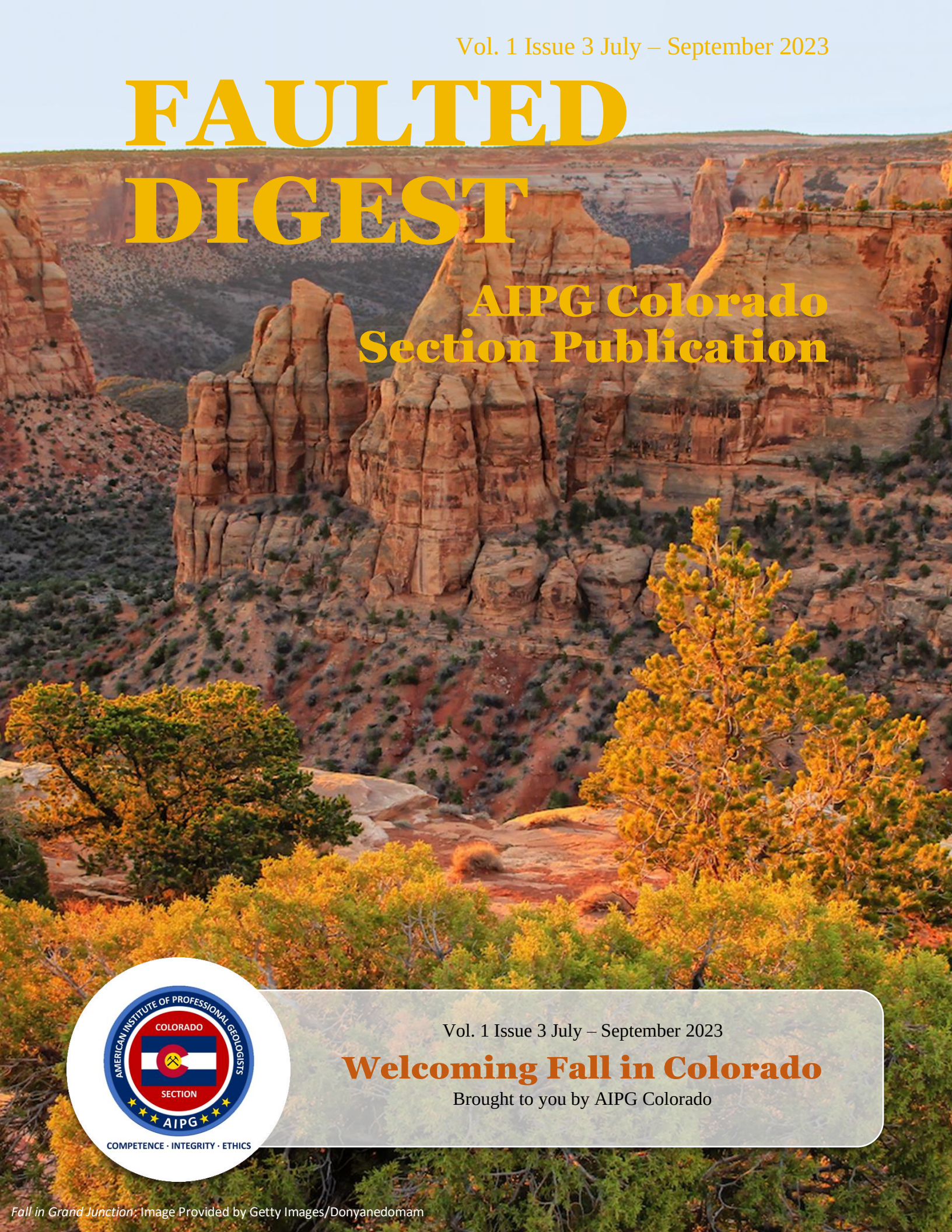
Vol. 1 Issue 3 July – September 2023

FAULTED DIGEST

AIPG Colorado Section Publication



Vol. 1 Issue 3 July – September 2023

Welcoming Fall in Colorado

Brought to you by AIPG Colorado

Fall in Grand Junction: Image Provided by Getty Images/Donyanedomam

The President's Message

September 2023

It's finally fall! I don't know about you, but I have really been enjoying the cooler weather along the front range the past few days.

We have a handful of important items coming up that the Executive Committee will need your help with:

- Keep an eye out for the Section's election for 2024 ExCom officers; this should show up in your inbox from National in a couple of weeks.
- We will be issuing a "Call for Volunteers" for the 2024 Annual Dinner. While it is a ways away in April, next year's dinner will feature our every-other-year Student Mentoring Session. This is a GREAT way to get to know our active student members and provide support and advice as they shape their careers upon graduation.

We are also planning a fall Happy Hour, tentatively planned at Golden City Brewery on November 4, so keep an eye on your email for further details!

I am incredibly passionate about AIPG and am very proud of the wonderful network of members we have here in Colorado. I invite you to reach out to me if you have any thoughts or questions about the Colorado Section or if you would like to get involved in any way. My phone number is 720-394-4270, and my email address is davey.jessica7@gmail.com. I look forward to meeting you if I haven't already!

Please keep an eye on your email or our Section's website (https://aipg-cosection.org/) for notices and more information as we coordinate activities and add dates to our calendar. The Colorado Section switched to a Star Chapter-hosted website last year, which centralized all of our communications and event hosting. *If you are not receiving our emails, please check your spam folder and save our email addresses as contacts or send me an email at davey.jessica7@gmail.com to ensure you don't miss out on any of our upcoming opportunities or events.*

Thank you for being involved in our amazing organization, and I look forward to seeing you at an upcoming event!

