



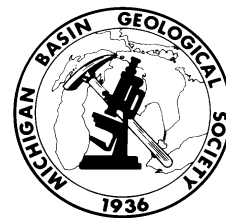
ON THE ROCKS

A Newsletter of the Michigan Basin Geological Society

2017-2018 Edition 7

www.mbgs.org

March 2018



MBGS ANNOUNCEMENTS

MONTHLY MEETING

March 14th, 2018: The March meeting will be held at Michigan State University, Natural Science Building at 7:00 pm in Room 351, Cameron J. Manche, Western Michigan University, will be presenting "Structural Controls on Migration and Evolution of Antrim Shale Gas in the Michigan Basin". Additional information is included in the newsletter.

GEOLOGICAL SOCIETY OF AMERICA SPECIAL PAPER 531

Special Paper 351 - Paleozoic Stratigraphy and Resources of the Michigan Basin. Contributions are needed for this momentous and timely GSA publication. If you can submit a donation as soon as practicable, GSA would greatly appreciate your support and you will be recognized. Please see attached GSA letter and form from Bill Harrison.

MBGS FIELD EXCURSIONS

April 13-15th, 2018 – GEOLOGIST RETREAT – YANKEE SPRINGS

The MBGS is hosting a "retreat" for our membership at Yankee Springs Recreation Area on April 13th through April 15th (Friday – Sunday). Rustic cabins/bunkhouses are reserved and we have room for 15 members to attend. This social event will include a geological presentation on the glacial landforms at Yankee Springs by Dr. Robb Gillespie, Assistant Professor of Geosciences, Western Michigan University. Friday evening and Saturday evening will be available as social time for the geologists to mingle and relax. Keep the weekend open and plan to join us!

SPRING 2020 - GEOLOGICAL EXCURSION BY RAFT ON THE COLORADO RIVER THROUGH THE *GRAND CANYON*

LEE'S FERRY TO WHITMORE WASH (PAGE, ARIZONA)

A 7-day Grand Canyon rafting trip through Hatch includes: 188 miles of rafting from Lee's Ferry to Whitmore Wash, pre-trip stay at Cliff Dwellers Lodge, helicopter ride & return flight to Las Vegas or Marble Canyon, and meals, beverages, camping gear and dry bags provided by Hatch while on the river. Contact Mark Wollensak at wollensak@voyager.net to get more information or reserve your spot on this trip.

TRIP BACKGROUND: The Michigan Basin Geological Society (MBGS) is returning to raft the Colorado River through the Grand Canyon in May of 2020. This is a repeat of the 2005 trip taken except this trip will be led by highly experienced geologist, Dr. Kata McCarville, Upper Iowa University. Many repeat stops are anticipated to be visited such as Lava Canyon, Redwall Cavern, Nankoweap Grainery and Havasu Canyon. New stops are also anticipated. The Grand Canyon is the first on the list of the Seven Natural Wonders of the World.

