



SOCIETY OF ECONOMIC GEOLOGISTS, INC.

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Student Chapter Annual Report Form

This form is used to report on Student Chapter activities over the previous year. The report provides a useful medium to document the status and progress of individual chapters. Annual Reports are used to evaluate applications for SEG support and to keep information up-to-date on the SEG website. Please provide a summary of chapter activities in a concise form as suggested below. Description of programs may be supported by a limited number of photographs and figures in a format appropriate for publishing on our website.

Submission Deadline: September 30th

Submit to: studentprograms@segweb.org

Month/Year Reported: From 08/2016 (mm/yyyy) – To 09/2017 (mm/yyyy)

Chapter Name: University of Minnesota, Duluth

Chapter Mailing Address: 1114 Kirby Drive, Heller Hall 229, Duluth, MN 55812

Chapter E-mail: umd-seg@d.umn.edu

Chapter Website: _____

Chapter Facebook: _____

Chapter Executive Committee (*in office during the time frame captured on this report*) (type "Vacant" if position not filled):

President:	<u>Sebastian Szymutko / Margaret Upton</u>	<u>upton040@d.umn.edu</u>
	Name	E-mail
Vice President:	<u>Gerrit VanderWaal / Jacqueline Drazan</u>	<u>draza004@d.umn.edu</u>
	Name	E-mail
Secretary:	<u>Travis Boser / Jay Robbie</u>	<u>robby197@d.umn.edu</u>
	Name	E-mail
Treasurer:	<u>Stephen Hanson / Andrew Regula</u>	<u>regul007@d.umn.edu</u>
	Name	E-mail

Chapter Academic Sponsor (*SEG Fellow membership in good standing*):

<u>George Hudak / Christian Schardt</u>	<u>ghudak@d.umn.edu / cschardt@d.umn.edu</u>	<u>218-788-2739 / 218-726-7899</u>
Name	E-mail	Phone
<u>5013 Miller Trunk Highway, Office 230D, Duluth, MN 55811 / 1114 Kirby Drive, Heller Hall 213, Duluth, MN 55812</u>		
Address		Fax

Chapter Industry Sponsor (*SEG Fellow membership in good standing and not affiliated with the student chapter's institution*):

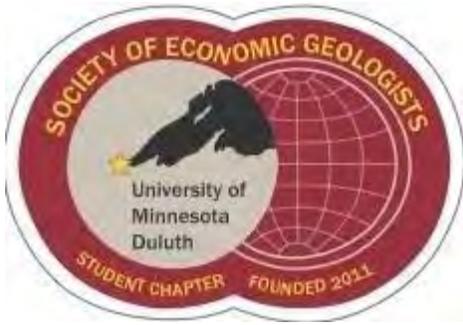
<u>Dr. Harold Noyes</u>	<u>Chathl@aol.com</u>	
Name	E-mail	Phone
<u>POB 1186, Golden, CO 80402</u>		
Address		Fax

Sponsoring Institution or Company (name): _____

- Attach:**
1. a list of names of **all** Student Chapter members (please indicate by * if SEG Student Member).
 2. complete Student Chapter Membership Information form with the current Executive Committee listed on page 1.

On a separate page(s) provide a summary of student chapter annual activities:

1. Regular meetings, lectures
2. Field trips (dates, area visited, field trip leaders, number of participants, sponsors, benefits for students).
Note: this is not the place for a detailed field trip report that is required from a chapter who has received funding from the Stewart R. Wallace Fund.
3. If your chapter received funding from the Stewart R. Wallace Fund, please submit a separate actual accounting of how chapter funds were spent/used.
4. Organization of conferences, workshops, short courses (theme, number of participants, benefits for students)
5. Participation in conferences, workshops, short courses (theme, number of participants from the chapter, benefits for students)
6. Fund-raising programs
7. Other programs
8. Future plans



2016-2017 End of Year Report

September 30, 2017

UNIVERSITY OF MINNESOTA, DULUTH CHAPTER: **SOCIETY OF ECONOMIC GEOLOGISTS**

The Society of Economic Geologists (SEG) has been an essential supporter of the SEG Student Chapter at the University of Minnesota in Duluth (UMD-SEG) since its founding in 2011. Thanks to this vital support, our student chapter was able to participate in a variety of field trips and events during the spring term of the 2016-2017 academic year. There were a total of 7 meetings held, with various amounts of attendees and an average of 9-10 students per meeting (see 2016-2017 meeting attendance spreadsheet at the end of the report). For the upcoming academic year (2017-2018) we will be requesting funding support from SEG to help us successfully execute several student chapter goals and allow us to continue to offer various field trips, networking, and educational opportunities for our student members.