Jessica Davey, MEM-3242

2023 Colorado Section President

Current Colorado Section Status

The last time I provided an update to the Colorado Section Membership was back in 2018, and so much has changed since then. We have seen major changes in industry here in Colorado, as well as having gone through the COVID pandemic, which has reshaped how many of us work and go to school. I have membership records for the past five years, that I have used in this report to show the changes to our membership over that time, as well as provide a snapshot of where we sit today, going into 2024.

As of now, there are a total of 406 members in the AIPG Colorado Section. Table 1 lists the current membership types and counts. Figure 1 below illustrates the breakdown percentages of the membership types.

Table 1: Breakdown of the 406 Colorado Section members as of October 1, 2023

Membership Categories	Count
CPG Member	192
CPG Emeritus Member	75
Honorary Member	2
Associate Member	5
Professional Member	43
Professional Member Non-Practicing	4
Early Career Professional Member	11
Student Member	74
Total	**406**

Early Career Professional Members consist of only 3% of overall membership within the state. Several articles have been published in the past few years by AGU and GSA discussing the generation gap in the geosciences, and the AIPG Colorado Section's current member roster reflects this gap. While Student Members make up 18% of the overall total, retention rates upon graduation are low, and this continues to be an issue with AIPG membership year over year.

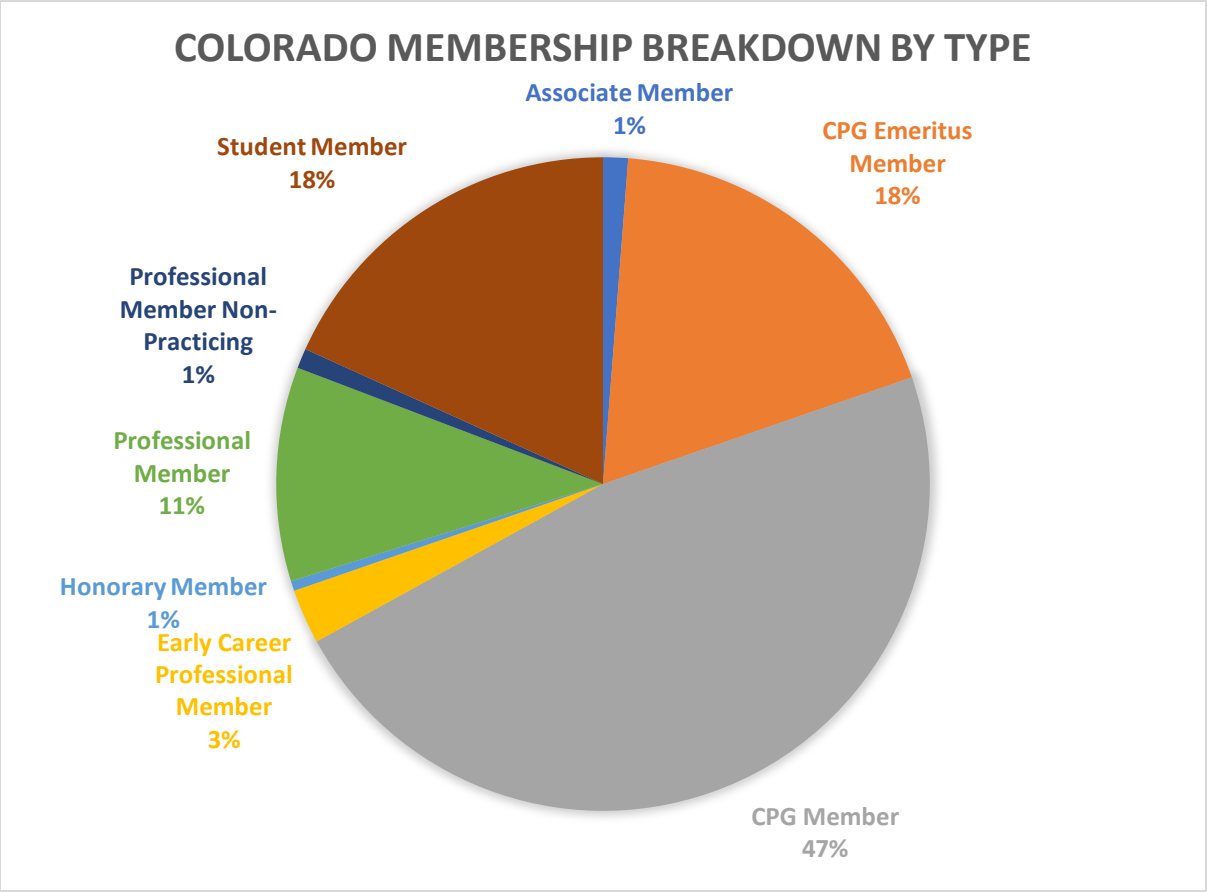


Figure 1: Piechart breakdown of the 406 Colorado Section members as of October 1, 2023

Figure 2, below, illustrates the change over the past five years to the Colorado Section Membership categories. One note: 2018, 2019, and 2020 rosters received from National did not separate out the CPG Emeritus Members, Honorary Members, or Professional Member Non-Practicing categories; however, it is expected to have these distinguished as separate membership types going forward for our metrics. The Colorado Section has seen trends similar to the rest of the country as our membership numbers have declined, primarily due to retirements and people leaving the geoscience fields in pursuit of other career options. Table 2 contains the raw data, which is displayed in the Figure 2 pie chart, reflecting the overall decline in membership over the past five years.

