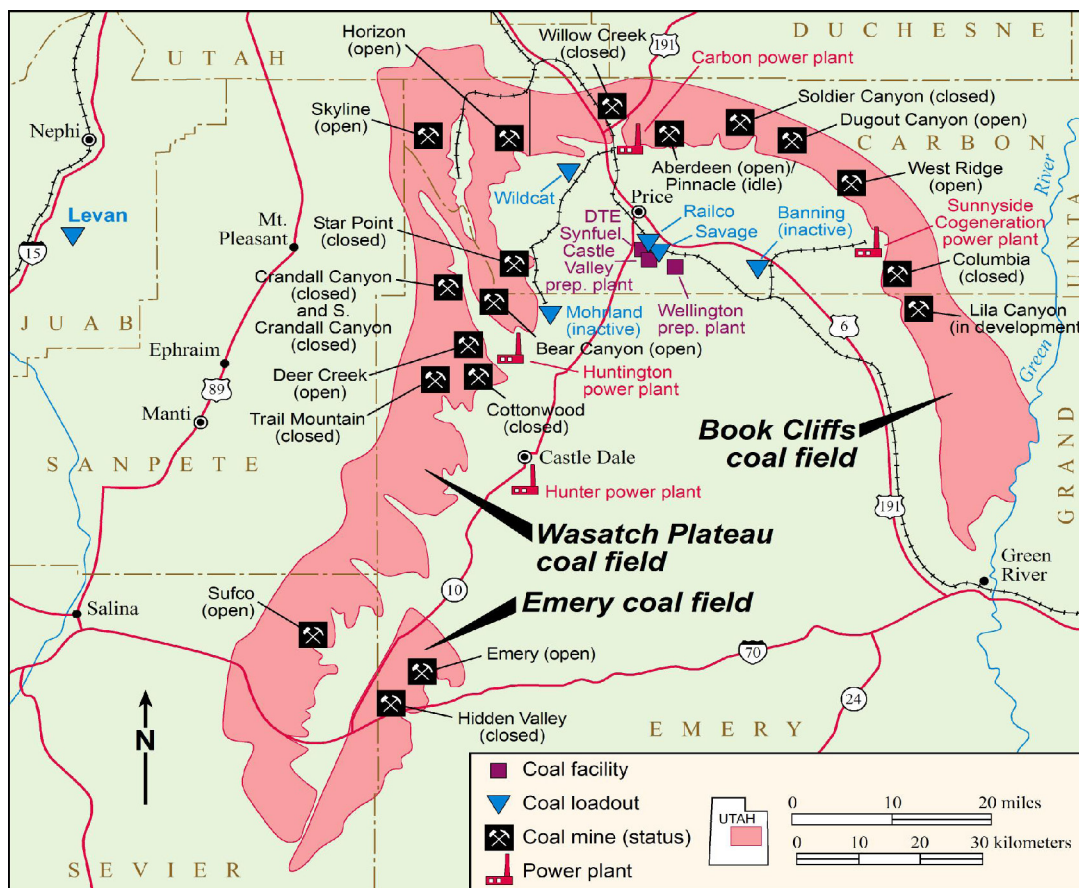


Figure 5. Location and status of central Utah's coal mines and processing plants. Data from DOGM files.

Energy West Mining Company (Rocky Mountain Energy); (3) Dugout Canyon, operated by Canyon Fuel Company, LLC; and (4) West Ridge, operated by West Ridge Resources.

Following the Crandall Canyon mine disaster in August 2007, the Crandall Canyon mine, operated by UtahAmerican Energy, Inc. was permanently closed. UtahAmerican Energy's Lila Canyon mine received all of its required permits late in 2007, and some site work was initiated (figure 5). The surge in oil and gas prices that began in the fall of 2003 has positively affected coal prices and production, which are both anticipated to increase in 2008. Approximately 60% of Utah's coal was consumed in state by three electric utilities in 2007.

EXPLORATION AND DEVELOPMENT ACTIVITY

Mineral exploration and development work increased in Utah again during 2007 due to the continuing dramatic run up in world commodity prices from the all-time low in 2001 to the current near record highs. Most efforts in Utah were focused on copper, molybdenum, gold, silver, zinc, and uranium. The information in this section is largely derived from numerous individual company websites and press releases. The locations of the projects and mining districts discussed below are shown on figure 6.