MBGS ONLINE STORE

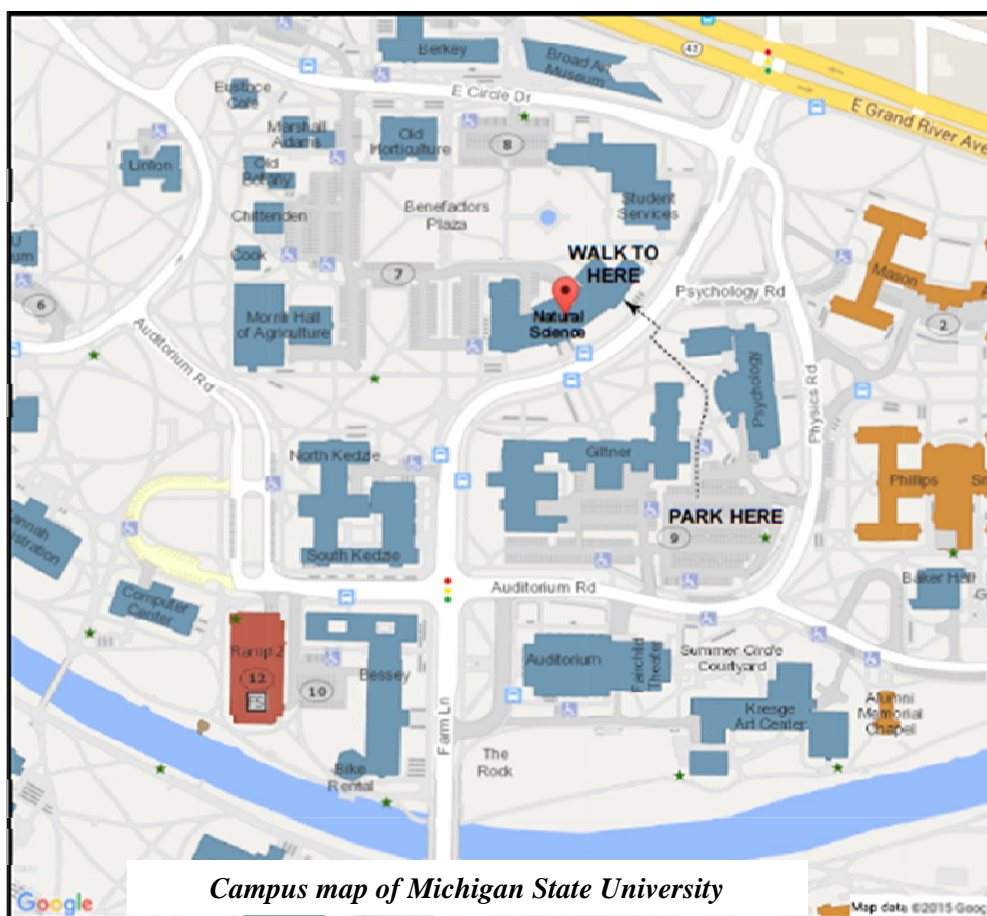
The Michigan Basin Geological Society now has an on-line store. Shop for shirts, hats, bags and other items at <http://www.cafepress.com/mbgs>. We appreciate any feedback on items you have purchased.

Michigan Basin Geological Society March 2018 Membership Meeting

Wednesday, March 14th
Michigan State University, Natural Science Building
7:00 PM in Room 351

Structural Controls on Migration and Evolution of Antrim Shale Gas in the Michigan Basin Cameron J. Manche, William B. Harrison, and Kyle J. Patterson

The Antrim Shale has been an economically viable source of natural gas in Michigan for nearly three decades. Despite the extensive exploitation of the Antrim Shale the origin of the natural gas is still poorly understood. Natural gas produced from the Antrim Shale consists of variable concentrations of methane, carbon dioxide, ethane, butane, and propane. Historically, Antrim Shale gas has been widely accepted to be of biogenic origin despite the occurrence of thermogenically derived hydrocarbons (e.g. ethane, butane, propane). In order for the Antrim Shale to source thermogenic gas it would have to reach a burial temperature of $>470^{\circ}\text{C}$, the Antrim Shale reaches a maximum burial temperature of 446°C . Since, the Antrim Shale did not reach a sufficient burial temperature to source thermogenic hydrocarbons we propose that it must be sourced from deeper stratigraphic formations. Additionally, it is proposed that the thermogenic hydrocarbons migrated through faults and fractures that propagated during the Alleghanian Orogeny. Finally, during the Wisconsin Glacial Episode scouring and eroding of bedrock exposed fractures enabled infiltration of glacial meltwater that introduced methanogenic bacteria. In summary, this research provides new insights on the influence of structural controls on the origin and evolution of natural gas within the Antrim Shale.



Between 5pm & 6pm you can park in Lot 9 behind Giltner Hall and the Psychology Building (former Physics and Astronomy building) for free. Otherwise you can try your luck with the metered slots clustered around the Natural Science Building and the adjacent Student Services Bldg, no charge after 6.