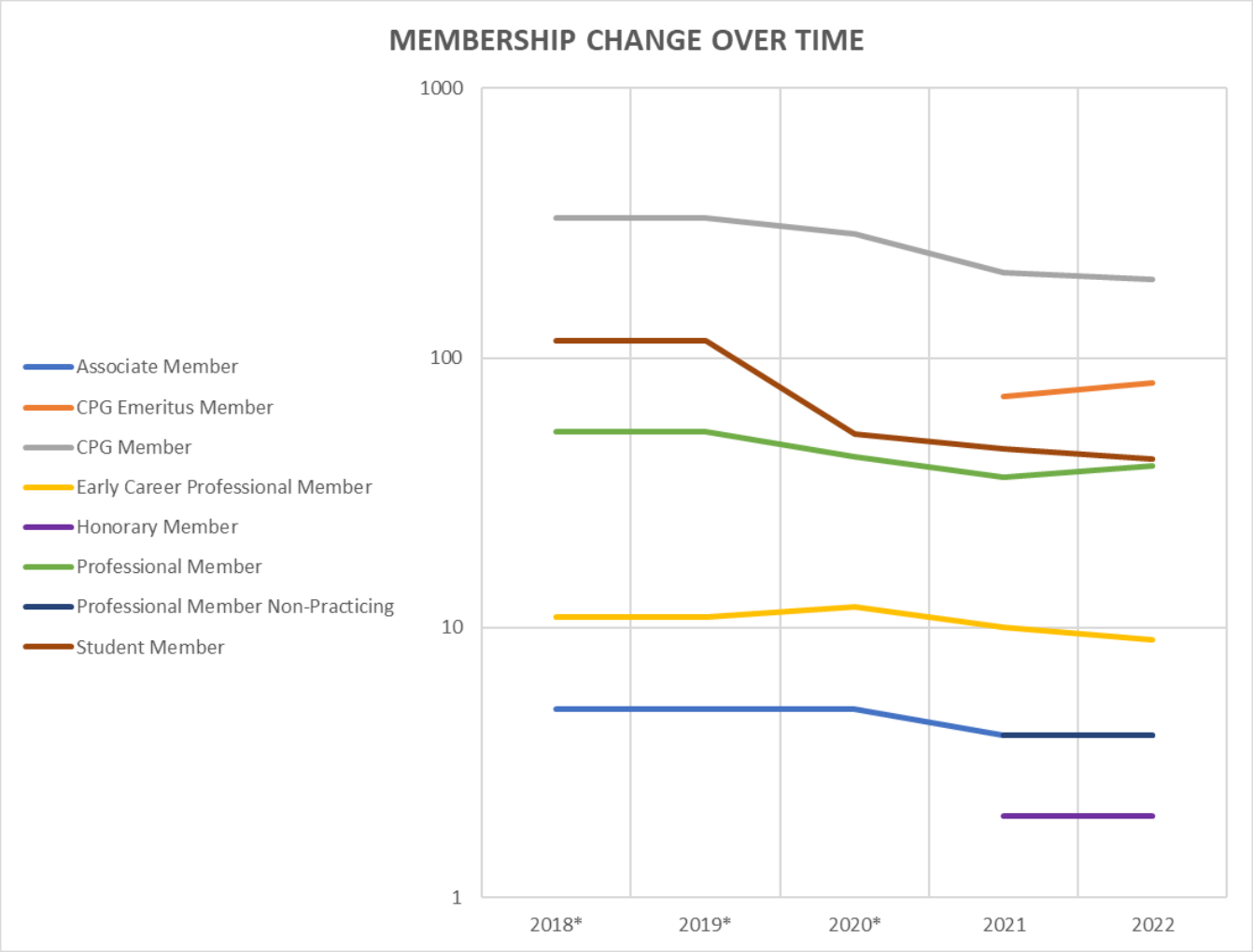


Figure 2: AIPG Colorado Section Membership Change Over Time

Table 2: Breakdown of the 406 Colorado Section members as of October 1, 2023

Membership Type	2018*	2019*	2020*	2021	2022	2023
Associate Member	5	5	5	4	4	5
CPG Emeritus Member				72	81	75
CPG Member	329	329	288	207	196	192
Early Career Professional Member	11	11	12	10	9	11
Honorary Member				2	2	2
Professional Member	53	53	43	36	40	43
Professional Member Non-Practicing				4	4	4
Student Member	116	116	52	46	42	74
Total	**514**	**514**	**400**	**381**	**378**	**406**

In addition to Professionals and Early Career Professionals, the Colorado Section will have to rely on Student Members to fill the ranks. Figure 3 below, illustrated the schools within Colorado that Student members attend as of October 1, 2023. As shown in Table 2, above, Student Member numbers were high prior to the COVID pandemic, with a total of 116 in both 2018 and 2019. These numbers declined rapidly during 2020, 2021, and 2022, and are slowly recovering as students are back in the classroom and AIPG volunteers are able to meet in person with classes and promote AIPG membership.

Prior to the COVID pandemic, active Student Chapters were found at Metro State University, the University of Northern Colorado, and Western Colorado University, and a dormant Student Chapter at Colorado School of Mines. Currently, a Student Chapter for University of Colorado Boulder is being established.

