



Ohio Section

American Institute of Professional Geologists

Fall Issue
October 2011

Chartered 1965

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Hydraulic Fracturing and Horizontal Drilling for Shale Gas Development October 20, 2011

Jeffrey J. Daniels, Professor
School of Earth Sciences, The Ohio State University

Location: LaScala Italian Bistro;
<http://www.lascalaitalianbistro.com/LaScala.html>

Schedule: Social Hour 5 pm; Dinner 6 pm; Presentation 7 pm

RSVP: President-Elect Greg Kinsall, (614) 526-2040
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See full announcement on page 2

Ohio Section Fall Field Trip Fossil Hunting in the Devonian Silica Formation October 22, 2011

Lafarge North American Limestone Quarry

RSVP: President-Elect Greg Kinsall, (614) 526-2040;
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See full announcement on page 7

Ohio Section Annual Meeting Dinner Presentation November 10, 2011

Dr. Patrick Leahy, National Executive Director
American Geological Institute

See full announcement on page 10

Hydraulic Fracturing and Horizontal Drilling for Shale Gas Development

October 20, 2011

Jeffrey J. Daniels, Professor, The Ohio State University

Natural gas exploration and development has been forever changed in the past 10 years by two technological advancements: horizontal drilling and hydraulic fracturing (“fracking”). Horizontal drilling is the revolutionary technology that has significantly increased natural gas production from around 1% of our domestic supply in 2000 to approximately 25% today. Horizontal drilling enables engineers to expose the perforated casing to a much greater volume of shale than in a vertical drill hole, resulting in a significant increase in gas production compared to a vertical hole. Fracking is the process of pumping fluids under high pressure into the shale rock until fractures are developed in the rock, and has been used routinely for decades (since at least the 1950’s) to enhance oil recovery in vertical wells. The chemical composition of frack fluids vary, with the primary component being water (99.5-100%), and the remaining 0.5 to 1% consisting of chemical additives that range from non-toxic citric acid to benzene. The sequence of activities to frack a shale formation in a well are: 1) the hole is drilled and cased with several layers of thick steel pipe (often pipes with 5 different diameters are used to protect the groundwater), 2) the region above the shale and between the rock and the steel pipes are sealed with cement, 3) the steel pipe is perforated with holes to enable fluids to be pumped into the rock, 4) frack fluids are pumped in to the pipe under pressure to fracture the shale rock, 5) gas, water, and sometimes oil, are pumped from the well, and 6) gas, oil, and water are separated on the surface.

One of the primary environmental concerns is the potential for groundwater contamination. Given the depth of the gas shale layers and the rapid return of the pressure in the shale after fracturing, groundwater contamination is considered unlikely. To address public concerns, many companies are now instituting a program to sample the shallow groundwater wells in the vicinity of a gas production well prior to drilling, and to monitor the water wells for any indication of increases in produced natural gas components, frack fluids, or other chemicals associated with the production process. Also, there are now methods (e.g., microseismic monitoring) to remotely monitor the progression and extent of fractures created in the shale. Two additional sources of concern are the volume of fresh water pumped down the drill hole during hydraulic fracturing, and the production and disposal of large volumes of saline (non-potable) water and frack fluids that are by-products of the extraction process. Often waste-water is injected into sandstone layers that are deeper than the gas-producing shale layers. There are also concerns about potential air pollution associated with the process of extracting natural gas from the water pumped from the subsurface. Technical ways and means are now available to control potential water and air pollution problems.

Shale gas development by fracking and drilling presents questions about balancing new energy development to meet societal needs with the imperative of protecting our environment. If concerns about potential air and water contamination are addressed with engineering controls, long-term environmental monitoring, and appropriate oversight, then shale gas may provide society with an additional domestic source of energy for the future that may

supplement other higher carbon-emitting fossil fuels and compliment developing alternative energy sources.

Biography

Jeff Daniels is an applied geophysicist, with a broad base of experience in surface and borehole geophysical methods applied to subsurface science. His research focuses on developing geophysical techniques to image objects, and monitor gas and fluids in the subsurface. His personal research funding has been continuous since he came to OSU in 1985, with funding sources ranging from DOD, NSF, and the EPA. He is the author of over a hundred publications in journals and proceedings, a book, and several book chapters. He regularly serves on professional panels (e.g., CIC Leadership Forum, NRC Committee on Subsurface Characterization), is currently is a member of the Science Advisory Board for SERDP (DOD's environmental research program), and a member of the College of Reviewers for the Canada Research Chairs Program. He is the former co-chair of the Energy Working Group for the university (2006), a founding member and organizer of the University Clean Energy Alliance of Ohio (a consortium of Ohio's 15 research universities organized in 2007), and a prime mover in organizing the University Consortium for Futuregen (a consortium of 8 major universities in Ohio and the Midwest). He was also the prime mover, and technical PI, of a successful proposal to the Third Frontier Program (Ohio Department of Development) for an Endowed Chair in Geologic Carbon Sequestration.