We are proposing a variety of activities (including collaboration with various organizations and other SEG student chapters) for the upcoming academic year. Our current active membership includes 7 students. This proposal highlights the current Fall semester 2017, future Spring 2018 semester activities, as well as activities from the past 2016 - 2017 academic year. In addition to planned activities, we have several trips currently being planned and community outreach proposals. With the assistance of SEG funding, we anticipate that we will be able to successfully execute the planned Spring Break 2018 SEG trip.

2016-2017 UMD-SEG ACADEMIC YEAR CHAPTER EVENTS

Field trips:

HibTac Mine: In the fall of 2016, UMD-SEG conducted a joint field trip with student members of the Society for Mining Metallurgy & Exploration (SME). We visited the Hibtac Mine operated by Cliffs Natural Resources, located in Hibbing Minnesota. The trip was attended by 4 SEG students and 8 SME students from the Twin Cities SME student chapter. This trip gave our students the opportunity to receive a comprehensive tour of the mine site as well as the entire processing facility. With assistance from members of the northern Minnesota subsection of the SME, the students were able to get a first-hand look at the large scale operations of an active taconite mine. In addition to a tour of the taconite operations we also visited a proposed mining operation, Polymet. James Tieberg, the project's mine engineer, gave us an in depth look into the pit design and explained the various processes which will be involved in ore extraction and processing.

Multi-State Road Trip: In the spring of 2017, UMD-SEG chapter members organized and participated in our annual spring break field trip to explore regional geology and economic ore deposits. The trip was attended by 8 students, and encompassed a week-long tour of mineral deposits and associated geology in Illinois, Kentucky, Tennessee and North Carolina. The eight undergraduate students that attended were able to visit Starved Rock State Park in Illinois, Garden of the Gods in Shawnee National Forest in Illinois, Mammoth Cave State Park in Kentucky as well as the historic Ray Mica Mine near Asheville North Carolina. The trip allowed students to see a variety of geological features as well as gain insight into local mineralization events. The planned visit to a MVT-type mine was cancelled by the operator due to the downturn in mining activity at that mine.

Community Outreach:

Our student chapter was also an active part of the Swenson College of Science and Engineering (SCSE) STEM outreach program. Four chapter members were active volunteers during the program. As part of this Duluth Public Schools and SCSE outreach program, chapter volunteers educated grade-school students about the basics of geological studies through a series of interactive lesson plans. One chapter member was the creator of multiple geology outreach lessons and activities; that member created cohesive lesson plans which included: plate tectonics, minerals and their properties, how minerals create rocks, map reading and interpretation, weathering and erosion, how minerals are used every day, and a “what’s in a geologist’s backpack?” demonstration. One faculty advisor (Prof. Schardt) attended several school events that showcased various professions and industries of northern Minnesota, including economic geology. Through hands-on experiences with ore samples and other natural resources students gain insight into what everyday items are made of and that the majority involves mining and minerals processing. The university and SEG chapter members plan to continue these outreach events during the upcoming 2017-2018 school year.

Fundraisers:

Adopt-A-Rock: This fundraiser was performed in conjunction with the Geology Club at UMD. Samples that were either collected by members while on SEG field trips, during class field trips, while members are on their own trips, or samples that were donated to the chapter. A majority of the rocks were adopted by university students and teachers. Two sales were held, one during the spring and one during the fall semester. Each sale was held for one week from around 9 am to 4 pm. Students from both of the clubs volunteered their time to conduct the sales. The profits from the two sales will be divided and we expect to receive approximately \$800, or half of the profits.



Conference Attendance

Society for Mining, Metallurgy & Exploration (SME): April 17-19, 2017 in Duluth, MN

The SME Minnesota Conference is widely recognized for the collaboration and development of practices, theories and technology used in the Midwest minerals industry, specifically focusing on innovative approaches to use in the iron ore industry. In addition to the conference's engaging technical program, the conference's expansive exhibit hall floor provides close-up views of the latest in mining technology and innovations, allowing our attendees to have hands-on opportunities for creative collaboration with leading industry vendors. <http://www.smemnconference.com/>

The next SME conference will be an international one, not just a regional one like last year, and will be held in Minneapolis, MN from February 25-28, 2017. We plan to have strong student attendance since the conference is only a few hours away from Duluth.

Institute on Lake Superior Geology (ILSG): May 9-11, 2016 in Wawa, Ontario

“The Institute on Lake Superior Geology is a non-profit professional society with the objectives of providing a forum for exchange of geological ideas and scientific data and promoting better understanding of the geology of the Lake Superior region.”

<http://www.lakesuperiorgeology.org/>

The University of Minnesota - Duluth typically has a strong presence at ILSG conferences. There were 9 UMD attendees, of which four students (2 graduate and 2 senior undergraduate) attended an extra field trip with other meeting attendees the day after the meeting. The field trip was to the Island Lake Gold Mine, operated by Richmond mining. We reviewed the regional geology, local mine geology and stratigraphy, ore mineralization characteristics, as well as drill core and recently cleared outcrops.

