

**Michigan Section
American Institute of Professional Geologists
MEETING ANNOUNCEMENT**

December 1, 2016

**UNDERSTANDING TENORM-RELATED CHALLENGES ASSOCIATED WITH MICHIGAN
BASIN HYDROCARBON PRODUCTION**

Featured Speaker

[Don Carpenter, Arcadis](#)

Location: Weber's Inn, Ann Arbor, MI (Map attached)

Cost: Students Free, Members \$30.00, Non-members \$50.00. Registration is payable electronically via Eventbrite (see link below) or at the door by cash or check; however, prepayment is preferred and speeds up the check-in process at the door. *Please note: Cancellations made within 48 hours of the meeting and/or "No Shows" will be charged and expected to pay the registration fee.*

Dinner: Choice of: Marinated flank steak, grilled, thinly sliced with au jus; Northern lakes whitefish with lemon crumbs and almonds; Pan-seared chicken, Tuscan andouille sausage, mushrooms, red onion, cilantro, sun-dried tomatoes in a reduced cream sauce.

Time: Cash Bar 5:30-6:30 PM, Dinner 6:30 PM, and Speaker 7:30-9:00 PM

RSVP: On the Eventbrite website no later than November 28th at: <https://www.eventbrite.com/e/aipg-2016-annual-michigan-section-meeting-tickets-28431027970>. You can select your meal choice and pay online if you choose, or pay at the door by cash or check.

Note: Space is limited; sign up early!

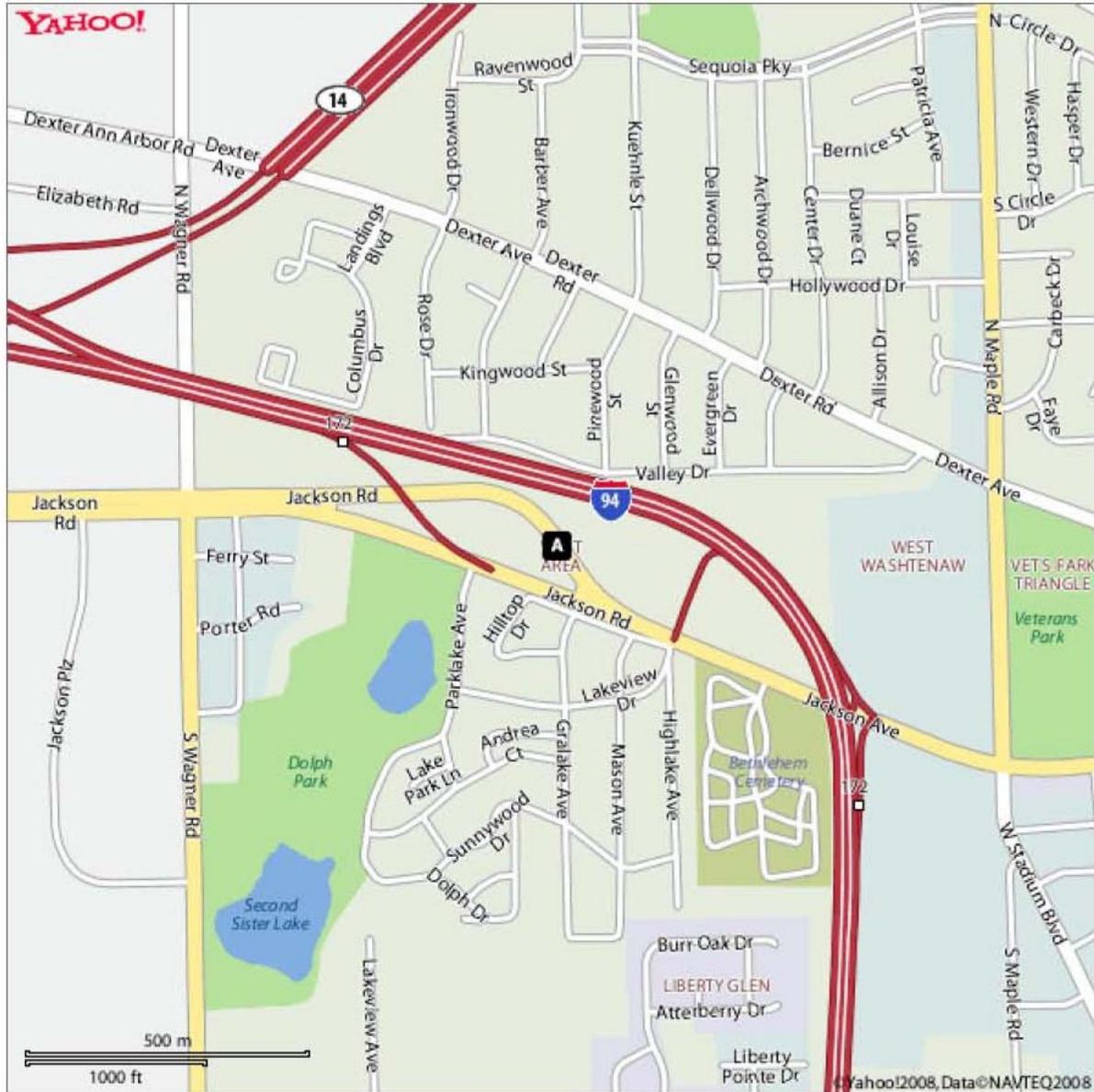
Abstract: The discovery of oil and gas-related Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) can be a very adverse surprise with important implications to worker safety, divestment and compliance with operational and material-disposal-related matters, in addition to operational routines. The purpose of this presentation is to examine the geochemical behavior of TENORM-forming constituents harnessing the advantages offered by solution equilibria geochemical models in providing estimates as to the potential for and the probable location of TENORM-bearing precipitates, including those consisting of both radium-enriched alkaline earth (dominantly, barium) sulfates and those consisting of Lead-210. The additional complexity posed by the presence of very high ionic strength oil and gas-related production fluids in the geochemical modeling effort will be shown to be addressed through the use of a specially augmented thermodynamic database; one that additionally includes the ability to simulate changes in solution temperature and oxidation/reduction state and how these changes impact the development of radioactive precipitate. The presentation will provide insight as to how these observations can be leveraged to assess hydrocarbon production within the Michigan Basin as to TENORM formation and further how specific State of Michigan TENORM regulations apply to impacted materials.

Speaker Bio: Don is a Senior Vice President, Distinguished Expert, and Chief Geochemist at Arcadis in their Novi, Michigan office. He has a B. S. in Geology from Michigan State University and an M. S. in Geochemistry from the Colorado School of Mines. He has 36 years of experience in uranium mining and restoration and investigation and remediation of various forms of radioactive materials, including oil and gas-related Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), which he will be discussing. He is also currently serving on the State of Michigan TENORM Subcommittee who are examining the State's current TENORM regulations.

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Weber's Inn, Ann Arbor

Map of 3050 Jackson Ave, Ann Arbor, MI 48103-1907



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.