Survey Geologist D. Mark Jones

Members Enjoy Informative Lake Erie Shoreline Erosion Presentation

The Ohio Section wishes to thank D. Mark Jones, of the ODNR Division of Geological Survey, for his informative presentation to the membership on erosion problems on Ohio's Lake Erie coast, on June 30, 2011. Mr. Jones explained that Ohio's coastal erosion program was a response to decades of land loss, infrastructure damage, and haphazardly designed shore protection structures that sometimes exacerbate erosion problems. The program identifies coastal erosion areas (CEAs) likely to be impacted by erosion in the next 30 years. The latest maps show that the amount of Ohio's coastline in a 30-year recession zone has declined by about two-thirds since the first maps were finalized. The reduction is most likely due to lower lake levels and increasing amounts of engineered shoreline protection.

MESSAGE FROM THE PRESIDENT

Tom Berg, CPG08208



TO THE FIELD! A year ago, my wife and I visited the Giant's Causeway (left) on the Northern Irish coast. This is a series of tremendous, world-class exposures of early Paleogene columnar basalt (60 million years old). Legend has it that the Irish giant, Finn MacCool, built the causeway so that he could do battle with the Scottish giant Benandonner. Ireland and Northern Ireland are rich in geological wonders—but so is Ohio. On October 22, the AIPG Ohio Section will conduct a field trip to a world-class, fossil-collecting locality at the Lafarge North America limestone quarry in Paulding County. This will be a very exciting trip and a unique opportunity to collect beautiful, pyritized, Devonian marine fossils! See the announcement in this AIPG Ohio Section Newsletter!

NATIONAL AIPG MEETING IN BLOOMINGDALE, ILLINOIS—From September 10 through 13, 2011, I attended the 48th AIPG Annual Meeting at Bloomingtondale, just west of Chicago, Illinois. It was hosted by the AIPG Illinois/Indiana Section and the American Institute of Hydrology. The meeting was sponsored by a large number of exhibitors and AIPG sections. The AIPG Ohio Section was one of ten sponsoring sections.

Saturday, September 10 was a very busy day beginning with the Executive Committee Meeting in the morning. The Institute officers, national committee chairs, and Executive Director all gave reports on their duties and activities. Minutes of the National Executive Committee meeting will be posted at <http://www.aipg.org/Meetings/PastMeetings.html>. After the officer reports, an account of activities at the American Geological Institute (AGI) was given by P. Patrick Leahy (who will be our speaker at the Ohio Annual Banquet Meeting). Of particular interest, Pat announced that AGI is changing its name to “American Geosciences Institute” to more broadly describe the breadth of its activities. The number of member societies has now reached 50. Educational activities at AGI are a very high priority, and the Institute is looking toward the development of electronic textbooks. Leahy explained that, as always, AGI will play the lead role in the national Earth Science Week (ESW), Oct. 9-15.

On Saturday afternoon, the outgoing and incoming National Advisory Boards met. Of particular interest, Ohio Section Member Brent Huntsman, CPG04620 was elected to serve on the incoming 2012 Advisory Board. Congratulations, Brent! During the 2011 Advisory Board meeting, individual AIPG Section Reports were presented. My report on Ohio is at: http://www.aipg.org/Meetings/mtg_proceedings/2011annmtg/2011%20Section%20Advisory%20Reports.pdf.

Of particular interest and concern on Saturday, there was a special session from 4:00 to 6:00 pm on the national report: *AIPG Ad-Hoc Committee on Support of State Sections*. The session was chaired by James Howard, CPG. Jim and committee members Helen Hickman, Bob Gaddis, Jim Jacobs, John Stewart, Foster Sawyer, and Mark Rogers made an extensive assessment of all the AIPG sections in early 2011. The report submitted to National AIPG in May 2011 states that the activity level of many sections is very low. “Of the 38 Sections in

