



# GEOLOGICAL SOCIETY OF NEVADA NEWSLETTER

Geological Society of Nevada, 2175 Raggio Parkway, Room 107, Reno, NV 89512  
(775) 323-3500 - Hours Tuesday -- Friday, 8 a.m. to 3 p.m. Monday by appointment.

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## CALENDAR OF GSN EVENTS

- Dec. 14, 2016 WEDNESDAY!** **GSN CHRISTMAS MEETING, SILENT AUCTION & RAFFLE!!**  
The GSN's annual Christmas meeting and GSN Foundation Fundraiser will be held in the Rose Ballroom at the Nugget Casino Resort, Sparks, Nevada.  
**Speaker: Dr. Catherine Hickson, Consultant. Title: "Remember when? Mount St Helens and the birth of modern volcanology".**  
**Drinks Sponsored by: PERSHING GOLD CORPORATION.** Cost for Dinner—\$40.00. GSN Students are free. Please make reservations for dinner with Laura Ruud, by emailing [gsn@gsnv.org](mailto:gsn@gsnv.org). 775-323-3500. Details on page 3.
- Dec. 15, 2016 THURSDAY!** **WINNEMUCCA CHAPTER HOLIDAY MEETING & SILENT AUCTION!**  
The meeting & Silent Auction will be held at the Martin Hotel, 94 W. Railroad St., Winnemucca, NV. Auction begins at 6 p.m. along with refreshments. Heavy appetizers at 6:30 p.m. and talk at 7:00 pm. **Speaker: William Chavez, Jr., New Mexico School of Mines. Title: "Mineral Industry Downturn? What "Downturn"?".** **Food & Drinks Sponsored by: ENVIROTECH DRILLING.** For more info please contact James Carver @ [icarver@silverstandard.com](mailto:icarver@silverstandard.com). Details and abstract on page 6.
- Dec. 15, 2016 THURSDAY!** **SO. NEVADA CHAPTER HOLIDAY MEETING**  
The monthly meeting will be held at the Las Vegas Natural History Museum at 900 N. Las Vegas Blvd. Pizza/drinks at 5:30 pm, Talk at 6:30 pm. **Speaker: Dr. Simon Jowitt, UNLV. Title: ""Large Igneous Provinces: relationships with the generation of mineral, hydrocarbon, and water resources and their use in mineral exploration".** Contact Paul Dockweiler for more information: [paul.dockweiler@cardno.com](mailto:paul.dockweiler@cardno.com). Details on page 7.
- Dec. 16, 2016 FRIDAY!** **ELKO CHAPTER HOLIDAY PARTY & SILENT AUCTION!**  
The Elko Holiday Party & Silent Auction will be held at the Western Folklife Center, 501 Railroad St., Elko, NV. Auction begins at 6 p.m. along with refreshments. Dinner served at 7:00 pm. **Evening festivities to be announced! Dinner & Drinks Sponsored by: BOART LONGYEAR and LEGARZA EXPLORATION.** For more info please contact Mark Travis at: [mark.william.travis@gmail.com](mailto:mark.william.travis@gmail.com). Details on page 8.



**G.S.N. DECEMBER CHRISTMAS MEETING SPONSOR!**

pershing gold

**FROM THE PRESIDENT**  
**Alan R. Coyner, GSN President 2016-2017**  
**DECEMBER 2016**



Greetings to all our GSN members wherever you may be! December is upon us and with it comes the holidays and the holiday parties. Please take time this month to attend one of the celebrations offered by our professional organizations (**GSN, SME, AIPG, NPGS, AEG**, and others). Most of the organizations have some sort of **raffle** at their holiday meeting as a **fundraiser**, so help out by donating to the raffles and bidding on the items. It is a lot of fun and you just might end up with that special mineral specimen you always wanted! December is also a month for travel and many of us will be headed out to spend time with family and friends. Please be cautious on the roadways and allow extra time to get to your destination.

Returning to the theme of **education**, I wanted to share with you some positive news about the **Miner Academy** at **Bishop Manogue High School**. The mission of the Academy is to prepare students for careers in the **Earth Science, Earth-based Engineering**, and **Technology** fields. The students take courses in Geology, Introduction to Engineering, and Computer Aided Design (CAD). The growth in the first two years of the program has been very impressive with 105 students now enrolled in the Academy. The Academy has a working relationship with the **Mackay School of Earth Sciences and Engineering** and recently the Geology course was approved for college credit, which is quite an accomplishment. Field trips are part of the curriculum and the students recently visited **Newmont's Twin Creeks mine**. Even more impressive is that nearly 30% of the students are young women. This is a program that is making a difference and will produce well-educated earth science professionals in the years to come. The **GSN Foundation** has recognized the potential of the Miner Academy and is helping with financial support. If you want to become involved with the Academy please contact Program Coordinator Danielle Lacombe at: [Danielle.Lacombe@bishopmanogue.org](mailto:Danielle.Lacombe@bishopmanogue.org) or call her at 775/336-6073.

I hope to see many of you at the **Reno GSN Christmas Party** on Wednesday, December 14 at the Nugget in Sparks. This holiday gathering has grown in recent years and now regularly exceeds 300 partygoers. Our speaker for the evening is **Catherine Hickson**. She has the distinction of witnessing (and surviving) the eruption of Mount St. Helens! This is a talk you will not want to miss! The **GSN Foundation** will again be sponsoring a raffle, silent auction and live gold auction to raise funds for educational projects. This is the Foundation's major fundraiser and is always a fun time! See the directions in this newsletter as to how you can donate to the raffle and help us to set a new record for total funds raised!