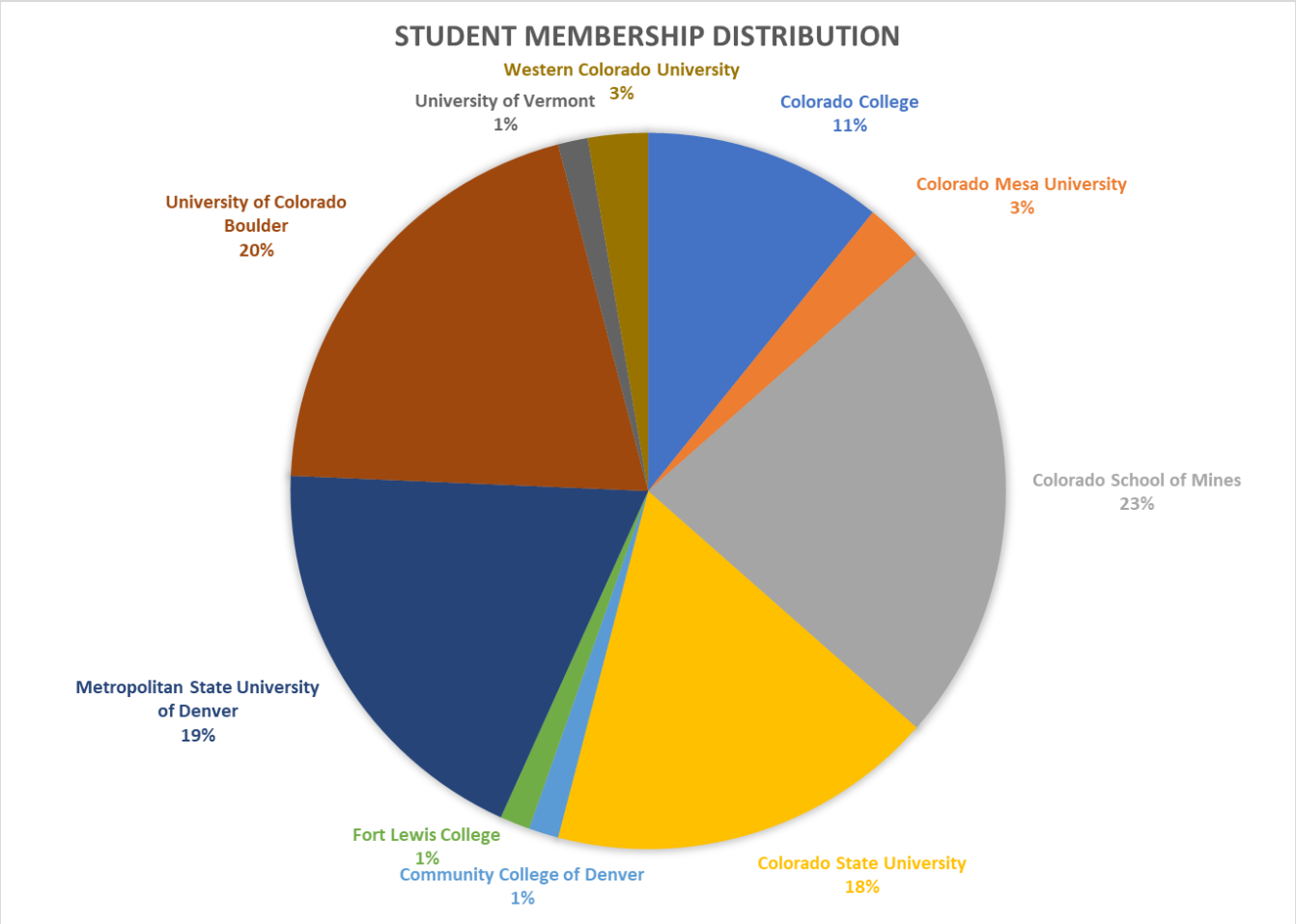


Figure 3: Schools Represented by CO Section Student Membership as of October 1, 2023

Discussion Considerations:

1. How can the Colorado Section increase retention rates as students graduate?
2. What can the Section do to provide a networking foundation for Early Career Professionals and working Professionals?

If you would like to volunteer with the CO Section ExCom and help to promote membership to your fellow coworkers, early career professionals, and students, please reach out. The section has access to promotional materials and can help you find the right resources for prospective members, whether it is the CPG application or access to the revamped mentoring program. Please also make sure you are receiving the CO Section emails, which are coming from the Star Chapter site that was set up last year. We will be sending out a "Save the Date" for the next Annual Dinner in the spring. The 2024 Annual Dinner will be held in conjunction with the Student Mentoring Session, which will feature representatives from graduate school programs and professionals within several facets of the geosciences to discuss their careers and offer advice to the students. This is a very fun event, and I strongly urge you to participate!

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We still have a need for pictures. It is strongly encouraged that everyone send high-definition, clear pictures they may have taken in Colorado to be used in the newsletter. This is also an opportunity for others to see your beautiful photos! Please include the location of where the photo was taken and what it is we are looking at. I will open up a link for sharing these images below.

We are still prompting everyone to also share their stories and adventures! Any articles, letters, and publications would be appreciated. Any informative pieces, publications, or interesting articles that are noteworthy and related to general geology or Colorado geology would make a great filler to our newsletter!

Thank you again and as always, I'm looking forward to the next edition of the newsletter!

Christina Tiggemann
AIPG Colorado Newsletter Editor

Photo Share:
https://drive.google.com/drive/folders/13M1xZhynIkwdC2qaidxEDZDrP3ciJq0s?usp=sharing

EDITOR'S NOTE

Faulted Digest. Volume 1, Issue 1 is published four times a year. This newsletter is distributed free to members. **Paid Subscriptions:** $1 million. Please send check or money order to Christina's home address along with a baby t-rex.