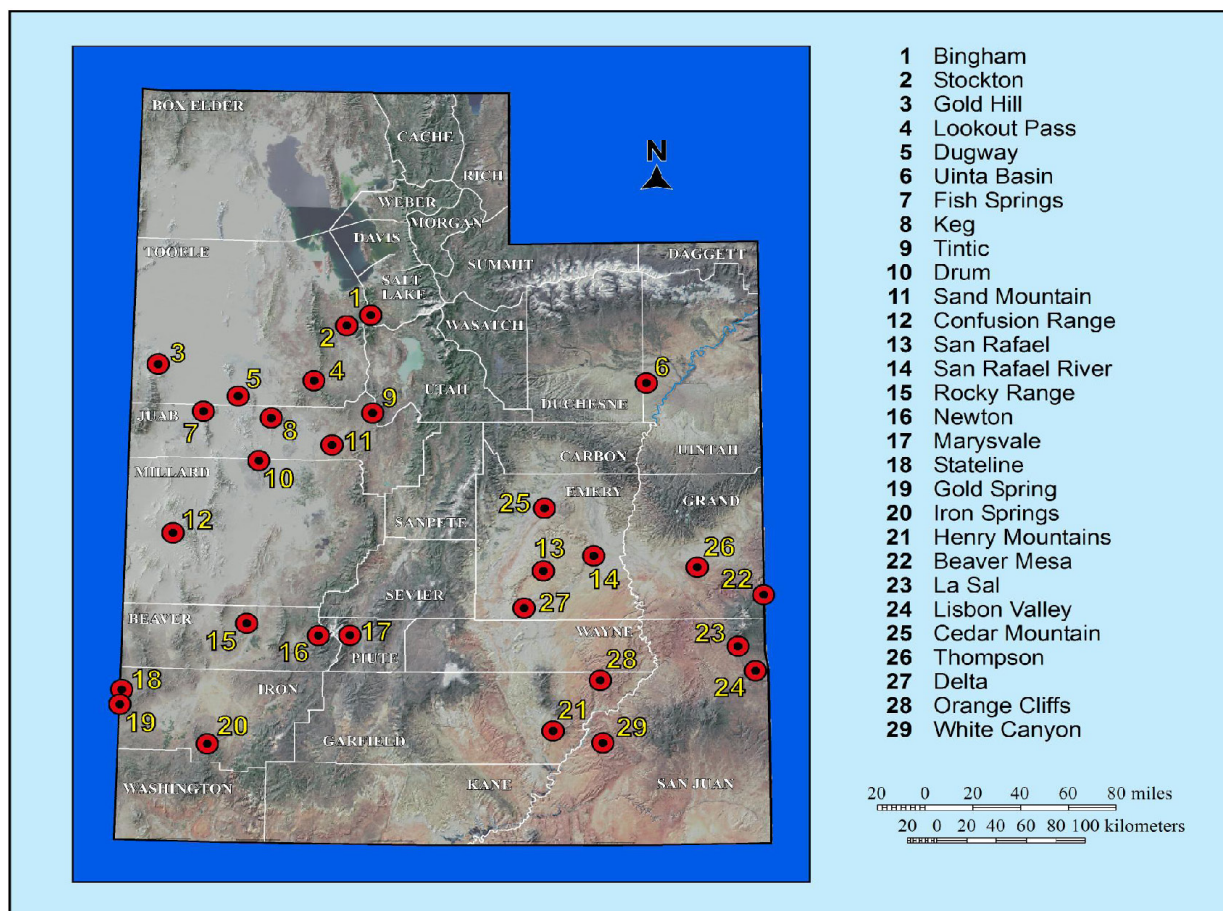


Figure 6. Major base- and precious-metals, and uranium exploration districts and areas in Utah in 2007.

Claims, Leases, and Mine Permits

The number of unpatented mining claims filed in Utah has risen dramatically from a low of 508 in 2001 to over 15,000 in 2007. The majority of the new claims in 2007 were staked for uranium. San Juan County recorded the most mining claims again this year with 4896, followed by Grand, Emery, Wayne, and Garfield Counties, all with over 1100 claims each (Opie Abeyta, Utah BLM, written communication, 2008).

The Utah School and Institutional Trust Lands Administration (SITLA), which manages about 1.4 million hectares (3.4 million acres) of state-owned lands in Utah, reported issuing leases and/or contracts on 273 tracts in 2007. These were divided among the following commodities: metalliferous minerals-176, geothermal-41, sand and gravel-23, building stone-8, mineral materials-6, bituminous/asphaltic sands-4, gemstone/fossil-4, humic shale-3, limestone-3, clay-2, gypsum-2, coal-1, oil shale-1, and volcanic materials-1 (William Stokes, SITLA, written communication, 2008). Utah Trust assets grew by a record \$210 million in 2007 and have surpassed \$1 billion for the first time.

