# GRAND JUNCTION GEOLOGICAL SOCIETY

www.gjgs.org

**FEBRUARY MEETING**

**WEDNESDAY, FEBRUARY 15, 2023**
**Joint meeting with the CMU Geology Students**
**7:30 PM**
**Saccomanno Lecture Hall**
**(Room 141 in the Wubben-Science Building)**

## Jordan Walker
## PhD Student, Baylor University

**Will Speak On**

**"Stratigraphic reevaluation of Mollies Nipple, Kane County, Utah, USA to better understand the origin of alunite and jarosite cements"**

**The abstract of the talk and the speaker's biography are on the next page**

**Guests Are Always Welcome**

**The presentation will be in person but will also be available by Zoom for those unable to attend. Zoom instructions follow the abstract and bio.**

Dues are due! Please see note following the Zoom instructions.

Stratigraphic reevaluation of Mollies Nipple, Kane County, Utah, USA to better understand the origin of alunite and jarosite cements

Jordan T. Walker

ABSTRACT: Mollies Nipple is a butte located in Kane County, Utah and is part of Grand Staircase-Escalante National Monument (GSENM). Mollies Nipple is now of particular interest to the Mars research community because of the presence of unusual diagenetic alunite and jarosite minerals. These minerals are present in sedimentary environments on Mars and have been used to interpret the diagenetic and depositional environments as acidic and/or arid. On Earth, these minerals are present in modern acid saline lakes, fumaroles, or acid mine drainage, but not commonly as diagenetic cements. The butte was mapped as Navajo Sandstone via photogeologic mapping, but the apex is 200 m higher than the surrounding upper extent of that unit in adjacent areas and there are some lithological inconsistencies that suggest the caprock may be a different overlying formation. Correctly understanding the diagenetic and depositional history of Mollies Nipple will inform future studies on Mars and has the potential to change the paradigm of these interpreted jarosite-bearing Martian environments. Stratigraphic sections were measured in the field and samples were collected for laboratory analysis. The dominant lithofacies is a cross-bedded quartz arenite. Structureless quartz arenite to wacke with lenticular green-gray quartz wacke (ash) is also present. Jarosite cement is common in upper sections of Mollies Nipple and is present, but sparse, in lower section of Mollies Nipple. Alunite is present in the upper section of Mollies Nipple. ANOVA conducted on point count data from samples collected from Nipple and representative samples of potential formations at Mollies Nipple do not differentiate between the possible formation candidate and Navajo Sandstone. Based on distribution of lithofacies, comparison with adjacent outcrops of Temple Cap Formation, Page Sandstone, and Carmel Formation, we conclude that the caprock at Mollies Nipple is most likely the Temple Cap Formation.

**Brief bio:** Jordan T. Walker is currently a Ph.D. student at Baylor University, working to better understand the paleoceanographic conditions of Cretaceous Western Interior Seaway deposits representative of Oceanic Anoxic Event 2. He has a B.A. degree from Colorado Mesa University (2020) and an M.S. from Southern Illinois University (2022). His work experience includes summer employment over several years with the Colorado Department of Transportation and one summer with Weaver Consultants Group.

Andres Aslan is inviting you to a scheduled Zoom meeting.

Topic: GJGS Feb 15 2023 meeting

Time: Feb 15, 2023 07:00 PM Mountain Time (US and Canada)

Join Zoom Meeting

https://coloradomesa.zoom.us/j/94594496785

Meeting ID: 945 9449 6785

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Find your local number: https://coloradomesa.zoom.us/u/acyAX3YuQP

## Dues are due for calendar year 2023!

The Council has determined that the yearly dues will remain at $15 for members and free for CMU students.

Please either bring a check or cash to the meeting or send it to:

Grand Junction Geological Society
P.O. Box 4045
Grand Junction, CO 81502-4045

Make the check out to the Grand Junction Geological Society Foundation, which is a tax-exempt 501(c)(3) organization, so you can deduct it from your taxes as a donation.

We are still working to set up a way to pay digitally, but it is not yet operational. The necessary connections have been made to our bank account, but our web master still needs to add the code and buttons to our web site.