A copy of our newsletter will also be available https://aipg-cosection.org/content.php?page=news.

Submission Information: Pictures, letters, announcements, etc… must be received by the editor the 2nd to last week of the following months: March, June, September & December**. Email preferred to:** christina.tiggemann@gmail.com. **Formats Accepted:** .doc, .docx, .pdf, .png, .jpg, .jpg.

Advertising Information: https://aipg-cosection.org/form.php?form_id=21.

Contact Information:
1333 W. 120th Avenue, Suite 211, Westminster, CO 80234
303.412.6205

The opinions expressed are those of the authors and not the Colorado Section officers unless clearly stated otherwise.

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North Clear Creek Falls: Image Provided by Larry Lamsa

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Colorado

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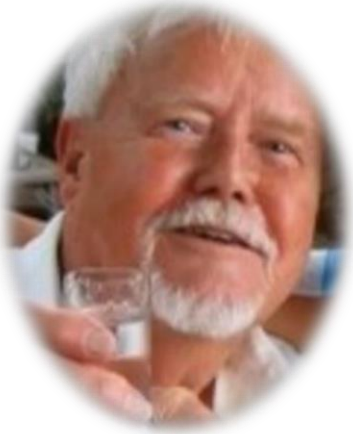
Proud member of AIPG, GSA, RMAG, AWG

In Memory Of



James Patrick O'Brien

December 26, 1961 – May 7, 2023

"It is with great sadness that I inform you of the passing of one of our founders, John Gustavson. John passed away on July 27 at the age of 90 after a courageous battle with cancer. John was a visionary and tireless leader who led the establishment of the International Institute of Minerals Appraisers (IIMA) in 1991. He was a member of the SME Valuation Standards Committee, and was one of IIMA's representatives to the International Mineral Valuation Committee (IMVAL). He was passionate about the Institute, our profession, and will be deeply missed by all who knew him. John was educated in Denmark where he received a Masters degree in Chemical Engineering from the Technical University of Denmark in 1956. He then moved to the United States where he continued his education at the University of California, Berkeley, in Fluid Dynamics from 1957 to 1959. He was independently active in the field of natural resource development since 1966, with a brief academic leave in the mid-1970s to obtain a Masters Degree in Geology from the University of Memphis. John specialized in resource/reserve estimates for financial reporting, market value appraisal of mineral properties, due diligence evaluation, and monitoring of extractive operations. He founded Gustavson Associates, a highly reputable consulting and mineral appraisal firm that he retired from in 2007. John also taught courses offered through the University of Tulsa on the appraisal of mineral properties and due diligence concepts for industry operators. John's contributions to the natural resources industry include patents, several inventions, numerous white papers, and presentations. He authored or co-authored over 60 papers on a variety of topics related to the mineral appraisal profession, presented his work at numerous professional conferences, and mentored many IIMA members on their path to certification. John was a kind and generous man and will be deeply missed by the entire mineral valuation community. He was always willing to help others, chat with colleagues and offer insights and experiences to beginners, and to help out with the next conference, seminar, or short course. Please join me in sending our thoughts and prayers to John's family during this difficult time."

Written by David Shetler, IIMA President

Image Courtesy of *No Film School*

Austin Raza Thompson

Education:

- Graduated Metropolitan State University of Denver - Spring 2023
  - *Bachelor's Degree: Applied Geology*

Professional Experience:

- Eagle Environmental Consulting (Current)
  Staff Geologist
- Undergraduate Research: Depositions of Thorium in the Upper Grape Creek Wilderness Study Area of Canon City, Colorado
  Evaluating thorium baring granite and how it is deposited as it weather and erodes
- Internship
  Haliburton – Engineer

Professional Organization Involvement:

- Metropolitan State University of Denver
  - Vice President – Geology Club

Why I Want to be a Geologist

I fell in love with geology as a child when my family and I went on a camping trip. While on this camping trip we hiked up to an abandoned mine and it was there that I found so many amazing rocks. It was from this that I wanted to know where why and how these rocks and minerals had gotten there. Almost 20 years later and I still have the little box of rocks I had collected, and I know or at least have an idea of why and how they formed and ended up where they were. Mining and subsurface exploration is a part of geology that I really enjoy most. I'm always learning and studying maps and data analysis to get a better understanding of the resources within the earth, and of course how and why they are there.

For me geology has also been a way of combining multiple areas of interest into a single focus. I have always been interested in environmental science, hydrology, engineering and of course rocks. Geology is one of the few sciences that draws from all other sciences and because of this I can apply it in a variety of situations. Currently my focus is on how the hydrologic and environmental systems are influenced by geologic aspects to better improve environmental remediation efforts. As my career progresses, I will hopefully be able to move into a role more involved in mining and exploration and continue to follow my passions within geology.

The American Institute of Professional Geologists - Colorado Section is proud to have Austin as an Early Career Professional member!

Image: Monument Canyon; Courtesy of *National Park Service*

Early Career Professional Spotlight

Image Courtesy of *No Film School*

Byron Clayton

Education:

- Graduated Metropolitan State University of Denver - Spring 2023
  - *Bachelor's Degree: Applied Geology*

Professional Experience:

- Ninyo & Moore
  Staff Geologist & Project Manager
- Geotechnical Field Technician
  5 year's experience
- USAF
  Active Duty – Fuels – 2F051

Professional Organization Involvement:

- Metropolitan State University of Denver
  - Treasurer – Geology Club
  - Field Class Assistance with Upper Division Courses

Why I Want to be a Geologist

Geological and Earth sciences are subjects that I have had a passionate curiosity and interest in since I was very young. The influences I have had are too numerous to list here, however, I took an interest (like any other child) in dinosaurs, ancient life and environments, different flora and fauna over the extremely long ages. The Rite of Spring from Walt Disney's Fantasia left me in a state of awe as a child as well as numerable trips to the Denver Museum of Nature and Science.

