

Registration Form
Gold and Silver Deposits in Colorado – July 20-24, 2017
Berthoud Hall, Colorado School of Mines, Golden, Colorado

Registration & Icebreaker—Thu, July 20;
Field Trips—Fri & Mon, July 21 & 24; Talks—Sat & Sun, July 22-23

Please complete a separate registration form for each attendee. Mail your form(s) and a check for all fees (made out to FCSMGM) to:

FCSMGM c/o Bill Jones
5995 W. Hampden Avenue, Unit B-16
Denver, CO 80227

PLEASE NOTE: Completed forms and checks MUST be received no later than June 30, 2017. Sorry, we cannot accept credit card payments.

Name (first, MI, last): _____ Title/Company: _____

Mailing Address (Street): _____

(City): _____ (State): _____ (ZIP/Postal Code): _____

E-mail Address: _____

Home Phone: _____

Cell Phone: _____ (used for coordinating field trips)

REGISTRATION FEE (includes a one-year membership in Friends of the Colorado School of Mines Geology Museum—required for liability insurance coverage): \$100.00: _____

Full-Time Student (ID required) \$50.00: _____

SATURDAY EVENING BANQUET BUFFET & After-Dinner Talk by Ed Raines-- SILVER AS A PRECIOUS METAL FROM THE GREEKS TO TODAY (7:00 PM at Table Mountain Inn, Golden): \$40.00

Number of Banquet Meals: _____ TOTAL BANQUET COST @ \$40.00: _____

(Registered attendees may bring unregistered guests to the Banquet only.)

(ALL OTHER MEALS ARE "ON YOUR OWN" at nearby eateries. Meals during field trips will be arranged by field-trip leaders.)

GUIDED FIELD TRIP OPTIONS for Friday and Monday (Each trip is a full day. Detailed field trip information is available on the pages below, and at: www.facebook.com/LikeCSMGeoMuseum/)

- A. Boulder County Trip #1—Jamestown Area (Fri—incl. Emmet Fluorite Mine surface, Rip Van Dam Mine underground)
- B. Boulder County Trip #2—Caribou Area (Mon—incl. Cross Mines underground & Caribou, etc.)
- C. Georgetown/Empire (Fri—incl. Georgetown Loop Railroad, Silver Plume District, etc.)
- D. Leadville Area (Mon—incl. California Gulch, Breece Hill, National Mining Museum, etc.)
- E. Alma/Fairplay (Fri—incl. Sweet Home Mine, London Mine, placers, etc.)
- F. Cripple Creek/Victor (Mon—C C&V open pit mine bus tour & nearby historic mines)
- G. Central City/Blackhawk/Idaho Springs (Fri—incl. Chaffee Mine underground, Gregory Vein, Glory Hole, etc.)
- H. Aspen/Smuggler Mine (Mon—incl. Smuggler Mine underground, etc.)

JULY 21 FIELD TRIP (please list preferences by letter): 1st _____ 2nd _____ 3rd _____ \$40.00: _____

JULY 24 FIELD TRIP (please list preferences by letter): 1st _____ 2nd _____ 3rd _____ \$40.00: _____

Do you have access to a 4WD vehicle? _____ How many open seats for passengers? _____

OPTIONAL MEMBERSHIPS (in other co-sponsoring organizations):

Denver Region Exploration Geologists Society – through 2017 (DREGS; www.dregs.org) \$5.00: _____

Friends of Mineralogy/Colorado Chapter (<http://friendsofmineralogycolorado.org>) \$15.00: _____

TOTAL CHECK AMOUNT ENCLOSED: _____

(Add Symposium Registration Fee, plus Saturday Banquet, Field Trip Days, and Optional Memberships)