This is the time of year when we ask you to renew your **GSN Membership** for 2017. I believe we continue to offer a great value for your annual dues of \$50.00. Please go to the GSN website and renew your membership online or download the membership form. And why not invite a friend to attend one of our meetings and ask them to join our great organization?

You have heard repeatedly from me about the importance of **involvement**. You can get involved! Donate to the **GSN Foundation raffle**. Join the **Bishop Manogue Miner Academy Advisory Committee**. Our organization continues to benefit from the involvement of so many of our dedicated members. It is this involvement that preserves and enhances our society.

Lastly, this is the time of year to count your blessings. You could spend most of your time worrying about things that you have little control over or are really inconsequential. Be thankful with what you have! Cherish the really important things in life, like **freedom, family, friends**, and **good health**. I wish you a very blessed holiday season and a great 2017!

**The G.S.N. wishes to thank **Envirotech Drilling** for sponsoring  
the NOVEMBER MEETING SOCIAL HOUR in RENO!!**

# **GSN Christmas Meeting **DECEMBER 14, 2016!****

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**SPEAKER: DR. CATHERINE HICKSON**

**TOPIC: EYEWITNESS TO THE MOUNT ST. HELENS ERUPTION!**

**Social Hour begins @ 6:00 pm; Dinner @ 7:00 pm;**

**Live Gold Auction @ 7:45 pm; Talk begins @ 8:00 pm**

**Location: RENO ELKS LODGE, 597 KUMLE LANE (across from the Convention Center)**

**DINNER COST—\$40.00 per person.**

**(You will be invoiced if you do not cancel your reservation BY DEC. 9TH!)**

For dinner reservations, please e-mail [gsn@gsnv.org](mailto:gsn@gsnv.org) or call 775-323-3500

**Reservations due by 5:00 p.m. on FRIDAY, DECEMBER 9, 2016**



Remember when? Mount St Helens and the birth of modern volcanology.

By Dr. Catherine Hickson

Dr. Catherine Hickson's life began in Alberta – a far cry from the towering peaks, scorching playas and the occasional exploding volcano that make up her life now. If you asked her, she would be the first to admit that how her life has evolved was not at all what she envisioned for herself. In fact she didn't really "follow her dreams", they followed her! A curious mind and an interest in the natural world provided the twists and turns that have evolved into a career as a volcanologist; but seminal to this career decision was the eruption of Mount St. Helens. An eyewitness to the May 18 1980 eruption, this near death experience of the almost instantaneous destruction of the volcano focused her rapt attention on understanding the incredible destructive force behind the eruption. But not just her, the entire volcanological community of the United States and indeed the world turned its attention to Mount St. Helens. Their goal was trying to understand just what had happened during those critical few moments of the eruption. What was the trigger? Why such widespread destruction?

Come join Dr. Hickson to a ring side seat as you remember when Mount St. Helens unleashed destruction over the Pacific Northwest.

# FACES OF GSN

## Erin L. Hart, Geologist

I grew up along the western shore of Lake Michigan, halfway between Milwaukee and Chicago. For all intents and purposes the term “Rust Belt” aptly describes my home town. During the summer months the oppressive heat and humidity of the Midwest would become unbearable, and my family would escape with a vacation. These trips tended to include the family of four driving across the US in a 1991 Honda Civic packed full of camping gear and good spirits. We explored our nation’s amazing park system, visited almost every roadside “wonder” and studied the history of our country. These trips inspired me to travel and explore the world. At the age of 16 I had visited 45 out of 50 states, and my eyes were set on more exotic places. By the time my high school graduation rolled around, I had grand visions of being a globetrotting journalist.

I enrolled in the University of Wisconsin-Madison with the intent of receiving a degree that would allow me to travel while paying the bills. Fortunately, the University is a liberal arts college and expects students to take a wide breadth of classes. This nudged me into an introductory geology class my first year; which led me to a summer paleontology dig. All of this was followed by mapping pegmatites during sleeting rain, camping over spring break in the Appalachian Mountains, and exploring the Black Hills. Before I knew it, geology had snuck up behind me, hit me squarely on the head and claimed me for itself. In 2007 I graduated with a degree in geology; all that stood between me and the real world was field camp in Park City, UT.

Field camp was everything I hoped it would be. I found such joy traversing the Wasatch and Uinta ranges. The class and scenery were strangely calming. My anxiety about finding a job dissipated. I was on a sort of cruise control until I met three professional geologists.

These economic geologists went in the field with us, observed us. I enjoyed spending time with them and found their work interesting. One thing led to another, and I had lined up an entry level job with Newmont Mining Corp. in wonderful Winnemucca, NV.

August 2007, I dutifully packed my belongings and drove across the country to northern Nevada. This is the moment my life changed. I arrived. Suddenly I was submerged in the mining industry. I use submerged because I felt I was barely able to keep my head above water. My first job was fast paced, physically intense and mentally draining; I worked as an underground ore control geologist in a narrow vein gold and silver mine. The first six months of the job were a difficult adjustment. During my first year I referred to myself as a “baby geologist”, because there was so much to learn. Looking back now I mostly remember fun and excitement. I had amazing support from the team of great geologists I worked with. They pushed me to keep going.