The next ILSG meeting will be May 16-17, 2017 in Iron Mountain, MI and we expect that a significant number of students, both graduate and undergraduate, to attend this meeting as well. Multiple SEG members also plan to present their research progress at this meeting.



2016-2017 UMD-SEG CHAPTER MEETINGS

The UMD-SEG chapter hosts monthly meetings for members as well as invited guest speakers. The chapter holds regularly scheduled meetings, consisting of group discussions regarding advancements in mining, major topics facing the mining industry, as well as topics presented by guest speakers from industry and academia. Several meetings are co-hosted with the UMD student chapter of the SME as well as the Mesabi Range Geological Society (MRGS), which offer the opportunity for student members to network and expand their knowledge of geology and related fields. During each meeting the treasurer of the student chapter shares up-to-date information regarding the chapters funds. This ensures that every member is aware of chapter incomes and expenses. In the past academic year (2016-2017) the chapter held 7 meetings and was able to invite two local speakers to give presentations.

Guest speakers for the 2016-2017 academic year included:

Larry Zanko

Senior Research Fellow for the Economic Geology Program within the Minerals Division of the Center for Applied Research and Technology Development. He is a geological mining engineer and has been with NRRI (Natural Resources Research Institute) since 1988. He has worked on a variety of research projects related to industrial, ferrous and nonferrous minerals. Areas of particular focus have included aggregates, biogeochemistry, geological data compilation, geostatistics, geological resource/mine modeling, environmental remediation, kaolin and ball clay evaluations, mining economics/tax comparisons and mineral waste characterization/utilization projects. (<https://www.nrri.umn.edu/about-nrri/our-people-68>)

Presentation Topic:

An Overview of NRRI Minerals-Based By-Product Research and Development

Activities: how current research and technological advances at the NRRI focus on the recycling and repurposing of mining materials and minerals processing by-products

Mark Severson

Received his BS in Geology from Western Illinois University, followed by a MS in Geology from the University of Minnesota Duluth. His professional experience includes positions as a Project Geologist with Teck American and as a researcher with the NRRI. His specialized economic geology research interests include: the iron ore resources of the Mesabi Iron Range, especially the stratigraphy and Cu-Ni deposits of the Duluth Complex.

(<http://www.d.umn.edu/prc/workshops/Instructor%20Bios/Mark%20Severson.pdf>)

Presentation Topic:

Cu-Ni deposits and magma chambers of the Duluth Complex: the stratigraphic unraveling of the Duluth Complex while core logging; the Cu-Ni-PGE ore deposits within the Duluth Complex and their petrogenesis

While we are satisfied with our SEG chapter accomplishments during the academic year of 2016-2017, there is always room for further improvement. We are proud to say that we are working on further opportunities for our chapter to expand and enhance its experience. In addition to finding new fundraising opportunities, the student chapter was able to move further along in its public forum initiative that had been planned previously.

2017-2018 UMD-SEG FUNDRAISING EVENTS

The UMD-SEG chapter would like to thank the SEG for the generous funding that allows this student chapter to be successful each year. Our local mining industry is facing difficult times. As a result of this our external solicitation efforts for industry donations continue to generate very few additional funds. Despite the rather difficult climate, UMD-SEG has planned other sources of fundraising to provide financial support for monthly meeting expenses, honorariums for invited speakers, and, especially, chapter-run fall and spring field trips. If fundraising is successful, the chapter hopes to use some of its financial resources to provide travel assistance to chapter members attending economic geology focused meetings, field trips, and workshops during the academic year. Proposals for fundraising activities are the following:

Adopt-a-Rock Sale

We plan to continue with the “Adopt-a-Rock” fundraising sale, which will occur for one week in each semester of the school year. In addition to the rock sale, we will continue to catalog and put up for sale the antique maps that the UMD geology department has donated to the SEG chapter. We are currently exploring other opportunities for fundraising such as an arts and crafts site on Etsy.com for selling collector-quality samples, antique map crafts, and crafts made from rock samples.

To complement these fundraisers, we are planning to offer a cutting and polishing service for rock and ore samples, a service unavailable in the area. This service would be used for fundraising, teaching material and as a resource for local rock/mineral clubs. This will also act as a promotional tool that may help us gain new members. The department, through the initiative of our faculty advisor, has already purchased the necessary equipment to realize this plan and our recent fundraiser has begun promoting this service.

Antique Map Sales

A fundraiser from donated samples and maps at the upcoming 2017 ILSG meeting in Iron Mountain/MI. Based on the success of last semester's fundraiser at the 2016 ILSG meeting in Duluth. we hope to continue this fundraiser.