During 2007, DOGM approved 11 new Large Mine permits (greater than 2 ha [5 acres] disturbance), 21 Small Mine permits (less than 2 ha [5 acres] disturbance), and 27 Notices of Intent (exploration) permits. Eight of the new Large Mine permits were for industrial minerals operations, and one each was for copper, uranium, and gemstone (red beryl) operations. The 21 Small Mine permit applications were for the following: industrial minerals-18 and precious-metals-3. Exploration Notices of Intent were dominated by uranium-19, followed by base metals-4, precious metal-2, and industrial minerals-2.

Base Metals

Base metals had another strong year in Utah, buoyed by near record metal prices: the Bingham Canyon mine produced exceptional profits, the Lisbon Valley copper mine produced for a full year, another copper operation near Milford is poised to begin production in 2008, and exploration is ongoing in numerous other districts across the state.

Bingham Canyon

Kennecott Utah Copper Corporation's (KUC) Bingham Canyon mine earned \$1.6 billion in 2007, down slightly from a record \$1.8 billion in 2006, on increased copper, gold, and silver prices and a continued strong molybdenum price. Bingham remains the U.S.'s second largest producer of both copper and molybdenum. KUC is in the fourth year of an aggressive development program with current efforts concentrated on extending the mine life from the current plan of 2017 to 2036. Alternatives being studied include additional open-pit laybacks and/or various underground options. A pre-feasibility study of skarn and porphyry targets will be completed in 2008.

Exploration efforts in 2007 included drilling 38 diamond holes totaling 29,000 m (95,000 feet). Significant results included expansion of the known molybdenum and copper-gold mineral resources. Development work at Bingham Canyon included re-excavation of the North Ore Shoot shaft collar, which was buried by the canyon dump, and the driving of a horseshoe-shaped drainage tunnel from near the bottom of the pit to the north and west. The North Ore Shoot shaft will be refurbished in 2008. An \$82 million project at the mill to improve the bulk flotation

process, begun in 2004, will be completed in the second quarter of 2008 (Kim Schroeder, written communication, 2008).

Brownfield exploration at Bingham Canyon continued with induced polarization (IP) surveying and geochemical sampling southwest of the pit on West Mountain. This work resulted in the recognition of a large phase IP anomaly with coincident Cu-Au surface geochemical anomalies. Exploration drilling is planned for 2008.

Lisbon Valley Copper

The Lisbon Valley Mining Company began mining and stacking the leach pads in 2005, and plant construction at the new open-pit, heap leach, SX-EW copper operation was completed in 2006. Copper mineralization at Lisbon Valley occurs as disseminated and fracture-controlled copper in Cretaceous sandstones along the nose of a salt-cored anticline. The operation has continued to endure startup problems throughout 2007 as it attempted to ramp up to full production. Fundamentally, the recovery of copper from the pads has been substantially slower than anticipated. Despite efforts to increase production, the operation has continued to underachieve, so mining will be suspended in early 2008. Approximately 35 million pounds of copper will have been placed on the leach pads by the time that mining is halted and leaching of this material is expected to continue for the next one to three years. 2007 production was about 9000 mt (10,000 st) of copper.

Exploration by Lisbon Valley in 2007 focused on evaluating the Flying Diamond - Stateline resource, discovered under cover a few miles southeast of their open-pit operation. Drilling in 2007 included 16 new holes totaling 1287 m (4220 feet). These holes were generally laid out in northeast-trending fence patterns perpendicular to the ore-controlling east splay of the Lisbon Valley fault, and helped define a mineralized zone approaching 3050 m (10,000 feet) long by about 152 m (500 feet) wide and about 15 m (50 feet) thick with grades of approximately 0.4% Cu. Because of the problems at the mining operation, exploration drilling was suspended in October 2007 (Constellation Copper Corp., 2007).

Rocky-Beaver Lake

Western Utah Copper Company (WUCC) controls about 37,200 ha (92,000 acres) in the Milford area and has been actively exploring the Rocky and Beaver Lake mining districts for the past several years. The districts host seven partially defined copper skarn and breccia pipe deposits. Current proven ore reserves total approximately 2.2 million mt (2.4 million st) averaging 1.38% total copper with possible gold-silver credits. In 2007, WUCC obtained a Large Mine permit from DOGM, stripped overburden from the Hidden Treasure copper skarn, and began construction of a 2270 mt per day (2500-tpd) flotation mill (Western Utah Copper Company, 2007). In January 2008, WUCC was acquired by Copper King Mining Corporation.