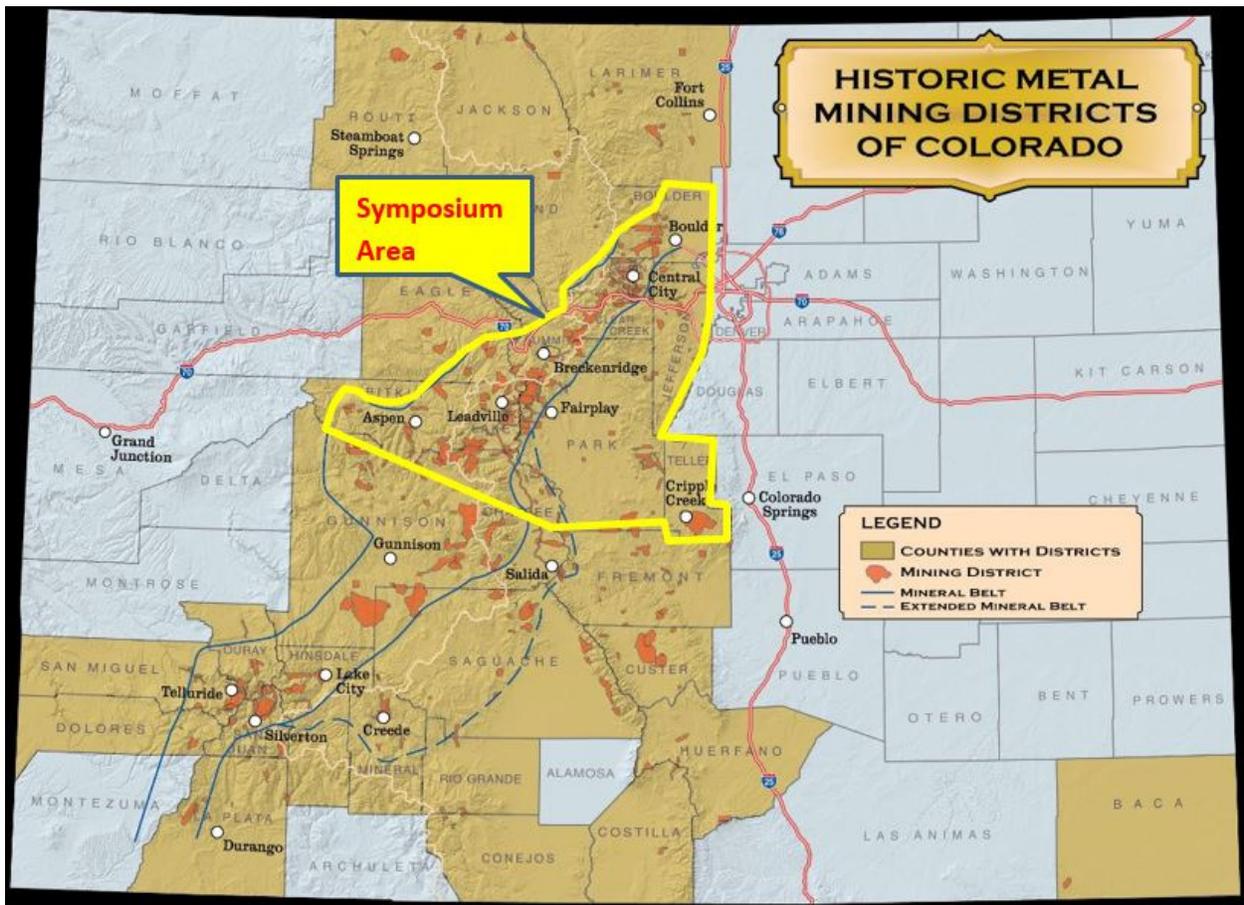
PLEASE REMEMBER: Conference registration is limited. Most field trips are also limited (some to no more than 20 attendees per trip) and will be filled in the order in which fully paid registrations are received. In order to receive your preferences on field trips, prompt registration is STRONGLY encouraged. Your registration form and a check for ALL fees MUST be received no later than **June 30 !**

For info and questions, please contact Mike Smith (303.530.2646; m_l_smith@earthlink.net).