Those first peers and supervisors are now close friends and mentors. I do not think I would have made it without their support, and there is no way to adequately thank them. (Continued on page 5)



Mojave Trip: Volunteering my time with three great professionals. We were teaching introductory fields methods to first time geology students.

From Left to Right: Erin Hart, Kurt Burmeister, Allie Macho, Allie Severson

(Erin Hart, cont. from page 4)

That was almost ten years ago. Since then I have had many amazing opportunities within Newmont. After my stint working underground ore control I evaluated and started new potential underground projects, assessed potential acquisitions, managed surface exploration programs, and kept learning. Even though my career has not taken me around the world (yet), it has provided me with the opportunity to travel in my free time.

I recently came back from a trip to Scotland. One day I forced my travel companion (and husband) to participate in a geologic pilgrimage. We spent the morning strolling up Arthur's Seat and soaked in the exquisite views of Edinburgh. After a delicious lunch we ventured to Greyfriars Kirk to visit James Hutton's grave. I shed a few unexpected tears and remembered why I love being a geologist.

I explore the world around me with cutting edge technology. I see pieces of the world that have never been seen before. Then I interpret what it means; I predict where the next deposit is or where the fault projects. I cannot think of any other job where I would be able to take what I dream up and see if it is reality. To me, being an economic geologist is the perfect mix of science and art. I look forward to many more years in the industry, because I know I will always have the opportunity to learn and grow.

Sometimes I dream of the trees and lakes of my childhood; then I channel Wallace Stegner, "You have to get over the color green; you have to quit associating beauty with gardens and lawns; you have to get used to an inhuman scale; you have to understand geological time."



Whitney Summit: We are just below the summit of Mt. Whitney and decided to take a quick break to snap a few photos.

From Left to Right: Me and my husband/travel companion Andy Hart.

(Editors Note: Erin (Gray) Hart served as the President of the GSN Winnemucca Chapter in 2011-2012 and as the Winnemucca Membership Chair in 2015-2016. Thanks for your volunteer service to the GSN Erin!)

Bring your wallets, purses, pocketbooks, checkbooks, credit cards and cash to the GSN Christmas meeting on December 14th! The gold splatter pictured below is just one of the fantastic items we have this year to bid on. **Scott Werschky with Miners Lunchbox** has promised a spectacular mineral specimen too!



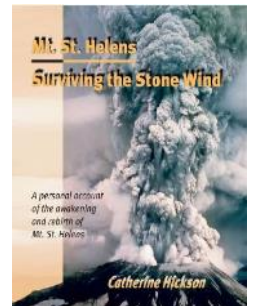
Gold Splatter donated by:



**DR. HICKSON'S BOOK WILL BE AVAILABLE FOR SALE AT THE CHRISTMAS MEETING DECEMBER 14TH AT THE NUGGET!**

Speaker Catherine Hickson's book, "Mt. St. Helens: Surviving the Stone Wind" will be for sale at the door of the GSN Christmas meeting on December 14th.

**Price is \$15.00 each  
Cash or Checks only!!**





**GSN WINNEMUCCA CHAPTER**  
**HOLIDAY PARTY & SILENT AUCTION**



**THURSDAY, DECEMBER 15, 2016**

**(Note Thursday not Wednesday this month!)**

**Location: THE MARTIN HOTEL**

94 W. Railroad Street, Winnemucca, Nevada

**Time: 6:00 p.m.—Appetizers/Drinks/Silent Auction bidding**

**7:00 p.m.—Talk begins**

**GUEST SPEAKER: WILLIAM X. CHAVEZ, JR., New Mexico School of Mines**

**TITLE: Mineral Industry Downturn? What “Downturn”?**

**Food and Drinks Sponsored by:**

**Envirotech Drilling**

**Mineral Industry Downturn? What “Downturn”?**

Abstract:

The economics of the minerals industries do not respond necessarily to supply-and-demand, with significant deviations from this mantra indicated by new or expanding mining operations worldwide. Many of the deviations may be explained by company or country evaluations of commodity futures that suggest metals prices will see a substantial improvement within a timeframe reflected by the turnkey of these new or expanded mines.

Examples of forward-thinking – or forward-hoping – mine developments, especially in Latin America, also suggest that international and domestic-owned exploration and mining companies anticipate metals markets to improve within the next two- to three years justifying current and in some cases enormous financial investment and corresponding risk. Although many formerly active exploration prospects have been placed on the back-burner, and numerous mines have experienced curtailments of production or closure, large base metal mines in Latin America taking advantage of the economies-of-scale or co-product value are undergoing expansion or development. Notably, even mature mines in which near-surface ores have historically been mined may consider the expensive and long timeline associated with changing to underground production with likely significant lowering of metal production corresponding to lower ore grades and tonnage (e.g., Chuquicamata). The advantages of using existing infrastructure to extend mine life or to open new ore deposits that otherwise would be economically marginal (e.g., Bajo La Alumbrera – Agua Rica) have presented opportunities to continue metals production even in regions having geographically-challenging logistics (e.g., Colquijirca – Brocal).

Continued brownfields exploration in mature base metal districts, as it has adjacent to precious metal mines in Nevada, will likely continue to render new discoveries and enhanced resource potential in response to current global demand (e.g., China will require about 12X the annual copper production from the La Escondida Cu-Mo porphyry system in 2016), with large-scale mines that can take advantage of the economies-of-scale not only surviving but seeking to enhance their reserve base and metals production capacity.