Inland Explorations

Inland Explorations Ltd. was formed in 2006 specifically to conduct base metal exploration in Utah. The company has aggressively pursued a grassroots exploration program and has acquired four properties to date: 1) Dugway, 2) Keg, 3) Thompson Knoll, and 4) Dunes (Sand Mountain). The most advanced target is a Cu-Pb-Zn-Au-Ag carbonate-hosted

replacement deposit on the southwest flank of the Dugway district. Inland has run a detailed aeromagnetic survey, collected 240 surface rock chip samples, and drilled 1144 m (3752 feet) in four preliminary diamond holes. Surface samples have assayed up to 2.9% Cu, 10.9% Zn, 14.6% Pb, 285 ppm Ag, 12.8 ppm Au, and 168 ppm Mo. Mineralization at Dugway is associated with high magnetic susceptibilities and a 3-D magnetic model will be used to delineate drill targets in 2008.

The target at the Keg property is a porphyry/skarn deposit. Surface rock-chip samples assay up to 4.7% Cu, 3.8% Pb, 0.5% Zn, 0.26% Mo, 123 ppm Ag, and 0.6 ppm Au. Geophysical surveys include a detailed aeromagnetic survey 85 km² (33 mi²), a spontaneous potential/resistivity survey 3.6 km² (1.4 mi²), and one long IP line 5.5 km (3.4 mi). Results of geophysics and surface geochemistry indicate several coincident anomalies. A drilling program is scheduled to begin in 2008.

Thompson Knoll lies in the Confusion Range of west-central Utah. The targets here are both base- and precious-metal skarn and sediment-hosted gold similar to that in the adjoining Kings Canyon deposit. Geophysical surveys completed include a detailed ground magnetic survey (20 km²) and several IP lines (16 line km). The ground magnetic survey defined a sizeable magnetic high representing a buried intrusive. Surface samples indicate that the intrusive is associated with base and precious metal mineralization, with assays up to 2.2% Pb, 0.4% Zn, 50 ppm Mo, 16 ppm Ag, and 0.8 ppm Au. Combined magnetic and IP/resistivity results suggest a possible skarn target and an area of silicification and gold mineralization. Drilling is planned on both of these targets in the coming year.

A fourth property at Dunes is a base and precious metal massive sulfide replacement target associated with gently dipping structures. Twenty-six (26) surface samples assayed up to 1.3% Cu, 1.4% Pb, 0.3% Zn, 318 ppm Ag, and 1.3 ppm Au. Geophysical surveys, including ground magnetic lines and IP lines, are in progress (Margaret Venable, personal communication, 2008).

Crypto

Lithic Resources Ltd. acquired the Crypto zinc skarn in the Fish Springs mining district of western Juab County in 2005 (Lithic Resources Ltd., 2007). A 1993 Cyprus Minerals Company estimate shows a shallow oxide resource of 2.8 million mt (3.1 million st) averaging 7.0% zinc and a deep sulfide resource of 5.4 million mt (6 million st) averaging 8.8% zinc. In 2007, Lithic began a planned 10,000-m (33,000-foot) core drilling program aimed at confirming and expanding the historical zinc resource at Crypto. At the end of the year, five holes had been completed for a total of 1297 m (4255 feet) of drilling. Reported intercepts ranged up to 12.2 m (40 feet) of 21% Zn oxide; Zn sulfide intercepts of 17.3 m (57 feet) grading 27.3% Zn; and 30 m (98.5 feet) grading 17.93% Zn with minor copper. Drilling is continuing through the first part of 2008, and additional targets include an IP anomaly, high-grade silver-lead mineralization in the vicinity of the historic Utah mine, and deep molybdenum mineralization associated with the Crypto intrusive. The drill program will be followed by preliminary metallurgical test work and an updated resource estimate (Chris Staargaard, personal communication, 2008).

Stockton

Kennecott Exploration's Stockton porphyry copper deposit, about 16 km (10 mi) southwest of Bingham, was acquired by Geoinformatics Exploration, Inc. Stockton hosts a previously estimated resource of approximately 172 million mt (190 million st) at 0.41% Cu and 0.14 ppm Au beginning at a depth of about 225 m (740 feet). The best previous hole ran 277.4 m (910 feet) averaging 0.39% copper and 0.13 ppm gold. Geoinformatics has continued drilling at Stockton (Geoinformatics Exploration, Inc., 2007). Stephanie Murillo is completing a M.S. thesis on the district under Dr. William Chavez at the New Mexico Institute of Mining and Technology.