General Symposium Information

The Friends of the Colorado School of Mines Geology Museum (FCSMGM), the Denver Region Exploration Geologists' Society (DREGS), the Colorado School of Mines Geology Museum, and the Friends of Mineralogy—Colorado Chapter (FoM/CC) invite you to a symposium on “Gold and Silver Deposits in Colorado,” July 20 – 24, 2017. The Symposium will be held on the Colorado School of Mines campus in Berthoud Hall, Golden, Colorado, and will include two full days of talks (July 22 & 23) and two days of field trips (July 21 & 24). Information on the field trips follows on the next pages.

The geographic focus for this Symposium includes the northern half of the Colorado Mineral Belt (Boulder County southwest through Leadville) plus the mining districts of Cripple Creek, Eagle, and Aspen.



(Map courtesy of the Colorado Geological Survey - <http://coloradogeologicalsurvey.org/mineral-resources/historic-mining-districts/> with modification by “Gold and Silver Deposits in Colorado” Symposium 2017.)

The Symposium's objectives include...

- **To focus on important gold and silver deposits in Colorado using a multi-disciplinary approach emphasizing geoscientific, economic, environmental, historical, and social perspectives. The primary geographic focus will be on the northern half of the Colorado Mineral Belt (CMB), from Boulder County southwest to Leadville and Aspen, including Cripple Creek.**
- **To bring together a diversified audience ranging from geoscience professionals, academics, mineral collectors and prospectors, historians, and laymen interested in precious metal and associated mineral occurrences, their exploration and development, and the impact of associated activities on Colorado.**
- **To inspire scientific curiosity, encourage appreciation of the Earth and responsibility for its mineral and historic mining treasures, and to promote the exchange of current scientific thought and technology as it applies to exploration and ore deposits.**

Oral and poster presentations are still being reviewed and finalized, but will include presentations chosen from the following topic areas:

- **Geology and Mineralogy**
- **Metallogeny**
- **Geochemistry**
- **Structure and Crystallography**
- **Recent research on ore deposits in Colorado**
- **Economics of gold and silver**
- **Mineral collecting**
- **Exploration: prospects and methodologies**
- **Mining and milling technologies**
- **Mining law and environmental regulations**
- **Mining histories of Colorado (e.g., Alma/South Park, Aspen, Boulder County, Breckenridge, Cripple Creek, Central City/Idaho Springs/Georgetown, Leadville, and Montezuma)**

Presentations will run approximately 30 minutes, including Q&A.

Field Trips—General Information

This general description applies to all trip options, each of which is subsequently described in further detail below.

Symposium field trips will cover a broad spectrum of symposium topics and reach out to a broad spectrum of symposium attendees, consistent with the stated symposium objectives. Efforts are being made to keep costs down. Accordingly transportation will be in personal vehicles, preferably 4- or all-wheel-drive, and carpooling and gas-sharing will be strongly encouraged. Unless otherwise stated, participants will need to provide their own lunches. Future field trip communications may, however, provide an option to pre-order a box lunch through either CSM's food catering service or a local Golden food establishment. The cost for each trip will be \$40.00, which will include the cost of guidebook (with ALL trips); entry fees where applicable; snacks and water; and other incidental expenses incurred by field trip-leaders in the course of organizing and running these trips. Field trips will initially be scheduled on either Friday or Monday but may, at the discretion of field trip leaders, be run on both days if there is sufficient demand, but don't count on it. Because field trip space is limited, registration will be on a first come, first serve basis and prompt registration is strongly recommended. Those interested in more than one trip are asked to rank their trips preference, e.g., with "1" being your first choice. The most important strategy for assuring the success of these trips is **SAFETY**. Participants are encouraged to be in good physical condition and prepared to look out for the safety of themselves and others, taking into account weather and field conditions. Field trips could involve a moderate amount of hiking on sometimes steep and/or wet ground. Ticks are known to be out and about, so take steps to cover up if you don't want to give them a ride. In some cases, participants may be encouraged to provide some sort of Personal Protective Equipment (PPE) such as hard hats, steel-toed boots, head lamps, etc. Those registering for trips that go underground will be required to attend a safety lecture, which will likely be conducted at the respective mine site by a certified trainer. All field trip participants will also be required to sign a waiver prior to the trip and possibly at specific trip locations such as mine sites.