UPCOMING EVENTS



March 7th, 2018: Ohio Geological Survey, Geophysical Log Analyses, West Virginia University
<https://ohiogeosoc.org/events/geophysical-log-analysis-workshop/>

March 16-18th, 2018: 56th Annual Michigan Gem and Mineral Society's, Jackson County Fairgrounds American One Event Center, <http://www.mgmsrockclub.com/annual-show.html>

April 11th, 2018: Michigan Section AIPG Meeting, University Center of Central Michigan University, Mt. Pleasant. Speaker and topic TBA.

April 13-15th, 2018 – MBGS Geologist Retreat– YANKEE SPRINGS, Michigan, information included in the newsletter.

May 15th, 2018: Michigan Section AIPG Golf Outing, Moose Ridge Golf Course, South Lyon. Details in the attached flyer and on the Section website.

May 16 - 17th, 2018: Institute on Lake Superior Geology 2018 Annual Meeting, Iron Mountain, Michigan
<http://www.lakesuperiorgeology.org/IronMt2018/index.html>

June 12 -13th, 2018: Michigan Environmental Compliance Conference,
http://www.michigan.gov/deg/0,4561,7-135-3308_3333-451152--,00.html

June 12 -13th, 2018: Annual Michigan Section AIPG Technical Workshop to be held in Roscommon

September 8 -11th, 2018: 55th Annual AIPG Meeting to be held in Colorado Springs, CO

MDEQ Calendar of Training and Workshops
http://www.michigan.gov/deg/0,4561,7-135-3308_3333---,00.html



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2017-2018

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MBGS PUBLICATIONS

<http://www.mbgs.org/publications.html>



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Orders for publications should be prepaid in U.S. Funds and addressed to:

MBGS — Publications
P.O. Box 14044
Lansing, MI 48901-4044

Historical CD #1: Nine out-of-print publications from 1949 through 1965 and 1998, 2000, \$15

- The Stratigraphy of Manitoulin Island, Ontario, Canada, June 19-20, 1954
- The Devonian and Silurian Rocks of Parts of Ontario, Canada and Western New York, June 22-23, 1951
- The Traverse Group of the Northern Part of the Southern Peninsula of Michigan, June 16-17, 1949
- The Devonian Strata of the London-Sarnia Area, Southwestern Ontario, Compiled by Erwin C. Stumm, Lewis B. Kellum and Jean Davies Wright, June 9-10, 1956
- The Ordovician Rocks of the Escanaba-Stonington Area, Led by R. C. Hussey , June 2-3, 1950
- The Niagara Escarpment of Peninsular Ontario, Canada, June 18-19, 1955
- Lower Paleozoic and Pleistocene Stratigraphy Across Central Wisconsin, Compiled by C. E. Prouty, Led by L. M. Cline, J. L. Hough and R. F. Black, 1960
- Classic Silurian Reefs of the Chicago Area, by Donald G. Mikulic and Joanne Kluessendorf , June 27, 1998
- Geology of Central Ontario, Canada, 1965

Historical CD #2: Four out-of-print publications from 1947, 1959, 1983 and 1991, 2001, \$15

- Copper Country Field Trip, Michigan, June 20-22, 1947
- Geology of Mackinac Island and Lower and Middle Devonian, South of the Straits of Mackinac, June 12-14, 1959
- Tectonics, Structure and Karst in Northern Lower Michigan, August 1983
- Geology of the Pictured Rocks, Upper Peninsula, Michigan, July 11-13, 1991

Historical CD #3: Six out-of-print publications from 1948, 1952, 1990 - 1995, 2001, \$15

- Pleistocene and Early Paleozoic of the Eastern Part of the Northern Peninsula of Michigan, June 18-21, 1948
- Stratigraphy and Structure of the Devonian Rocks in Southeastern MI and Northwestern OH, June 20-21, 1952
- Lower Ordovician and Upper Cambrian of Wisconsin , May 10-12, 1990
- Guidebook to the Precambrian Geology and Metallogeny of the Central Upper Peninsula of Michigan September 12-13, 1991