# GSN SO. NEVADA CHAPTER HOLIDAY MEETING



**THURSDAY, DECEMBER 15, 2016**

**Location: Las Vegas Natural History Museum  
900 Las Vegas Blvd. North**

**Time: Food & Drinks @ 5:30 p.m., Talk begins @ 6:30 p.m.**

**SPEAKER: DR. SIMON JOWITT, UNLV, Asst. Professor in Economic Geology**

**TITLE: "Large Igneous Provinces: relationships with the generation of mineral, hydrocarbon, and water resources and their use in mineral exploration"**

**Dinner and Drinks Sponsored by: (Contact Paul Dockweiler if you'd like to be the sponsor!)**

**ABSTRACT:**

Large Igneous Provinces (LIPs) represent large volume (>0.1 Mkm<sup>3</sup>; frequently above >1 Mkm<sup>3</sup>), mainly mafic (-ultramafic) magmatic events of intraplate affinity that occur in both continental and oceanic settings, and are typically of short duration (<5 m.y.) or consist of multiple short pulses over a maximum of a few 10s of m.y. They comprise volcanic packages (flood basalts), and a plumbing system of dykes, sills and layered intrusions, and can be associated with silicic magmatism, carbonatites and kimberlites. LIP events are linked with continental breakup, global climate change including extinction events, and represent significant reservoirs of energy and metals that can either drive or contribute to a variety of metallogenic and other resource systems. The relationships between LIPs and differing metallogenic systems can be condensed into five distinct although partially overlapping classifications:

- (1) LIP magmas that directly generate mineral deposits (e.g., orthomagmatic Ni-Cu-PGE sulphides, or Nb-Ta-REE and diamonds hosted by often LIP-related carbonatites and kimberlites, respectively)
- (2) LIP magmas that provide energy, fluids, and/or metals for ore types such as hydrothermal volcanogenic massive sulfide (VMS) and iron oxide-copper-gold (IOCG) deposits (the latter also including the silicic components of LIPs or SLIPs) and as a heat source that drove hydrocarbon source rocks to maturation or over-maturation.
- (3) LIP rocks (particularly sills and dykes) as barriers to fluid flow and/or as reaction zones that control mineralizing events (e.g. during the formation of some Au deposits), acted as structural traps within hydrocarbon systems, or formed impermeable barriers that controlled water flow and hence aquifer formation
- (4) weathering of LIP rocks to form Ni-Co laterites and Al bauxites from exposed LIP mafic-ultramafic rocks in tropical climates and residual Nb, Ta, and REE laterites from LIP-associated carbonatites. Weathering of LIP rocks can also lead to surficial interactions that genetically link oceanic plateau LIP formation with anoxic events and the formation of important organic-rich black shale hydrocarbon source rocks;
- (5) indirect links between LIPs and ore deposits, where LIP events linked to attempted or successful continental breakup generate a 'barcode' record that can be used to correlate and reconstruct Precambrian supercontinents, enabling the tracing of metallogenic belts between presently separated but formerly contiguous crustal blocks, and links between major continental breakup (linked to LIPs) and distal compression and transpression in the plate tectonic circuit, leading to the formation of orogeny-related deposits, such as orogenic Au mineralization.

This talk will provide an overview of LIP magmatism and the genetic relationships between these voluminous magmatic events and the generation of mineral, hydrocarbon and water resources.

*Thank you to our generous Chapter meeting sponsors in November*





**GSN ELKO CHAPTER HOLIDAY PARTY**  
**& SILENT AUCTION FUNDRAISER**

**FRIDAY, DECEMBER 16, 2016**

**(NOTE CHANGE FROM THE NORMAL THURSDAY!)**

**Location: The WESTERN FOLKLIFE CENTER**  
 501 Railroad Street, Elko, Nevada

**Time: Refreshments & Silent Auction @ 6:00 p.m., Dinner @ 7:00 p.m.**

**Silent Auction & Raffle to benefit the Elko Scholarship Fund**

**Food and Drinks Sponsored by: BOART LONGYEAR & LEGARZA**



**AIPG CHRISTMAS EXPLORATION ROUNDUP**

**Tuesday, December 13, 2016**

Ramada Hotel (6<sup>th</sup> & Wells)  
 6:00 Open Bar, 7:00 Dinner, 8:00 Program

**Companies:**

Waterton, Newmont Mining, Barrick Gold, Gold Resources, Klondex Gold & Silver, Rye Patch,  
 Kinross, Bronco Creek

**Meeting Sponsor: Boart Longyear**



**\$50 AIPG/GSN Members; \$60 Others** (cash, check)  
*Mackay Students: Free*

Reservations: Kel Buchanan ([summitcrk@aol.com](mailto:summitcrk@aol.com); 775-786-4515, fax 786-4324)

**by December 9, 2016 @ 5:00 p.m.**

*Raffle for Mineral Specimens from Mark Stock to Benefit AIPG UNR Club Field Trips*





## **NEWS FROM THE FOUNDATION**

**By Cami Prens, GSN Foundation Chair**

Are you ready for the party season? Ready or not, it's upon us starting very soon. We're gearing up for the annual GSN Christmas meeting/party with the popular raffle, silent auction and live auction. We have some fabulous prizes and items for auction including a gold splatter generously donated by Newmont. We're still taking donations if you haven't had a chance to do that yet. We'll be pre-selling raffle tickets, as we did last year, but you can always purchase more there. Remember to bring your return address stickers or address stamp to ease the task of putting your name on all your tickets. Look for more announcements before the meeting for news of marvelous prizes you can plan to win!