Southwest Tintic

Quaterra Resources, Inc. acquired about 1300 ha (3200 acres) of patented and unpatented mining claims covering the Southwest Tintic porphyry copper system. The property hosts a known resource of approximately 360 mt (400 million st) of 0.33% Cu and 0.01% Mo. Quaterra plans drilling in 2008 (Quaterra Resources, Inc., 2007).

Iron Springs

Palladon Iron Corporation acquired the Iron Mountain property (former Comstock-Mountain Lion open-pit), which hosts an estimated resource of 16 million mt (18 million st) averaging 52% Fe. The ore occurs as massive replacement/skarn deposits adjacent to Miocene laccoliths. Palladon spent 2007 drilling a series of condemnation/water monitoring holes (558 m [1830 feet] total) at the future mill site and installing a power substation. The proposed plant is a 2-million-mt (2.2-million-st) per year mill/concentrator (Palladon Ventures Ltd., 2007).

Miscellaneous Base-Metal Developments

In other base metal developments in Utah: (1) Chief Consolidated Mining Company is applying for permits for renewed operations at the Burgin Pb-Zn mine in the East Tintic district, (2) RTM Exploration and Holdings LLC controls about 777 ha (1920 acres) of sediment-hosted Cu-Mo prospects in the Uinta Basin, (3) Great Western Minerals Group Ltd. acquired an extensive (17,094 ha [42,240 acre]) rare earth heavy mineral sand deposit in western Juab County, and (4) Unico, Inc. continued work on the Deer Trail Zn-Pb-Ag mine near Marysvale in central Utah.

The construction of a titanium sponge plant adjacent to U.S. Magnesium's magnesium facility on the west shore of Great Salt Lake will add incremental demand for magnesium and begin a new era in metal processing in the state.

Precious Metals

Near record prices for precious metals over the past year significantly increased the level of gold and silver exploration activity in Utah. These efforts are largely focused in the eastern Basin and Range Province of western Utah.

Silver Dome

The Silver Dome property in the southern Fish Springs district has never been drill tested. The 2023 ha (5000 acres) property was acquired by Cordex for Columbus Gold Corporation (Columbus Gold Corporation, 2007). Silver mineralization at Silver Dome is hosted in flat-lying Ordovician sandstones. Initial work has identified mineralization, typically assaying from 15 to 100 ppm silver, in a zone measuring 1000 by 100 m (3300 by 330 feet) along the edge of post-mineral cover. The target at Silver Dome is bulk-mineable silver mineralization amenable to open-pit development. Several lines of IP were completed this year and a National Instrument (NI) 43-101 report is being prepared. Permitting is in progress for a 27-hole drilling program to begin in May 2008 (Andy Wallace, written communication, 2008).

Keg

The Keg project is another silver property acquired by Cordex and Columbus Gold. This 405 ha (1000 acre) property covers an area of stockwork quartz veining in a window of quartzite surrounded by Tertiary volcanic rocks and alluvium. Mapping, sampling, and a ground magnetic survey have been completed and an excavator trenching program is planned for spring 2008 (Andy Wallace, written communication, 2008).

Gold Hill

Dumont Nickel, Inc. continued its exploration efforts in the Gold Hill mining district in southwestern Tooele County. The Rattler project, a sediment-hosted gold system on the northwestern portion of Dumont's property, was tested by five holes totaling 233 m (765 feet) in 2007. The best hole cut 16.8 m (55 feet) of calcareous siltstone averaging 0.23 ppm Au (Dumont Nickel, Inc., 2007).

Confusion Range

Maestro Ventures acquired the Kings Canyon sediment-hosted gold property in southwestern Millard County. The property was explored in the early 1990s, primarily by Crown Resources. The property contains several gold zones with the largest defined resource holding about 6.2 million mt (6.8 million st) averaging 1 ppm gold. Maestro completed 463 m (1518 feet) of confirmatory core drilling in a five hole program. The best hole (KCC07-02) cut an interval of 15.5 m (51 feet) averaging 1.02 ppm Au (Maestro Ventures Ltd., 2007).

Bingham District

Grand Central Silver Mines, Inc. drilled 13 reverse circulation holes totaling 5262 m (17,265 feet) on a 46 ha (114 acre) tract on the western fringe of the Bingham mining district in 2006-07. The best drill intersection was 7.6 m (25 feet) of 2.06 ppm Au. A NI 43-101 technical report is pending.