Historical CD #4: Six out-of-print publications from 1957, 1958, 1961, 1967, 1968 and 1970, 2004, \$15

- Silurian Rocks of the Northern Peninsula of Michigan , 1957
- Cambrian Geology of Parts of Dickinson and Iron Counties, Michigan, June 1958
- Geologic Features of Parts of Houghton, Keweenaw, Baraga and Ontonagon Counties, Michigan, May 19-21, 1961
- Correlation Problems of the Cambrian and Ordovician Outcrops Areas, Northern Peninsula of Michigan 1967
- The Geology of Manitoulin Island, June 1968
- Devonian Strata of Alpena and Presque Isle Counties, Michigan 1970

Historical CD #5: Five out-of-print publications from 1971, 1989, 2001, and Oil & Gas Fields Vol. 1 & 2, 1969 & 1992, 2006, \$50

- Oil & Gas Fields Symposium, Volume 1, April 1969, 200 pp., maps, illus., second printing with updates
- Oil & Gas Fields Manual of the Michigan Basin, Volume 2, 1992, 520 pp., maps, illus.
- Glacial Geology of Southwestern Michigan, 1989, 53 pp. by A. Kehew, L. J. Schmaltz, and W. T. Straw
- Geology of the Lake Erie Islands and Adjacent Shores, 1971, 65pp., maps, illus. by Jane L. Forsyth
- Glacial Geology of Southwestern Michigan, Landforms of the Lake Michigan Lobe, Southwestern Michigan, 2001, AAPG Eastern Section Meeting Field Trip, 32 pp., maps, illus. by A Kehew and A. Kozlowski

Historical CD #6: Six out-of-print

publications from 1946, 1953, 1963, 1966, 1978 & 1987 plus the Richfield Challenge, 1952 & Tom Knapp's MS Thesis, 2007 \$15.

- Guidebook for Ordovician Stratigraphy of the Cincinnati, Ohio and Richmond, Indiana Areas, June 12, 13, 1953 by W. H. Shideler and B. T. Sandefur
- Guidebook for Ontario Geological Excursion to Kettle Point – Owen Sound- Waubesa, June 21, 22, 23 1946 by W. A. Roliff, C.S. Evans and J.F. Caley
- Guidebook for the Stratigraphy of the Silurian Rocks in Western Ohio, May 31-June 2, 1963 by C. H. Summerson, Jane L. Forsyth, Karl V. Hoover and J. R. Ulteig
- Guidebook for Cambrian Stratigraphy in Western Wisconsin, May 21, 22, 1966 by Merideth E. Ostrom
- Geology of the Manitoulin Area, Special Papers #3, September 29, 30 and October 1, 1978 by J. T. Sanford
- and R. E. Mosher
- Middle Devonian Cratonic Carbonates and Shales in Southwestern Ontario, November 14, 1987 by Bruce Wilkinson
- The Richfield Challenge, A Review of the Richfield Developments in Michigan, 1952 by Gordon H. Hautan
- A Theory of Rogers City and Dundee Relationships in Central Michigan, Masters Thesis, 1947 by Tom Knapp

Historical CD #7: Field Guidebooks from 1962, 1969, 1977, 1980, 1985 & 1988, \$15

- Silurian Rocks of the Southern Lake Michigan Area, 1962, James H. Fisher, Chairman, MBGS Annual Field Conference
- Studies of the Precambrian of the Michigan Basin, by Harold B. Stonehouse, 1969
- The Geology of the Marquette District: a Field Guide By F. W. Cambray, 1977
- Ordovician and Silurian Geology of the N. Peninsula of Michigan, 1980, R.B. Votaw, 40 pp., illus., maps
- Special Paper #4: Ordovician and Silurian Rocks of the Michigan Basin and its Margins, 1985 K.R. Cercione and J.M. Budai (eds.), 96 pp., illus.
- Upper Keweenaw Rift-Fill Sequence, Mid-Continent Rift System, Michigan, 1988, P.A. Daniels and R.D. Elmore, M.S. Wollensak, ed., 150 pp., illus., maps