Our UNR Scholarship recipient this year is Brandon Rasmussen. He is a Senior majoring in Geology and has a GPA of 3.958. Look for Brandon at our monthly meetings and congratulate him. The GSN Endowed Scholarship was established in 1990 and this scholarship is awarded to full-time undergraduates pursuing a degree in geological sciences at the Mackay School. Recipients will have a 3.0 overall GPA and a 3.4 GPA in geological sciences course work. Preference is given to students with financial need.

Looking forward to seeing many of you on Dec. 14!

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### **PLEASE HAVE DONATIONS IN BY MONDAY, DECEMBER 12TH!**

If you have a donation, please contact D.D. LaPointe (cell: 775-240-4916 or email: [dlapoint@unr.edu](mailto:dlapoint@unr.edu)). We need to have all items in hand by Monday, December 12, 2016.

You can drop off donations with Cami Prens at Mine Development Associates, 210 So. Rock Blvd., Reno. MDA office phone: 775-856-5700. You can drop off donations with me at the GSN office too. Thank you for your support!

Donors will have their names acknowledged on signs at the event as well as having their names listed in the January newsletter. The GSN Foundation is a 501(c)(3) public charity.



# *Thank you to our generous donors in November!!*

## **G.S.N. FOUNDATION**

### **PLATINUM DONORS +\$1000**

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## **G.S.N. Student Dinner Fund**

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## **G.S.N. Student Field Trip Fund**

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**William Wulftange**

**Pamela Zohar**

# PLEASE RENEW YOUR 2017 DUES to stay in good-standing

(Deadline to be in the Directory and stay on the email list is December 31st)

**RENEW NOW ONLINE AT: <http://gsnv.org/membership/join-gsn.php>**

Thank you to the 586 members who have already renewed! There are 834 members who haven't yet!

## GEOLOGICAL SOCIETY OF NEVADA

## 2017

2175 Raggio Parkway, Room 107, Reno, NV 89512 USA

Phone (775) 323-3500 • Fax (775) 323-3599 • [gsn@gsnv.org](mailto:gsn@gsnv.org) • [www.gsnv.org](http://www.gsnv.org)

Offices are located at NBMG's Great Basin Science Sample & Records Library at The Desert Research Institute

Walk-in Office hours: Tuesday through Friday, 8:00 AM - 3:00 PM. Mondays - Call or email for appointment.

The Geological Society of Nevada (GSN) is a non-profit, educational organization whose principal objective is to promote the advancement of geological sciences, especially as they relate to Nevada. GSN supports the dissemination of information through meetings, field trips, publications and academic endeavors. Membership is open to geologists, geophysicists, geochemists, engineers, educators, students, prospectors or anyone else with an interest in the geological sciences and/or the goals of the GSN. The organization is based in Reno with additional Chapters in Elko, Las Vegas and Winnemucca.

The GSN Fiscal Year begins June 1st. **Annual dues are \$50.00, Students \$25.00 or Lifetime Membership \$1,250.00.** Dues are due prior to December 31st each year. The GSN conducts a Field Trip in the Fall and one in the Spring of each year. Monthly meetings are held September through May in Reno, Elko, Winnemucca, and Las Vegas. If you would like to receive email announcements from one of the G.S.N. Chapters (Elko, Winnemucca or Southern Nevada) please check a box below.

Please help support the GSN Foundation, the Student Dinner Fund, or Student Field Trip Fund when renewing. Foundation dollars are used for the Kindergarten through 12th grade Field Trip Earth Science Grant Program, Nevada Mapping Grants, Field Camp Grants, and scholarships at the University of Nevada, Reno, Great Basin College and University of Nevada, Las Vegas.

### MEMBERSHIP APPLICATION

Renewal  New

Date: \_\_\_\_\_

Name: \_\_\_\_\_ Position/Title: \_\_\_\_\_

**CHECK HERE if everything is the same as before, except as indicated below.**

Consultant  Consulting Geologist Company Name: \_\_\_\_\_

Current Full-Time Earth Science Student University: \_\_\_\_\_ Alma Mater: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State/Province: \_\_\_\_\_ Zip Code: \_\_\_\_\_

E-Mail: \_\_\_\_\_ Country: \_\_\_\_\_

**Email address is required for Emailed Newsletter**

Office/Work #: \_\_\_\_\_ Website: \_\_\_\_\_

Fax #: \_\_\_\_\_

Cell Phone #: \_\_\_\_\_ Home Phone # (optional): \_\_\_\_\_

(Your home phone number will not be listed in the Directory)

- I would like to have an asterisk by my name in the directory indicating I am available for consulting.  
 I have met the licensing requirements and want "QP" (Qualified Person) by my name in the directory.

I authorize GSN to send to me, via email: GSN event announcements, publications updates, employment opportunities, etc.