Drum Mountains

Copper King Mining Corporation initially acquired about 486 ha (1200 acres) of mostly patented mining claims in the Drum (Detroit) mining district; historically one of the largest gold producing districts in Utah. Copper King later acquired an additional 445 ha (1100 acres) of unpatented claims in the district through the merger with WUCC, giving Copper King a large land package including some previously defined small gold resources.

Miscellaneous Precious-Metal Developments

In other precious metal developments: (1) Newmont Mining Corp. staked about 145 claims in the Stateline Au-Ag district of Iron County, (2) Miranda Gold Corporation staked about 190 claims on the Lookout Pass sediment-hosted gold property in southeastern Tooele County, and (3) Astral Mining Corp. controls about 997 ha (2464 acres) in the Gold Springs district of Iron County.

Uranium

The dramatic rise in the price of uranium since 2001 has substantially impacted exploration and development activity in Utah. Historically, Utah has been the third largest uranium producing state. The majority of the uranium work in Utah has focused on the Colorado Plateau (Gloyn and others, 2005), where the Pandora mine, near La Sal, was the first mine to reopen. The following paragraphs report the major uranium events in Utah in 2007 with miscellaneous uranium activities summarized in table 2.

Table 2. 2007 Uranium projects in Utah organized by county and district in alphabetical order.

County	District	Property	Company	Progress
Beaver	Newton	Newton	Dumont Nickel, Inc.	12,000 acres acquired
Emery	Cedar Mountain	Cedar Mountain	Magnum Uranium Corp.	Resource: 1.5M st at 0.05% U ₃ O ₈
Emery	Delta	Hidden Splendor	Bluerock Resources Ltd.	Resource: 37,000 st at 0.25% U ₃ O ₈
Emery	San Rafael	BBP	Bluerock Resources Ltd.	5778 acres acquired
Emery	San Rafael	Big Muddy	Magnum Uranium Corp.	1160 acres acquired
Emery	San Rafael River	Green River South	Uranium Power	14,405 feet drilled in 21 holes, including 5 feet @ 1.22% U ₃ O ₈
Emery	San Rafael River	I-70	USA Uranium Corp.	720 acres acquired
Emery	San Rafael River	Sahara	Uranium One, Inc.	Resource: 109,000 st at 0.23% U ₃ O ₈
Emery	San Rafael River	San Rafael	Magnum Uranium Corp. - Uranium One, Inc.	15 drill holes, totaling 9,150 feet, including 6.5 feet at 0.9% U ₃ O ₈
Emery	San Rafael River	Sinbad	Target Exploration & Mining	15 hole, 3300-foot drilling program
Emery	San Rafael Swell	Family Butte	Utah Uranium Corp.	2075 acres acquired
Emery	San Rafael Swell	Four Corners	International Ranger Corp.	47,120 acres acquired
Garfield	Henry Mtn.	Frank M	Uranium One, Inc.	Resource: 1.5 M st at 0.12% U ₃ O ₈
Garfield	Henry Mtn.	Henry	Trigon Uranium Corp.	4 holes completed, 6080 feet
Garfield	Henry Mtn.	Henry South	Trigon Uranium Corp.	30,600 acres acquired
Garfield	Henry Mtn.	Little Egypt	Magnum Uranium Corp.	1180 acres acquired