Below are more detailed descriptions of each of the eight field trips being offered. Although these trips are in variable stages of organization, please base your field trip registration preferences based on these descriptions. Additional specific field trip information will be forthcoming from the respective field trip leaders following registration.

Individual Field Trip Descriptions

A. Boulder County Trip #1 – Jamestown (Friday)

Stop 1: Emmett Mine, Jamestown, Colorado

We will briefly examine this fluorite deposit one mile north of town. It lies in a near vertical vein 6-18 feet wide trending N65W and hosted in brecciated Silver Plume Granite. The vein is cut by a later granite porphyry dike. Outcrops of the fine grained purple fluorite are abundant.

Stop 2: Rip Van Dam Mine, Jamestown, Colorado

This mine is accessed 3 miles east of Jamestown. Underground gear is needed here for the 2nd level to review the small veins trending N60E dipping SE. Small veins of ferberite and fluorite may be seen along with a beryl-bearing pegmatite and secondary andersonite(?) on the principal host rock: Silver Plume Granite. These workings reveal structures beneath productive workings of the 1st level. A mined, serendipitously found, high grade gold-silver-telluride ore piece near the 1st level may be viewed with a reflected light microscope. For operational production details on these deposits participants may want to review: U.S. Professional Paper 223, Geology and Ore Deposits of the Front Range Colorado.

For additional information, please contact Jim Paschis (jimpaschis@yahoo.com).

B. Boulder County Trip #2 – Caribou (Monday)

This trip will center on the abandoned town of Caribou in the Grand Island Mining District located about four miles WNW of Nederland, CO. An underground trip to the Cross gold mine will be followed by a surface examination of the Caribou silver mine. A visit will be made to the Eldora Mining District. The return trip will be via the Sugarloaf cutoff road where a tungsten ore-bearing mine dump will be examined and, if time permits, the alkali feldspar syenite of Sugarloaf Mountain will be examined.

For additional information, please contact Steve Zahony (szahony@comcast.net).

C. Georgetown/Empire Area (Friday)

In this trip, auriferous pyritic veins surrounding a central monzonitic intrusive will be examined in the Empire district followed by a ride on the Georgetown Loop Railroad. Mine dumps will be examined in the Georgetown-Silver Plume District and the Silver Plume granite quarry will be visited.

For additional information, please contact Steve Zahony (szahony@comcast.net).

D. Leadville (Monday)

Production from gold placers in California Gulch began in 1860 followed by discovery in the late 1870's of complex zoned Zn-Pb-Cu-Ag-Au replacement bodies in Paleozoic limestone-dolostone. Production

continued until 1999. Site visits to the center of the district at Breece Hill out to the fringes on Fryer Hill will give participants the opportunity to collect samples from mine dumps. A visit to the Leadville National Mining Museum will allow viewing of core with assay data from near H.A.W. Tabor's Matchless mine on Fryer Hill.

For additional information, please contact Tommy Thompson (thompstommyt@aol.com).

E. Alma/ Fairplay Area (Friday)

The Alma District has a long and colorful mining history, and participants will see evidence by way of historic structures in the field and the mining towns of Alma and Fairplay. In keeping with the symposium's theme of Au and Ag deposits, the emphasis of the field trip will be on gold and silver mines in the northwest corner of South Park, but we will also emphasize the colorful history of this fascinating district.

There will be nine stops and a few short walking excursions. There will be a short geologic presentation at each stop with time for a bit of rock breaking at the Sweet Home and London mines and the Combination and Pfister/Sanborn placer mines.