I moved into different positions over the years, but I always found myself coming back to study the motion of the continents, the development of early life, the vast eternity that lies behind (and before) us. My interests moved to planetary sciences, and following the exploration of Mars, and the New Horizons Pluto mission.

Moving into the Geologist career path has simply been a result of following through with my personal interests and passions. Geology is a wide field with many different areas to learn from and has many different views. For myself, Geology has given me the tools to see into eternity.

The American Institute of Professional Geologists - Colorado Section is proud to have Byron as an Early Career Professional member!

Image: Fountain Valley Trail; 2011; Courtesy of *Greg Willis, photographer*

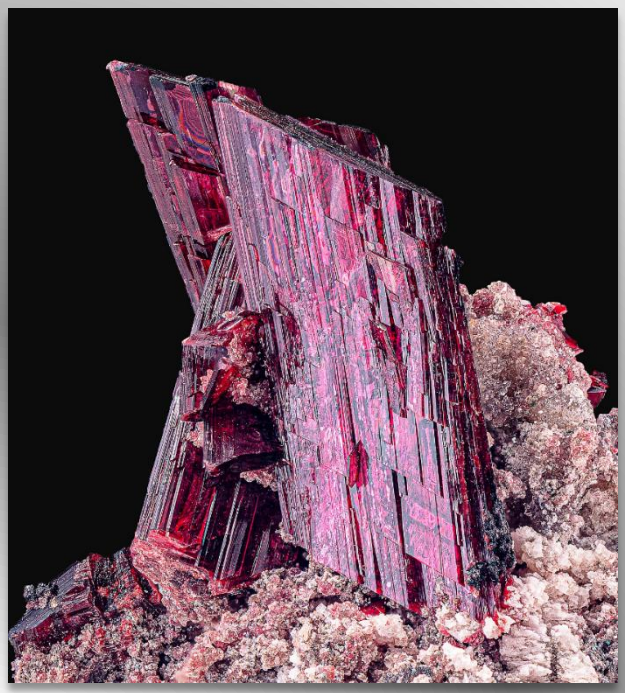
Images & Info sourced from *mindat.org* and *Smithsonian Nature Guide*

"Although of little commercial value, erythrite is an important tool for prospectors looking for cobalt and related silver deposits. The bright purplish pink color of erythrite in a rock indicates the presence of cobalt. This explains why miners call erythrite "cobalt bloom." Erythrite is a cobalt arsenate hydrate. It forms a chemical replacement series with annabergite, in which nickel replaces cobalt in the erythrite structure. Its color may vary from crimson red to peach red, with the lighter colors indicating a higher nickel content. The coloration may also occur in bands. Well-formed crystals are rare but when found they occur as deeply striated, prismatic to needlelike, commonly radiating, globular tufts of crystals, or as powdery coatings. Erythrite is a secondary mineral found in the oxidized zones of cobalt-nickel-arsenic deposits. Fine specimens come from Canada and Morocco. Erythrite is also found in Mexico, France, southwestern USA, the Czech Republic, Germany, Australia, and elsewhere.

Autumn Arsenates

Erythrite

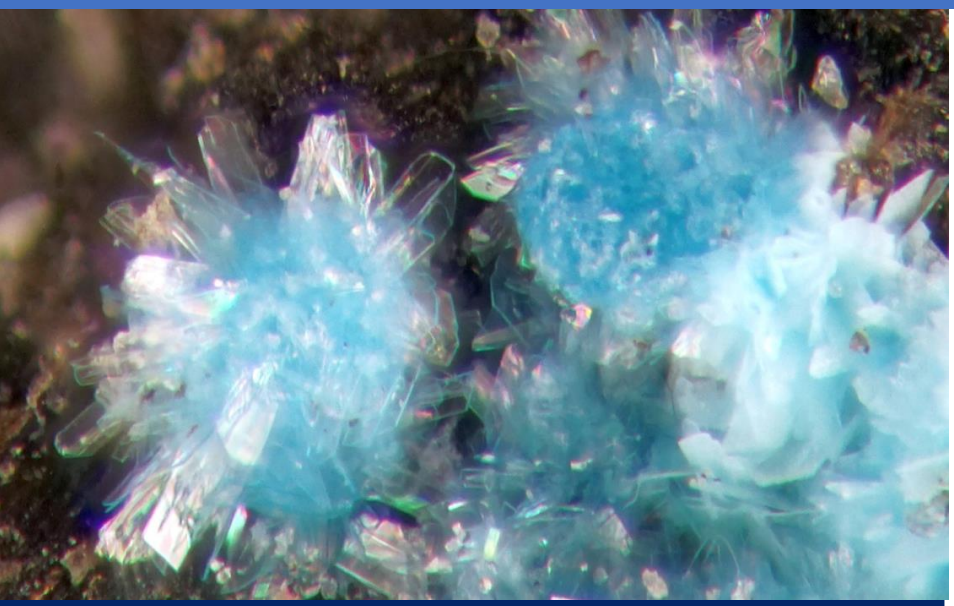
$CO_3(AsO_4)_2 \cdot 8H_2O$



Physical Properties of Erythrite

Luster:	Sub-Vitreous, Waxy, Pearly, Dull, Earthy
Transparency:	Transparent, Translucent
Color:	Crimson to peach red, pale rose, pink
Streak:	Pale red to pink (paler than the colour)
Hardness:	1½ - 2½ on Mohs scale
Tenacity:	Sectile
Cleavage:	Perfect Perfect on {010}, poor on {100}{102}
Translation Gliding:	T{010}, t[001]
Density:	3.06 g/cm^3 (Measured) 3.135 g/cm^3 (Calculated)