County	District	Property	Company	Progress
Garfield	Henry Mtn.	Loa	USA Uranium Corp.	2360 acres acquired
Garfield	Henry Mtn.	Tony M	Denison Mines Corp.	Rehabilitation/permitting of a 5.3 million pound U ₃ O ₈ resource
Garfield	Orange Cliffs	Hot Rocks	International Ranger Corp.	5661 acres acquired
Garfield	Orange Cliffs	PSC	Bluerock Resources Ltd.	700 acres acquired, 1231 feet drilled
Grand	Beaver Mesa	Whirlwind	Energy Fuels, Inc.	Resource: 164,000 st at 0.20% U ₃ O ₈ and 0.66% V ₂ O ₅
Grand	Thompson	Thompson	Golden State Resources Ltd.	6680 acres acquired
Piute	Marysvale	Koorsharem	International Ranger Corp.	120 acres acquired
Piute	Marysvale	Marysvale	Trigon Uranium Corp.	6489 feet in 16 holes, including 5 feet of 0.39% U ₃ O ₈
Piute	Marysvale	Marysvale	Magnum Uranium Corp.	640 acres acquired
San Juan	La Sal	Browns Hole	USA Uranium Corp.	1260 acres acquired
San Juan	La Sal	Energy Queen (Hecla Shaft)	Energy Fuels, Inc.	Resource: 178,150 st at 0.22% U ₃ O ₈ and 0.86% V ₂ O ₅
San Juan	La Sal	La Sal	Vane Minerals LLC	80 acres acquired
San Juan	La Sal	La Sal West	USA Uranium Corp.	2200 acres acquired
San Juan	La Sal	La Sal West	Lifespan, Inc.	Old uranium mine
San Juan	La Sal	North Alice Extension	Vane Minerals LLC	17 holes, includes 6.5 feet at 0.22% U ₃ O ₈
San Juan	La Sal	Pandora	Denison Mines Corp.	Mining about 100 st per day; 1.3 million pound U ₃ O ₈ reserve
San Juan	La Sal	RAD	Mesa Uranium Corp.	Four ~1000-foot holes completed
San Juan	La Sal	Wray Mesa	Trigon Uranium Corp.	10,000 acres acquired
San Juan	La Sal	Wray Mesa	Homeland Uranium, Inc.	6000 acres acquired
San Juan	Lisbon Valley	Dar	Mesa Uranium Corp.	1000 acre property
San Juan	Lisbon Valley	Lisbon mine	Mesa Uranium Corp.	22 holes (~60,000 feet), including 3.5 feet at 0.28% U ₃ O ₈
San Juan	Lisbon Valley	Locuist	Anglo Canadian Uranium	780 acres acquired
San Juan	Lisbon Valley	North Alice	Mesa Uranium Corp.	Three holes completed
San Juan	Lisbon Valley	Velvet	Uranium One, Inc.	Resource: 306,164 st at 0.34% U ₃ O ₈
San Juan	White Canyon	Daneros	Golden State Resources Ltd.	210,000 st resource at 0.3% U ₃ O ₈ ; 8 holes including 8.5 feet @ 0.84%
San Juan	White Canyon	Geitus	Golden State Resources Ltd.	Resource: ~40,000 st at 0.3% U ₃ O ₈
San Juan	White Canyon	Happy Jack	Vane Minerals LLC	Old uranium mine
San Juan	White Canyon	Red Canyon	Trigon Uranium Corp.	5000 acres acquired
San Juan	White Canyon	Whale	Utah Uranium Corp.	660 acres acquired
Wayne	Henry Mtn.	Henry Mountain	Utah Uranium Corp.	2000 acres acquired
Wayne	Henry Mtn.	Pinto	Utah Uranium Corp.	6800 acres acquired

Denison Mines

Denison Mines Corp. owns the White Mesa uranium mill near Blanding, the Pandora mine, and the Henry Mountains mining complex. These properties were acquired from International Uranium Corporation in late 2006. In 2007, the 1800 mt (2000 st) per day, dual-circuit (uranium-vanadium) White Mesa mill continued processing alternate feed nuclear waste

materials, while ore from the Pandora mine was trucked to the mill and stockpiled. The company began a \$21 million upgrade to the mill, which is expected to produce more than 1.36 million kg (3 million pounds) of U_3O_8 and 2 million kg (4.5 million pounds) of V_2O_5 annually by 2010. The mill is expected to switch from alternate feed waste material to ore in early 2008. The mill is also accepting ore from other companies for toll milling.

In late 2006, Denison's Pandora mine, in the eastern La Sal district, resumed uranium production. In 2007, Pandora produced approximately 32,650 mt (36,000 st) of ore, which was shipped about 110 km (70 mi) south to the White Mesa mill. Reserves at the Pandora mine are estimated at 263,000 mt (290,000 st) at 0.22% U_3O_8 .

Denison Mines' Henry Mountains Complex (Tony M mine and Bullfrog properties) in the Shootaring Canyon district host the largest known uranium resource in Utah, estimated at about 2.9 million mt (3.2 million st) averaging 0.28% U_3O_8 and an existing stockpile of 200,000 mt (220,000 st) of 0.138% U_3O_8 . The mine is being rehabilitated while the final permits for the mining operation are pending from the U.S. Bureau of Land Management. Mining is scheduled to resume in 2008 and production is expected to ramp up to about 9070 mt (10,000 st) per month (Denison Mines Corp., 2007).

Energy Fuels, Inc.