The field trip will provide a general geologic overview of the gold and silver deposits of the northwest corner of South Park. The area is bounded on the west by the north-south trending Mosquito Range, which is part of the eastern limb of the Precambrian cored Sawatch anticline. Basement is overlain by Cambrian to Pennsylvanian sedimentary rocks which dip gently to the east. These are intruded by Laramide and middle Tertiary aged stock, dikes and sills. The area is traversed by the Colorado Mineral Belt and a variety of ore deposits are present, including Au and Ag veins hosted in crystalline basement and Paleozoic sediments, Laramide aged replacement Au – Ag deposits in Paleozoic carbonates, Mississippian/Permian/Laramide aged Ag-Pb-Zn-Cu 'Sherman Type' deposits, middle Tertiary intrusives with elevated Mo-W-F, disseminated gold in skarn, and finally, alluvial and colluvial placer gold deposits.

After a brief orientation stop on Hoosier Pass, we will visit the Sweet Home Mine in Buckskin Gulch. A new adit (the Detroit City Mine) is being collared above the Sweet Home Portal, which is plugged. This mine has produced the world's finest rhodochrosite specimens. Located near the historic town site of Buckskin Joe, this site will provide an opportunity for rock collecting on the mine dump and, time permitting, examining greisen veins (quartz-muscovite-fluorite-pyrite-huebnerite) characteristic of early, high temperature Sweet Home mineralization, a pebble dike, and a historic arrastra.

Next we will visit the famous London Mine. Recently operated, this mine produced over 700,000 ounces of gold from high grade quartz veins, breccia zones and replacement bodies. We will discuss the genesis of ore in the London District, and its relation to the Laramide London Fault. There will be an opportunity for rock collecting from mine dumps.

The colluvial placers on Pennsylvania Mountain will be our next field stop. The Penn Mountain placers are famous for their crystalline gold nuggets, which have been attributed to in situ nugget growth within the soil profile.

We will next travel to the Pfister/Sanborn Placer Mine on the north side of Fairplay. With luck this active placer mine will provide an opportunity to watch a wash plant in operation.

We will conclude the day with a visit to the South Park City outdoor museum in Fairplay. South Park City is a historically restored mining town from the 1800's featuring historic buildings and mining artifacts. It provides an unparalleled firsthand view of the Old West. Here we will also see evidence of the extensive past placer mining that caused Fairplay to be founded.

We are relying on volunteer drivers to provide transportation for this field trip. If you wish to be a driver please contact L. J. Karr or Dean Misantoni by email (ljkarr@comcast.net, dmsantoni@hotmail.com). The route will be on paved and well maintained dirt roads. **Participants are responsible for bringing their own bag lunches.** Water and snacks will be provided.

Participants are cautioned that the tour is at high altitude (> 9,000 feet) and that moderately strenuous hiking may be required to visit some of the sites. It is important that you are in good health and physical condition. Sturdy field boots are de rigueur and a hat and sunscreen are strongly recommended.

F. Cripple Creek/Victor (Monday)

Cripple Creek and Victor Gold Mining Co., a division of Newmont Corp., will provide a guided tour of the Cresson open pit that lasts approximately 2 ½ hours. After lunch, we will visit several sites that illustrate the host rocks and historically important mines in the district, including the Vindicator, Independence, Portland, Strong, and Ajax mines, all of which are currently inactive. The history and geology of the district will be discussed, and there are many opportunities for photography and for examining and collecting samples of Precambrian host rocks, including the Idaho Springs metamorphics, Boulder Creek foliated granodiorite, Cripple Creek quartz monzonite and, Pikes Peak Granite. We can also pick up samples of the Cripple Creek Breccia and other Eocene host rocks on the mine dumps. Trip leaders will also point out local museums and hiking trails that participants may wish to explore on their own.

Participants will meet at the Victor-Lowell Thomas Museum in Victor to depart at 10:00AM. Because of bus constraints on the Cresson mine tour, the trip is limited to 23 people. Lunch will be "al fresco" in Victor; participants can purchase a box lunch for \$10 (reserve your lunch by e-mailing steven.veatch@gmail.com or ccarnein@gmail.com).