OTHER SPECIAL OFFERS

- **Historical CD Set - # 1 – 7 (detailed above) for a special purchase price of \$95**
- **NE Lower Peninsula Geological Field Conf., 2004, T. Black, M. Wollensak, On CD \$10**
- **Stratigraphic Lexicon for Michigan, 2001, prepared by MBGS and published by DEQ, \$4**
- **Robert E. Mosher Geological Studies** A lifetime of geological research on Silurian Rocks with John T. Sanford. The disks are organized chronologically and include field work in North America and Europe. 2007, 2 CDs \$35.



SCIENCE ■ STEWARDSHIP ■ SERVICE

February 15, 2018

Re: GSA Special Paper 531: *Paleozoic Stratigraphy and Resources of the Michigan Basin*

Dear Colleague:

The Geological Society of America will soon publish Special Paper 531: *Paleozoic Stratigraphy and Resources of the Michigan Basin* (edited by G. Michael Grammer, William B. Harrison III, and David A. Barnes). The book contains 15 papers that summarize much of the key research that has been done on the Michigan Basin over the past 10 to 15 years (see attached table of contents). I understand from the editors that you have been engaged with and supportive of scientific research in the Michigan Basin and am writing to ask if you would consider helping support the publication of the volume.

Publication of scientific results with full color figures, as will be included in this volume, can be expensive, and the costs do affect the selling price and distribution of the volume. With the advice of the editors, we are asking a select group of companies and individuals for help subsidizing printing of the book. Your financial support will help disseminate these new and exciting scientific findings from the Michigan Basin and will also reflect on your support of scientific research.

A contribution of any amount will help reduce the ultimate price of the book to individuals and libraries, and all contributors will be acknowledged in the book. For contributions of US\$1,000 or more, your company's logo will appear with other contributor logos on the volume's Acknowledgments page (see attached sample), as well as with other recognition of GSA sponsors.

As an international scientific society, GSA serves members in academia, government, and industry around the world. Since 1888, GSA's meetings, publications, and programs have enhanced the professional growth of geoscientists and fostered geoscience stewardship and service. GSA encourages cooperative research and public dialogue on geoscience issues and supports all levels of earth-science education.

Thank you for your time and consideration.

Sincerely,

Jeanette Hammann
GSA Director Publications

GSA Special Paper: Paleozoic Stratigraphy Stratigraphic Resources of the Michigan Basin

G. Michael Grammer, William B. Harrison III and Dave A. Barnes (editors)

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1. Grammer, G.M., Harrison, W.B. III, and D.A. Barnes, Introduction to the Paleozoic Stratigraphy Stratigraphic Resources of the Michigan Basin
2. Zdan, S. and D.A. Barnes, Regional Reservoir Characterization of the Ordovician St. Peter Sandstone, Michigan Basin, U.S.A.
3. Sattler, F.R. and D.A. Barnes, Geological Characterization and Assessment of Confining Layer Potential of the Upper Ordovician Utica Shale, Michigan Basin, USA
4. Voice, P.J., Harrison, W.B. III, and G.M. Grammer, A Reevaluation of the Burnt Bluff Group (Lower Silurian, Michigan Basin) from the Subsurface and Outcrop Data: Development of a Time-Transgressive Depositional Model
5. Ritter (Varga) A. and G.M. Grammer, Utilizing Sequence Stratigraphy to Develop a Depositional Model for Silurian (Niagaran) Reefs in the Michigan Basin
6. Wold, J.L. and G.M. Grammer, Rock-based 3-D Reservoir Characterization of a Silurian (Niagaran) Reef – Ray Gas Storage Field, Macomb County, Michigan
7. Trout, J.L, Grammer, G.M. and W.B Harrison III, Windward vs. Leeward Variability of Faunal Distribution in a Silurian (Wenlock) Pinnacle Reef Complex – Ray Reef, Macomb County, Michigan
8. Toelle, B. and Y.V. Ganshin, Porosity Characterization in a Silurian Reef, Northern Michigan Basin, Using Azimuthal Seismic and Potential Impacts for EOR
9. Rine, M., Garrett, J., and S. Kaczmarek, A New Sequence Stratigraphic Model for the Silurian A-1 Carbonate of the Michigan Basin
10. Harrison, W.B. III and P.J. Voice, Evaporite Facies of the Michigan Basin
11. Pollard, K., Rock, F. and D.A. Barnes, Middle Devonian Sylvania Sandstone, Michigan Basin, U.S.A.
12. McCloskey, S.M. and G.M. Grammer, Utilization of Modern and Ancient Analogs to Constrain 3-D Geostatistical Models, Devonian of South Buckeye Field, Michigan Basin
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15. Benison, K.C., the Pennsylvanian Pewamo Formation and Haybridge strata of central Michigan: The youngest rocks of the Michigan Basin?