Additional Fundraiser Ideas:

- Take a geologist for a hike, where we would accept a donation for SEG members time volunteered to hike with an interested party and explain the geology on one of the many readily-available hikes within Duluth, MN
- Map crafts, such as envelopes, bookmarks, stationery tags
- Rock crafts, such as candle holders, rock gardens, jewelry

2017-2018 UMD-SEG ACADEMIC YEAR PLANNED EVENTS

UMD-SEG is planning on organizing a minimum of three field trips for the 2017-2018 academic year; at this time, we have three trips cleared with permissions. During the first meeting of the 2017-2018 year, we plan to survey members for other ideas based off member interests.

Coleraine NRRI Lab

The first field trip of the 2017-2018 academic year will be a to the NRRI (Natural Resources Research Institute) Coleraine Lab in Coleraine, Minnesota: located near the taconite iron ore mines on the Minnesota Iron Range. NRRI's Coleraine lab is a world renowned research center for iron ore-related investigations. The field trip will be hosted by department directors at the lab; we have gained clearance for the field trip and are awaiting open time slots to plan the trip.

Thunder Bay, Ontario Amethyst Mines

Amethyst is a beautiful purple variety of quartz. We have two purposes for visiting the mines at this location: to learn about the genesis and mining of gemstones, as well as gathering ample sample amounts of samples to sell at the "Adopt-a-Rock" fundraiser sale. We plan to meet with the neighboring Lakehead University's SEG student chapter and professors for some inter-chapter field trip experience.

Cu-Ni-PGE Eagle Mine, Michigan

The Eagle mine, located near Marquette, MI, is a Cu-Ni-PGE mine and represents a prime example of responsible mining and community engagement on mining-related issues. The underground Eagle mine produces a Ni and Cu concentrated in their own milling facility and as such presents a great opportunity for students to see and experience many aspects of mining operations first-hand. In addition, a recent UMD graduate now works at the mine so students will have the opportunity to learn what a future employment by a mining company is like.

Planned Guest Speakers

Currently, two speakers have been invited to talk for the fall semester. Michael Orobona is the head geologist for the now-active Minnesota Cliff's Natural Resources taconite mine. We plan to organize for him to give a talk about the iron range geology and hopefully schedule an open-pit and minerals processing facility tour. Andrea Reed of the Minnesota Department of Natural Resources will be a guest speaker about the exploration efforts of lithium resources within Minnesota. She will talk about the lithium presence within Minnesota geology and how interested private investors would go about getting exploration rights to land.

2017-2018 CLOSING REMARKS

The UMD-SEG chapter has recently held new officer elections for the academic year of 2017-2018. The incoming officers have high ambitions and for the goals of the chapter in the forms of field trips, community outreach and education, and professional/industry involvement. New officers include:

President - Margaret Upton, *2nd year graduate*
Vice President - Jacqueline Drazan, *1st year graduate*
Treasurer - Andrew Regula, *1st year graduate*
Secretary - Jay Robbie, *senior undergraduate*
Professional Sponsors - Christian Schardt, George Hudak

In light of our proposed 2017-2018 activities, we are requesting \$1,500 from the SEG Student Chapter: Stewart R. Wallace Fund in order to help achieve our semester experience goals. Funds awarded to our club will primarily serve to offset travel expenses for our 2017 spring break trip but will also contribute to chapter activities such as shorter weekend trips within the Minnesota, Michigan Upper Peninsula, Thunder Bay (Ontario), and Wisconsin region.

We would like to thank the Society of Economic Geologists for its continued sponsorship of the University of Minnesota, Duluth's chapter.

MEETING DATE	# of ATTENDEES
9-22-16	12
10-20-16	11
11-16-16	8
2-15-17	10
3-1-17	10
3-15-17	10
4-26-17	7
AVG ~	10

ADVISOR	ADVISOR EMAIL	# of MEETINGS ATTENDED
Christian Schardt	cschardt@d.umn.edu	6
George Hudak III	ghudak@d.umn.edu	4
STUDENT NAME	STUDENT EMAIL (__ @d.umn.edu)	# of MEETINGS ATTENDED
Sebastian Szymutko	szymu001	7
Thomas Bouta	bouta017	7
Jordan Reimn	reimn005	7
Jeremy Hurley	hurle151	7
Ethan Engstrom	engst223	3
Nevada Lasher	lashe009	6
Geritt VanderWaal	vand0810	6
Jessica Wilson	wil00216	4
Margaret Upton	upton040	4
Shawnee McMillian	mcmil144	5
Tyler Soltis	solti018	2
Ann Hunt	huntx218	1
Jay Robbie	robbi197	3
Stephen Hanson	hans5179	1
Nathan Koski	koski173	1
Ross Salerno	saler026	1
GUESTS	EMAIL	AFFILIATE
Larry Zanko	lzanko@d.umn.edu	NRRI
Mark Severson	mseverson@nrri.umn.edu	NRRI