Yes  No

Optional Chapter Affiliation (to receive Chapter announcements directly and Chapter voting rights):

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**2017**

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# Activity Update

Mike Brady, OCTOBER 2016

[www.activityupdate.com](http://www.activityupdate.com)

## NEVADA

Caeneus Minerals Ltd. announced that it acquired an option to earn a 100% interest in the New King Property (Li) from Nevada Clays Ltd. for \$95,000 cash and 140,000,000 shares over 4 years. *Press Release:* October 17

Novo Resources Corp. announced that recent drill results at the Tuscarora Project include 154.0-155.5 meters @ 21.5 gpt Au (16TSRC-06) and 80.8-115.9 meters @ 1.72 gpt Au (16TSRC-10). *Press Release:* October 12

TriMetals Mining Inc. announced that recent drill results at the Gold Springs/Thor Project include 179.8-187.5 meters @ 44.77 gpt Au, 58.3 gpt Ag (T16-01); 12.2-18.3 meters @ 4.46 gpt Au, 45.7 gpt Ag (T16-02); 13.7-21.3 meters @ 2.76 gpt Au, 50.8 gpt Ag (T16-03) and 33.5-42.7 meters @ 0.41 gpt Au, 16.6 gpt Ag (T16-09). (resource @ Gold Springs = 19,003,000 tonnes @ 0.57 gpt Au, 11.4 gpt Ag measured+indicated) *Press Release:* October 6

Cap-Ex Iron Ore Ltd. announced that it acquired an option to earn a 100% interest in the Palmetto Property from private interests for \$50,000 cash now and an additional \$1,400,000 over 3 years. *Press Release:* October 18

Columbus Gold Corp. announced that recent drill results at the Eastside Project include 239.3-285.0 meters @ 1.26 gpt Au (ES-126); 280.4-289.6 meters @ 13.59 gpt Au (ES-127); 174.7-211.2 meters @ 0.42 gpt Au (ES-129) and 160.0-173.3 meters @ 0.41 gpt Au (ES-133). *Press Release:* October 20

Coeur Mining Inc. announced that recent drill results at the East Rochester Project include 109.73-204.22 meters @ 26.3 gpt Ag, 0.07 gpt Au (ROCR16-1030); 234.7-280.42 meters @ 102.0 gpt Ag, 0.41 gpt Au (ROCR16-1034); 124.97-201.17 meters @ 59.4 gpt Ag, 0.17 gpt Au (ROCR16-1040) and 137.16-192.02 meters @ 36.2 gpt Ag, 0.92 gpt Au (ROCR16-1049). (reserve @ Rochester = 136,992,000 tonnes @ 0.10 gpt Au, 18 gpt Ag proven+probable) *Press Release:* Oct. 10

Starcore International Mines Ltd. announced that recent drill results at the Toiyabe Project include 269.1-294.1 meters @ 1.20 gpt Au (T-1601C); 67.1-80.8 meters @ 0.16 gpt Au (T-1602); 146.3-164.6 meters @ 0.46 gpt Au (T-1608) and 76.2-89.9 meters @ 0.27 gpt Au (T-1613). (resource = 4,523,000 tonnes @ 1.19 gpt Au inferred) *Press Release:* October 24

Gold Resource Corp. announced that recent drill results at the Gold Mesa Project include 0-6.1 meters @ 0.94 gpt Au (GMA-050); 0-6.1 meters @ 1.10 gpt Au (GMA-058); 3.05-19.81 meters @ 0.42 gpt Au (GMA-061) and 0-18.29 meters @ 0.49 gpt Au (GMA-063). *Press Release:* October 13

Premier Gold Mines Ltd. announced that it acquired an option to earn a 50% interest in the Goldbanks Property from Kinross Gold Corp. for \$20,000,000 in exploration expenditures over 5 years. *Press Release:* October 26



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### Short Course on Cu, Mo, and Au Porphyry Deposits December 6-15, 2016

The **Lowell Program in Economic Geology at the University of Arizona** is pleased to announce the opening of registration for the 13th annual offering of our popular Porphyry Short Course, which will take place December 6-15, 2016, in Tucson, Arizona. We now alternate between the two formats of the course, and this year we are offering the version entitled "Cu, Mo, and Au Porphyry Deposits." This short course is designed for members of the industry and graduate students and will be led by Eric Sedorff, Mark D. Barton, and others. It has a focus on exploration geology and will include 3½ days of lectures and 2 days of labs in Tucson, as well as 3½ days of field trips to representative ore systems in Arizona. To request further information or to register, contact Rocío Brambila by e-mail at [brambila@email.arizona.edu](mailto:brambila@email.arizona.edu).

# ROCK TALK



## Nevada Geology Calendar 2017—Now Available!

We thank Jack Hursh, Jennifer Vlcan, Chris Henry, and Nick Hinz for designing another beautiful calendar for the new year!

This 12-month calendar features a different geologic topic each month (January through December 2017):

Desatoya Mountains, Sand Mountain, McDermitt Caldera, The Sump, Santa Rosa Range, Northern Nevada Orogenies, Mount Rose Glaciation, Basin and Range National Monument, Virginia Mountains, Old Soil Horizons, Pequop Mountains, Little Finland—plus interesting facts about Nevada and the geology of the state.

Click here to view/order the calendar:

<http://pubs.nbmgs.unr.edu/Nevada-geology-calendar-2017-p/cal2017.htm>

**Quantity discount:** If you buy 10 or more calendars per order, you will receive a 20% discount.

## Northern Nevada Section Society for Mining, Metallurgy & Exploration 2017 Nevada Historic Mining Calendars available!

Tybo, Nevada and the Hot Creek Valley is the feature location for the SME Calendar for 2017. By happenstance, a long awaited book on the history of the area was published in the Fall of 2016. Title is 'Tybo, Nevada Gem of the Sagebrush Frontier' and authored by Robert D. McCracken and Jeanne Sharp Howerton. The SME Calendar and the Tybo book would make ideal presents!