Europcar - With thanks for sponsoring the vehicles during the excursion in 2008, which made this field guide possible.



Statoil - With thanks for paying the travel and accommodation costs for Marc Edwards in 2007 and 2008.



Talisman Energy – With thanks for sponsorship

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GSA Special Paper 531: *Paleozoic Stratigraphy and Resources of the Michigan Basin*

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Geophysical Log Analysis Workshop

Reading the Rocks - All in Four “Easy” Tracks

Instructor: Dr. Tim Carr, Professor of Geology, West Virginia University

Sponsored by the Ohio Geological Society in conjunction with the Ohio Oil and Gas Association Winter Meeting

When: March 7th 2018 from 10am to 4pm with one hour for lunch and 2-15 minute breaks

Where: Hilton at Easton 3900 Chagrin Dr, Columbus, OH 43219, (614) 414-5000

What: Dr. Carr will lead instruction of four tracks each covering the basic concepts and uses of major log suites. Each track includes exercises in log analysis using EXCEL spreadsheets.

Who should attend: This course will help new and experienced geologists and geoscience technicians who work with geophysical logs and wish to learn or refresh log interpretation skills. OGS offers 0.5 CEUs or 5 PDHs upon completion.

Cost : Professional rate \$125 per person; Student rate \$100/person (student rate limited to 10 total).

Registration: Online through the Ohio Geological Society website at;

<https://ohiogeosoc.org/events/geophysical-log-analysis-workshop/>

Overview: Basic questions in the petroleum geosciences require knowledge of the sub-surface reservoir properties, and the spatial distribution of stratigraphic units and facies. This course is structured around four main tracks of wireline and LWD logs. Attendees will learn some theory, but more of the practical applications behind a range of methods and gain hands-on experience to address real-world challenges of understanding the subsurface. Attendees will get Excel templates to undertake brief exercises around each of the four tracks. OGS will provide copies of all material. OGS offers 0.5 CEUs or 5 PDHs to participants upon completion.

Track 1 – Gamma Ray and Caliper with exercise

Track 2 – Porosity Logs and Lithology with exercise

Track 3 – Resistivity and Water Saturation with exercise

Track 4 – Sonic and Geomechanics with exercise

IMPORTANT: If you have a laptop with Excel, please bring it. If not, you can look on others neighbors screen. If you have an LAS log with an interesting question, please feel free to bring it.