National EVENTS



Earth Science Week
October 8-14 2023
https://aipg.org/events/EventDetails.aspx?id=1699533&group=

November 2023

4th: AIPG National Executive Committee Meeting
https://aipg.org/events/EventDetails.aspx?id=1755434&group=

6th: AIPG Town Hall - National Committees & Officer Nominations/Duties
https://aipg.org/events/EventDetails.aspx?id=1790384&group=

14th: 12th Annual Frac Sand Supply & Logistics Conference
https://aipg.org/events/EventDetails.aspx?id=1740057&group=

October 2023

8th-15th: GSA Annual Meeting
https://community.geosociety.org/gsa2023/home

17th: AIPG Texas Webinar Series - Bringing the Heat
https://aipg.org/events/EventDetails.aspx?id=1791887&group=

20th: AIPG National Executive Committee Virtual Meeting
https://aipg.org/events/EventDetails.aspx?id=1787509&group=

23rd: AIMMGM
https://aipg.org/events/EventDetails.aspx?id=1766257&group=

31st: AIPG Lunch and Earn Monthly Webinar
https://aipg.org/events/EventDetails.aspx?id=1790100&group=

1st Natural Hydrogen Worldwide Summit
November 27, 2023
https://aipg.org/events/EventDetails.aspx?id=1790788&group=

All Images Courtesty of: mindat.org

National EVENTS

December 2023

3rd: SME Arizona Conference
https://aipg.org/events/EventDetails.aspx?id=1766258&group=

4th: AEMA Annual Meeting
https://aipg.org/events/EventDetails.aspx?id=1766259&group=

February 2023

8th: 10th Conference on: Innovative Environmental Assessment and Remediation Technology
https://aipg.org/events/EventDetails.aspx?id=1754978&group=

26th: AIPG Lunch During the SME Conference
https://aipg.org/events/EventDetails.aspx?id=1764891&group=

2024 USA National Women in Mining Conference
April 9, 2024
https://aipg.org/events/EventDetails.aspx?id=1750404&group=/

GJGS 2023 William L. Chenoweth Memorial Field Trip
Energy and Mineral Resources of the Piceance Basin
Aug. 26, 2023
To attend please contact: rcole@coloradomesa.edu)

Colorado EVENTS

October 2023

14th: Call for Volunteers! Girl Scouts Day at Dinosaur Ridge
Please send an email to Jessica Davey at davey.jessica7@gmail.com to volunteer

18th: GJGS October Meeting
https://coloradomesa.zoom.us/j/96837530667

24th: Mining 4 Beer - October
5 pm @Kodiac Brewery Bar and Grill
7685 E Arapahoe Road, Centennial

28th: RMAG On The Rocks: Red Rock Canyon Open Space Tour
https://www.rmag.org/index.php?src=events&submenu=Events&srctype=detail&category=Field%20Trips&refno=304

All Images Courtesty of: mindat.org

EMPLOYMENT

[redacted]

Environmental Technician
RJN Group
Irving, Texas
https://recruiting2.ultipro.com/RJN1000RJNG/JobBoard/035439b0-0113-4dd4-879b-83dfc751980a/OpportunityDetail?opportunityId=84305c56-1750-4b7d-aa0e-508c529cd91d

Senior Geologist (PG license required)
Leidos
St. Louis, Missouri
https://careers.leidos.com/jobs/13356796-senior-geologist-pg-license-required?tm_job=R-00119125-OTHLOC-PL-2D2605&tm_event=view&tm_company=2502&bid=7815

Senior Geologist (PG license required)
Leidos
Earth City, Missouri
https://careers.leidos.com/jobs/13356795-senior-geologist-pg-license-required?tm_job=R-00119125&tm_event=view&tm_company=2502&bid=7815

Hydrologist/Geologist (Interdisciplinary)
USA Jobs
Yuma, Arizona
https://www.usajobs.gov/job/751009600

[redacted]

General Support Assistant
University of Kansas
Lawrence, Kansas
https://sjobs.brassring.com/TGnewUI/Search/home/HomeWithPreLoad?PageType=JobDetails&partnerid=25752&siteid=5541&jobId=4806989&Codes=12#jobDetails=4806989_5541

Production Geologist
Ur-Energy
Lost Creek, WY (On-Site)
Apply by sending a resume to HR@Ur-Energy.com or online at Careers :: https://www.ur-energy.com/careers

Mid-Level Geologist
Ur-Energy
Casper, Wyoming
Apply by sending a resume to HR@Ur-Energy.com or online at Careers :: https://www.ur-energy.com/careers

For ALL career opportunities please visit: https://aipg-jobs.careerwebsite.com/

AIPG Purposes

The purposes of the Institute shall include:

- advance the geological sciences and the profession of geology;
- establish qualifications for professional geologists;
- certify the qualifications of specific individual Member geologists to the public;
- promote high standards of ethical conduct among its Members and Adjuncts, and within the profession of geology; and
- represent, and advocate for, the geological profession before government and the general public.