For additional information, please contact Bob Carnein (ccarnein@gmail.com) or Steve Veatch (steven.veatch@gmail.com).

G. Central City /Black Hawk/ Idaho Springs (Friday)

The focus of this trip is the gold and silver deposits of the Central City - Blackhawk - Idaho Springs area, past and present. Activities currently under consideration include: underground and above-ground mine visits; water treatment plant and mine mill site tours; drill core examination; gold panning demonstration; and sample collecting. Specific stops currently being considered include the Chaffee Mine, the Gregory discovery vein, the Patch / "Glory Hole" or Burroughs Shaft areas, the Bates and Quartz Hill overlooks, the Argo Mill and the Argo Water Treatment Plant. The currently envisioned trip route will be counter-clockwise, beginning in Golden, proceeding up Clear Creek Canyon and then up to Blackhawk, through Central City, down to Idaho Springs and finally back to Golden. Transportation will be in personal 4- or all-wheel vehicles and carpooling will be encouraged. Bring good hiking boots, weather-appropriate clothing, sunscreen, headlamp or flashlight, and hard hat if you have one. Plan on bringing your own lunch unless otherwise notified.

For additional information, please contact Larry James (jamesgeoa@cs.com) or Jim Piper (geopros@clanmurray.org).

H. Aspen (Monday)

A field trip to the Aspen area of central Colorado will examine aspects of the silver-rich, carbonate-hosted manto deposits from underground and surface exposures within the productive part of the mining district. The visit will commence at the Smuggler mine where an overview of the geology, discovery and mining history, mineralogy, and production of the Aspen district will be presented. We will then examine via underground drifts and stopes of the Smuggler mine the diverse styles of brecciated host rocks developed within and atop the Leadville Limestone and their role in hosting the manto mineralization. The underground visit will also provide an opportunity to observe the character of the mantos, plus the alteration features developed within limestone, breccia bodies, and a Laramide-aged sill situated proximal to the mineralization.

The trip will then drive part-way up Aspen Mountain to the Spar Gulch area where the geology and mineralization features important to the discovery and early high-grade mining of the district will be visited - including the original discovery adit and mine dumps of the Spar, Aspen, Emma, and Durrant mines. A traverse will commence along a road cut at Spar Ridge to examine the barite-rich manto mineralization within the Contact breccia virtually at the Spar adit discovery location, then into Vallejo Gulch for a discussion of the historic apex law suit between rival claim owners that resulted in the driving of the Court Drift. At the portal of the Compromise tunnel, a presentation will be made of the mineralization features of this area including the important control by faults and their intersections with breccia bodies and limestone that localized the large manto deposits along the east limb of a syncline. We will continue by walking across the Aspen and Emma mine dumps to a ridge west and observe the alteration features of a Laramide-aged sill altered to a sericitic-pyrite assemblage. This will be followed by an examination of jasperoid masses within the Leadville Limestone in Pioneer Gulch and their

relationship to mineralization. Note the term jasperoid was first introduced by Spurr (1898) in his USGS Monograph 31 on the Aspen mining district for occurrences from here south to the Tourtellotte Park area.

In an effort to keep the field trip cost low, there will not be hotel or field trip transportation provided. Lunches will not be included so each participant should plan accordingly, but water will be available during the field trip. To allow participants to travel to Aspen, we will meet at 10am at the Smuggler mine situated in the northeast area of Aspen at the base of Smuggler Mountain. From there the trip will drive several miles up Aspen Mountain via the Summer Road, a single dirt road that has several steep pitches. Participants will be encouraged to car pool from the Smuggler mine to reduce the amount of vehicles because of limited parking on Aspen Mountain. For the underground mine visit, each person is required to wear a hard hat, long pants, and sturdy boots. A mine lamp and belt will be provided; some hard hats will be available.

For additional information, please contact Ralph Stegan (rstegen@fmi.com).