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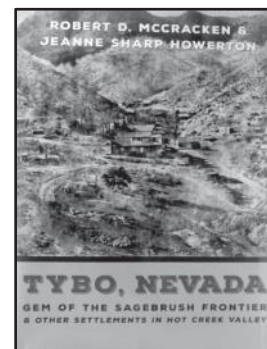
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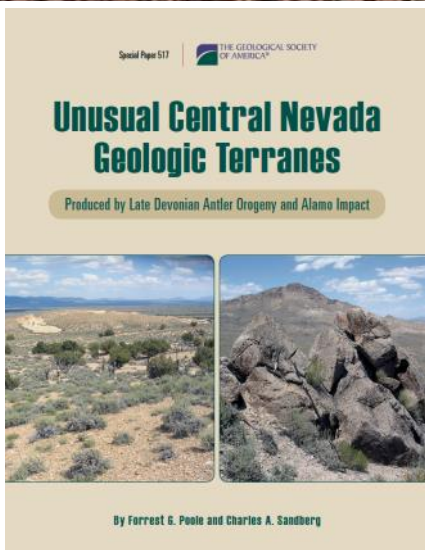
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## GSA SPECIAL PAPER 517 ON CENTRAL NV

GSN member Marilyn Miller sent this to us with the thought that some of our Members would be interested in this GSA Special Paper titled “Unusual Central Nevada Geologic Terranes”. The book is published by The Geological Society of America and can be found on their website:

<http://specialpapers.gsapubs.org/content/517>

Forrest Poole and Charles Sandberg are two well respected geologists with the US Geological Survey’s Denver, Colorado office.

### Chapter 1 ABSTRACT

#### ***Olistostrome shed eastward from the Antler orogenic forebulge, Bisoni-McKay area, Fish Creek Range, central Nevada***

**Forrest G. Poole  
Charles A. Sandberg**

*U.S. Geological Survey, Denver, Colorado 80225, USA*

The Bisoni-McKay area, a structurally isolated, fault-bounded horst, offset eastward at the south end of the Fish Creek Range, displays a geologic terrane that is previously unrecorded in Nevada, and perhaps elsewhere in North America. This unique terrane is an olistostrome that was shed eastward by listric faulting from the east side of the migrating Antler orogenic forebulge in Late Devonian (early Famennian, ca. 373 Ma) time. Stratigraphic identification of Devonian olistoliths and enclosing matrix that constitute the olistostrome, as well as overlying postemplacement units, is supported by correlation to formations in the main part of the Fish Creek Range and to the northwest in the northern Antelope Range. Precise zonal dating of map units and revised dating of Antler orogenic events are provided by 38 conodont collections recorded in the Devonian/Carboniferous (D/C) Conodont Database and by small collections of conodonts embedded in siltstone and mudstone. Our revision of regional geologic history uses Devonian conodont zones to measure “deep time” to circa millions of years before present.

The upper Upper Devonian (Famennian) tongue of the Woodruff Formation was deposited directly on the olistostrome and is overlain by clastic Mississippian synorogenic deposits. These deposits were shed eastward from the evolving Antler highland and related Roberts Mountains allochthon into the Antler foredeep. We propose the following revised dates for important Devonian tectonic events in Nevada: initiation of Antler orogeny, ca. 385 Ma; downwarping of Pilot backbulge basin, ca. 382 Ma; initial uplift of the Antler highland, ca. 373 Ma; third, major pulse of highland uplift, ca. 364 Ma. A summation of regional geologic history indicates that the elapsed time from start of Antler orogeny to start of Roberts Mountains thrusting was ~30 m.y.

### Chapter 2 ABSTRACT

#### ***Alamo impact olistoliths in Antler orogenic foreland, Warm Springs–Milk Spring area, Hot Creek Range, central Nevada***

**Forrest G. Poole  
Charles A. Sandberg**

*U.S. Geological Survey, Denver, Colorado 80225, USA*

The 45 km<sup>2</sup> map area is situated at the south end of the Hot Creek Range in central Nevada, ~16 km east of the buried leading edge of the Mississippian Roberts Mountains thrust. Three eastward-trending left-slip faults divide the area into four structural blocks. The southernmost block is occupied solely by upper Oligocene volcanic rocks. The narrow northernmost block, now occupied surficially by valley fill and volcanic rocks, represents the south end of the main part of the Hot Creek Range, from which the study area is offset. The middle two blocks display different aspects of the eastward-traveled outer crater rim created by the ca. 382 Ma (early Late Devonian, middle Frasnian) Alamo impact.

The Alamo impact was produced by a 5-km-diameter bolide, most likely a comet, which excavated a transient submarine crater 44–65 km in diameter. Comparison of thin (8–12 m) Alamo Breccia deposits in the northern of the middle two blocks with a more easterly, thick (35–42 m) Alamo deposit in the main Hot Creek Range, 4 km north of the map area, suggests that these blocks traveled many kilometers eastward. The northern of the middle two blocks contains a large olistolith capped by the thin breccia, whereas the southern block contains a larger olistolith lacking an Alamo Breccia cap.