What AIPG does . . .

- Professional Certification - Certifies geologists based on their Competence, Integrity, and Ethics.
- Categories of Membership - Certified Professional Geologist, Professional, Early Career Professional, Associate, and Student.
- Ombudsman - Intervenes with regulatory boards and agencies on behalf of individual geologists, at the geologist's request. Information also is disseminated in cooperation with the Association of State Boards of Geologists.
- Lobbying - Presents testimony and position papers to Federal and State legislators and agencies on matters affecting geologists and geologists' employment opportunities. Exhibits at the National Conference of State Legislators.
- Liability Insurance - Provides access to insurance for errors and omissions, designed specifically for geologists.
- Continuing Education - Through online learning, publications, seminars, short courses, and field trips, provides educational opportunities for geologists, other scientists, engineers, and the general public.
- Supplemental, Life, and Accident Insurance - Provides access to a full line of supplemental, life, and accident insurance.
- International Comity - Through agreements with professional societies in other countries, provides access for its Members to professional registration, certification, or chartered status in those countries.
- State and Section Activities - State and regional sections work on local political issues and the professional status of geologists in their geographic areas. The Institute's sections around the country hold regular meetings, featuring educational programs covering important subjects of interest to professional geologists. One of the most worthwhile benefits of AIPG Membership is the opportunity to make personal contact at the local and State level; to meet fellow geologists; and to learn from them.

Image Courtesty of: Conrad Earnest– *Visit Grand Junction*– Colorado National Monument

Copper Sponsors

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Jessica@DaveyConsult.com or 720-394-4270

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https://aipg-cosection.org/form.php?form_id=21

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SITE CHARACTERIZATION

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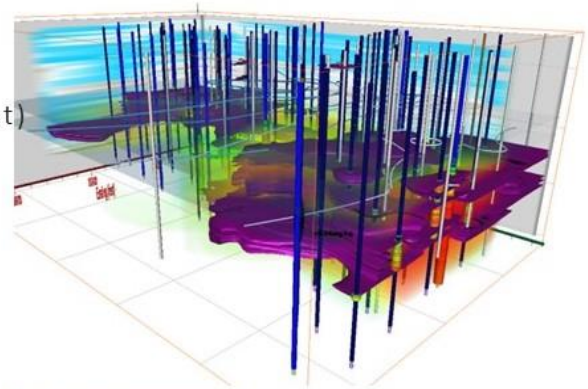
Optical Image Profiler (OIP-UV, OIP-G, OiHpt)
Hydraulic Profile Tool (HPT)
3D Data Visualization & Modeling
Ground Water Profiler (HPT-GWP)

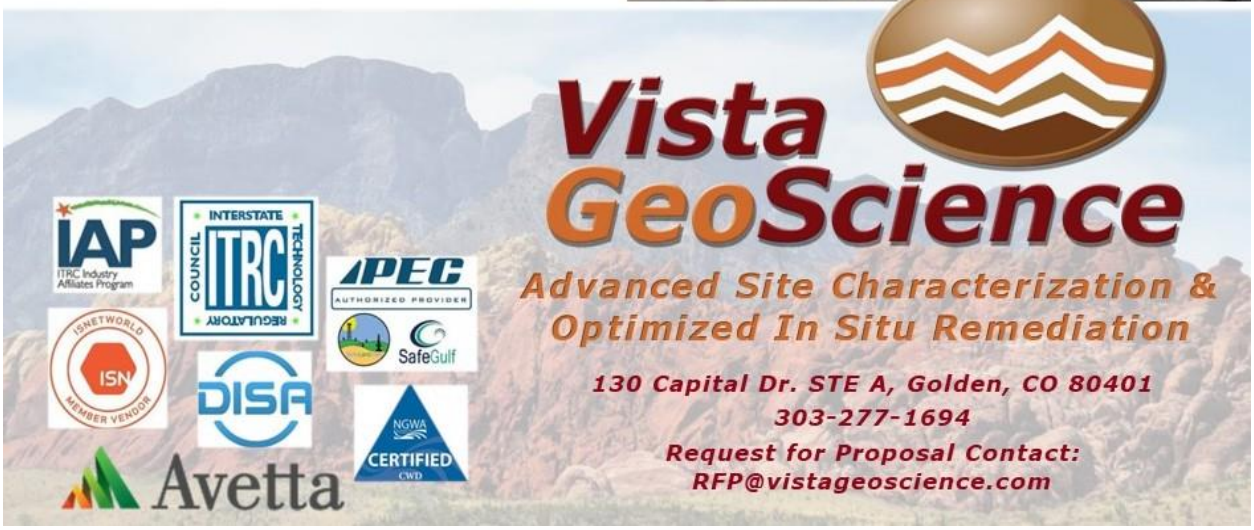


REMEDIATION

Clean-Inject In-Situ Injection Systems
Unique Top-Down Lateral Injection Tooling
Hydraulic Emplacement of Sand/ZVI
Permeability Enhancement for AS/SVE
ISCO, ISCR, ISBR

GEOTECHNICAL & ENVIRONMENTAL DRILLING

Direct-Push & Auger
Geoprobe Dual Technology Rigs
Dual-Tube Coring Systems
Discrete Ground Water Sampling
Monitor Wells, Piezometers

SOIL GAS - VAPOR INTRUSION

Active & Passive Soil Gas, Sub-Slab
Soil Gas Sampling/Monitoring
Tier-2 Landfill NMOC Surveys
Stray Gas Migration