Energy Fuels, Inc. is exploring and rehabilitating other historical uranium mines. The Whirlwind mine, on Beaver Mesa along the Utah-Colorado border about 45 km (28 mi) northeast of Moab, is scheduled to begin producing in 2008 (Energy Fuels, Inc., 2007). This is an interesting operation because, while much of the underground mining occurs in Utah, the portal and surface facilities are a mile to the east in Colorado. The Whirlwind resource is about 149,000 mt (164,000 st) of ore averaging 0.20% U_3O_8 and 0.66% V_2O_5 . Energy Fuels anticipates mining 180 mt (200 st) per day.

Energy Fuels also acquired the 284 ha (702 acre) Hecla Shaft property, near La Sal in 2007. The renamed Energy Queen mine has an estimated resource of 161,000 mt (178,000 st) of ore averaging 0.22% U_3O_8 and 0.86% V_2O_5 , and an existing 229-m (750-foot), lined shaft. Rehabilitation is underway for a 180-mt (200-st) per day operation starting in 2008.

Uranium One

Uranium One, Inc. acquired the uranium assets of the U.S. Energy Corp. in 2006 and Energy Metals in 2007. The properties include the (1) Velvet property (210,000 mt [231,000 st] averaging 0.43% U_3O_8) in the Lisbon Valley district, (2) Frank M resource (1.36 million mt [1.5 million st] averaging 0.12% U_3O_8) in the Shootaring Canyon district, (3) San Rafael property (587,000 mt [647,000 st]) averaging 0.16% U_3O_8) in the Green River area, and (4) Sahara mine (99,000 mt [109,000 st] averaging 0.23% U_3O_8) in the San Rafael River uranium district.

Uranium One also owns the Shootaring Canyon (Ticaboo) uranium mill in the Henry Mountains district. This 680 mt (750 st) per day mill is currently being re-permitted for operation (Uranium One Inc., 2007).

OUTLOOK

The overall value of mineral production in Utah is expected to be higher in 2008 because of anticipated higher base- and precious-metal production and higher average metal prices, increased coal production and prices, and a revived and growing uranium industry. Industrial-mineral production is expected to be flat or slightly lower due to the downturn in housing construction, which affects many industrial mineral operators and manufacturers. This downturn may also lower some industrial-mineral prices. The value of coal will increase as production and prices are expected to increase as new contracts at significantly higher prices replace existing contracts. One new coal mine that is under construction will add several million tons to Utah's annual coal production once the mine reaches capacity. The re-opening of Denison Mines' Pandora uranium mine and the switchover of Denison's White Mesa uranium mill from processing alternate feed waste material to uranium ore signals the rebirth of Utah's uranium industry. Several uranium mines and a second uranium mill are in the process of being permitted, rehabilitated, and returned to operation. The construction of a titanium sponge plant adjacent to U.S. Magnesium's magnesium facility on the west shore of Great Salt Lake will add incremental demand for magnesium and begin a new era in metal processing in the state. Magnesium is used in the processing of imported titanium-bearing minerals (titanium tetrachloride). Metal prices remained resilient in 2007 and several metals were at their peak as the year ended. From all indications, most metal prices will be higher in 2008.

NEW MINERALS INFORMATION

The following publications provide new information on the mineral resources of Utah. These and others publications are available through the Utah Department of Natural Resources Map and Bookstore <<http://mapstore.utah.gov/>>. Additional geographic information system (GIS) data on Utah is available for free download at <<http://geology.utah.gov/databases/index.htm>> and <<http://agrc.its.state.ut.us/>>.

Central Utah – Diverse geology of a dynamic landscape, UGA Publication 36, is a book/CD. The CD contains five papers on mineral resources, including articles on the Covenant oil field, Farnham Dome oil field, central Utah thrust belt exploration play, uranium production at Marysvale, and mining districts of the Marysvale volcanic field.

An annotated bibliography of Utah tar sands and related information was published by the Utah Geological survey as Open-file Report 503 (Gwynn and Hanson, 2007). Bryce Tripp (2007) authored a paper on the “Utah Industrial Rocks and Minerals – Geology, Mining, and Recent Developments”, which was published in the Colorado Geological Survey's Resource Series 46 (on CD).

RECLAMATION AND THE ENVIRONMENT

The U.S. Department of Energy and the State of Utah agreed in 2005 to move the 10.8 million mt (11.9 million st) of uranium mill tailings (Atlas mill) located along the Colorado River near Moab. The tailings are estimated to average about 100 parts per million (ppm) uranium and 400 ppm vanadium (Don Metzler, personal communication, 2007). The tailings

will be moved 48 km (30 mi) north to a site near Crescent Junction. Disposal cell construction at Crescent Junction is not expected to begin before 2009.

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