Three Devonian pulses of the Antler orogeny are better documented in the chapter on the Bisoni-McKay area. Here, the first Antler pulse in latest Middle Devonian time is obscured within an ~9 m.y. hiatus enlarged by excavation of the Alamo impact crater. The second Antler pulse is recorded by the ~4 m.y. hiatus produced by the regional unconformity between the lower and upper members of the Woodruff Formation. **The third Antler pulse is documented by an ~8 m.y. regional hiatus between the Mississippian Webb Formation and Upper Devonian Woodruff Formation. In previous papers, we had interpreted this pulse to initiate the Antler orogeny.**

## OTHER UPCOMING EVENTS

**3 December 2016 SME Northern Nevada Section Annual Holiday Party.** Circus-Circus Mandalay Room, Reno NV. Silent Auction, Raffle, Cocktails & Dinner @ 6 pm **followed by a live auction.** Cost \$70/each-Member, \$25/Students. Please RSVP by Wednesday, November 30th to Sarah Lightner, 775-746-7147 or [NNevSME@gmail.com](mailto:NNevSME@gmail.com)

**5 December 2016 DREGS (Denver Region Exploration Geologists),** Speaker: Dr. Murray Hitzman, and Title: "Mud, Malaria, and Mining — 19 Years of Geological Research in the Central African Copperbelt". Social 6 p.m., Presentation 7 p.m. at Berthoud Hall, Room 241, CO School of Mines, Golden. For more info. contact James Piper at [geopros@q.com](mailto:geopros@q.com)

**5-9 December 2016 AEMA 122nd Annual Meeting, Exposition & Short Courses, Nugget Casino Resort, Sparks/ Reno, Nevada.**

**6 December 2016 Arizona Geological Society meeting, Speaker: John Ewert, USGS Cascades Volcano Observatory presents "U.S.G.S. Responses to Some Volcanic Crises and Eruptions Around the World".** 6 p.m. to 9 p.m. at the Sheraton, 5151 E Grant Rd. (& Rosemont), Tucson, AZ Click on the link for more info and online registration: [John W. Ewert presents USGS Responses to Some Volcanic Crises and Eruptions Around the World](#) . Dinner closes on Dec. 2nd.

**9 December 2016 Nevada Petroleum & Geothermal Society Annual Christmas Party, Reno, Nevada** monthly meeting. Cocktails at 6:00 PM, Dinner at 7:15 PM, Ramada Reno Hotel; 1000 East 6th St., Reno NV 89512. **Each person attending is asked to bring a wrapped bottle of spirits or non-spirits for a gift exchange. Donations will be accepted for door prizes/raffle.**

Please make reservations by Tuesday, December 6, 2016 by using the following link:

[https://docs.google.com/forms/d/e/1FAIpQLScSeOytsIJnn\\_mX7YuDwkDBPkUQ3R5na5UZPkhRJ5vn-RWUGA/viewform](https://docs.google.com/forms/d/e/1FAIpQLScSeOytsIJnn_mX7YuDwkDBPkUQ3R5na5UZPkhRJ5vn-RWUGA/viewform)



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**September 16-22, 2017 GSA Thompson Field Forum - Catastrophic mega-scale landslide failure of large volcanic fields, Cedar City and Bryce Canyon City, Utah.** CONVENERS: Robert F. Biek—Utah Geological Survey, Salt Lake City, Utah, USA, [bobbiek@utah.gov](mailto:bobbiek@utah.gov). David B. Hacker—Department of Geology, Kent State University, Kent, Ohio, USA, [dhacker@kent.edu](mailto:dhacker@kent.edu); Peter D. Rowley—Geologic Mapping Inc., New Harmony, Utah, USA, [pdrowley@rushisp.com](mailto:pdrowley@rushisp.com).

A 6-day field forum designed to investigate the concept of exceptionally large catastrophic collapse of volcanic fields using the distinguishing characteristics and geologic implications of the gigantic Markagunt gravity slide and Marysville volcanic field, southwest Utah. **Application deadline: January 31, 2017.** For details, go to: [www.geosociety.org/fieldforums/](http://www.geosociety.org/fieldforums/)

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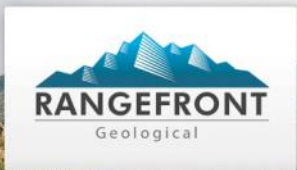
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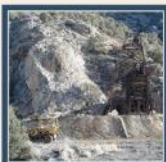
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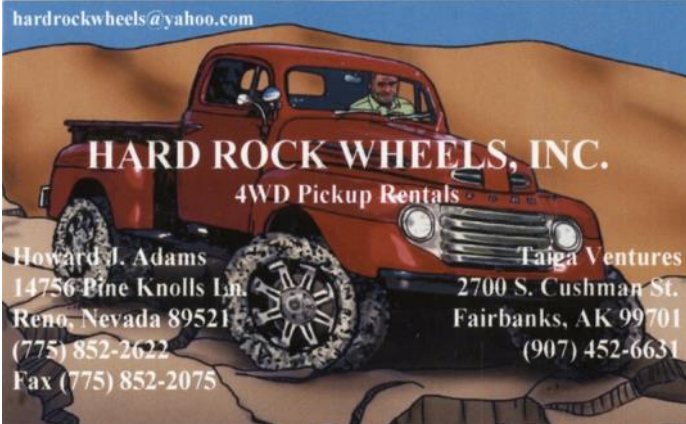


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*Merry Christmas and Happy Holidays from the G.S.N.!*