MICHIGAN BASIN GEOLOGICAL SOCIETY GEOLOGIST'S RETREAT APRIL 13-15, 2018

THE RIDDLE OF THE GLACIERS An Examination of the Yankee Springs Glacial History

- DATE:** Friday, Saturday and Sunday – April 13th, 14th & 15th, 2018
- FEE:** \$40 for MBGS Members (adult or student); \$50 for non-MBGS members.
- LOCATION:** Yankee Springs Recreation Area, Middleville, MI
- LODGING:** We have reserved 3 rustic cabins capable of bunking 18 members. You will need to bring your sleeping bag and pillow for this social event. Fee includes: a bunk for 2 nights, 2 breakfasts, a lunch and dinner.
- LEADERS:** Dr. Robb Gillespie, Assistant Professor of Geosciences, Department of Geosciences, Western Michigan University, Kalamazoo Michigan
- REGISTRATION:** Please email Mark Wollensak at wollensak@voyager.net to get your name on the attendees list. *We have room for only 18 participants. Separate cabins for each gender will be provided.* Complete and submit by April 2 the registration form below with fee to guarantee your reservation once you have your name on the attendees list.

General outline of this retreat:

This is a social event to allow members to assemble in a relaxed environment to share knowledge and mingle. In addition to spending the majority of Saturday viewing, hiking and discussing the glacial landforms left by the glacial retreat, time in the evenings can be spent playing euchre, other card games, or relaxing and sharing tales.

A little about our trip leader:

Dr. Robb Gillespie is professor of sedimentology, petroleum geology and geomorphology in the Department of Geosciences at Western Michigan University. His research through the department and the Michigan Geological Repository for Research and Education focuses on sedimentation, petroleum geology and glacial landscapes of the southeast Georgian Bay area of Ontario, Canada.

Name: _____

Phone Number: _____

Address, City, State, Zip: _____

Email Address: _____

Comments: _____

Notes: Please let us know if you have any dietary requirements/restrictions or food allergies.

If you are not a member, you will be required to complete the MBGS membership application, which can be found on our website: <http://www.mbgs.org>.

Please make check payable to "Michigan Basin Geological Society" in US\$.

Mail Completed Form and Payment to:

MICHIGAN BASIN GEOLOGICAL SOCIETY
ATTN: APRIL RETREAT @ YANKEE SPRINGS
P.O. Box 14044
Lansing, MI 48901, USA

MICHIGAN BASIN GEOLOGICAL SOCIETY GEOLOGIST'S RETREAT APRIL 13-15, 2018

THE RIDDLE OF THE GLACIERS An Examination of the Yankee Springs Glacial History

WHAT TO BRING:

1. Outdoor shoes/boots with ankle support are suggested. Plan on hiking trails to view and discuss glacial features. Off trail hiking may occur.
2. Rain jacket, weather appropriate clothing.
1. Camera, note-book, pencil.
2. Evening snacks to share.
3. Bring your favorite beverages.

GEAR FOR OVERNIGHT STAY:

3. Sleeping bag, pillow, sleeping wear. We will have 3 cabins to use.
4. Clothing for indoor and outdoor activities, personal supplies.

SCHEDULE OF EVENTS:

DAY 1 – Friday, April 13th, 2018:

6:00pm-12:00am Meet at Cabins to check in and be assigned a bunk. Gather for drinks, snacks, cards and relaxing!

DAY 2 – Saturday, April 14th, 2018:

8:00am Rise and shine.

8:30am – 9:30 am Breakfast.

9:30 am – 12:30pm Presentation by Dr. Robb Gillespie on glaciation at Yankee Springs Recreation Area. May have indoor presentation and hiking. May ask for assistance in carpooling around park as needed.

12:30pm - 1:30pm Lunch

1:30pm – 5:00pm Hiking and discussion lead by Dr. Robb Gillespie on glaciation at Yankee Springs Recreation Area. May ask for participants to assist in carpooling around park as needed.

5:00pm - 6:00pm Appetizers and aperitifs

6:00pm - 7:30pm Dinner

7:30pm – 12:00am Social time for card games, drinks, relaxing, campfire, etc.

DAY 3 – Sunday, April 15th, 2018:

8:00am Rise and shine.

8:30am – 9:30 am Breakfast

9:30am - 12:00pm Cleanup cabins and clear out.

12:00pm Trip ends - *Return whence you came!*