AIPG, 7 are now officially inactive (no officers or tax reports submitted), and 13 sections have not reported Section officers for 2011 as of this report. Representation at the Section delegates meetings at the national convention has been very low (20 Sections in 2009 and only 16 Sections in 2010). In 2009, only 17 Sections submitted any information on their Section activities to the TPG, a location where free publicity and information dissemination is available to all Sections and members. Annual reports were submitted by only 20 Sections in 2009 and by 16 Sections in 2010." The report goes on to say, "At National level, the number of applications for AIPG Certified Professional Geologist (CPG) certification has declined since 1998. This time frame seems to coincide reasonably well with the general expansion of geologic licensing/registration by 29 states in the U.S. Assessment of the data available indicates a general trend, at least in the last ten years, of slow but steady decline in Section activity, involvement and membership growth at the National level." At the Saturday afternoon session on this report, there was some lively discussion regarding the level of negativity in the document. I urge members of the AIPG Ohio Section to read the report at: http://www.aipg.org/Sections/Final%20Report%205-5-11%20_2_.pdf. This is an important AIPG document and you should be familiar with it. I think Jim Howard's closing statement is crucial: "Above all, results of the Survey comments and review of the status of our existing Sections indicate that AIPG *must* become more visibly involved in activities affecting the profession and our unique missions of Advocacy, Ethics and Professional Competence at both the national and local levels. We must demonstrate to our Sections and to the profession as a whole that AIPG's role of Advocacy for the Geosciences and Promotion of Professional Ethics and of Professional Competence is vital to the growth, vitality and survivability of the profession." PLEASE READ THE DOCUMENT!

Sunday was dedicated to field trips, exhibits, the American Institute of Hydrology Executive Committee Meeting, and the Welcoming Reception. Technical sessions dominated Monday and Tuesday of the meeting. I was impressed with the diversity of subjects which included remote sensing, geophysics, ground-water resources, high-resolution site characterization, sustainable development & urban geology, brownfield redevelopment, vapor intrusion, chemical oxidation technology, sustainable use of water resources, carbon sequestration, and ecosystem remediation. The national meeting *Program* with abstracts may be found at: http://www.aipg.org/Meetings/mtg_proceedings/2011annmtg/2011%20Program%20Illinois.

GOING TO BAT FOR THE OHIO GEOLOGICAL SURVEY—On September 6, 2011, the Cleveland Plain Dealer published an article on the Ohio Geological Survey's budget by AIPG Ohio Section Member Peter MacKenzie, CPG10698. The article titled, *Geological Survey in Fiscal Peril* is an important and succinct contribution in the battle to restore General-Revenue funding to the Division of Geological Survey in the Ohio Department of Natural Resources. Peter is an exploration geoscientist who obtained his geology degree from The Ohio State University. He is CEO and Founder of MacKenzie Land & Exploration, Ltd. of Worthington, Ohio, which conducts oil and gas exploration, prospect generation, and strategic consulting. Peter also represents the oil and gas industry on the Geological Survey's Ohio Geology Advisory Council. He is very well-qualified to speak on behalf of the Survey. In his article, MacKenzie describes the history and enormous value of the State's Geological Survey. He explains that in a recent professional analysis of the survey's impact on Ohio's economy by Kleinhenz & Associates, it was shown that the Ohio Geological Survey contributed \$575 million to the state's economy. Without the data and geological interpretations provided by the Geological Survey, the negative impacts of eliminating its \$2 million in General-Revenue Funds are horrendous and unconscionable. Peter MacKenzie exhorts all of us: "Restore funding to the Ohio Geological Survey: It is in the interest of the State of Ohio, of public safety, of common sense." Thank you, Peter MacKenzie. I urge all AIPG members to read Peter's article at http://www.cleveland.com/opinion/index.ssf/2011/09/geological_survey_in_fiscal_pe.html.

U.S. DEPARTMENT OF ENERGY NATURAL GAS SUBCOMMITTEE—Last January, the USDOE's Secretary of Energy Advisory Board (SEAB) established the *Natural Gas Subcommittee* to evaluate the part natural gas will play in our future clean-energy economy. In March, Energy Secretary Steven Chu asked the subcommittee to provide suggestions for actions to improve the safety and environmental performance of shale-gas extraction processes. The subcommittee issued a preliminary, *Ninety-Day Report* on August 11, 2011, which calls for advancement and amplification in the management of shale-gas development in the U.S. The recommendations in the report involve "... creation of a public database of information about shale gas drilling, disclosure of fracturing fluid composition, reduction in the use of diesel fuel, creation of a national organization to improve best practices, and investment in research and development." The report is to be available for public comment for 90 days, and a final report is to be released on November 18. I urge AIPG members who are interested in development of shale gas and fracking in Ohio to read the *Ninety-Day Report* at http://www.shalegas.energy.gov/resources/081111_90_day_report.pdf. Further, I urge AIPG members who are concerned about the content of this report to submit public comment at <http://app.fossil.energy.gov/app/shalegas/CommentForm.aspx>.

UPCOMING OHIO SECTION ACTIVITIES—We have some exciting AIPG activities and functions coming up in the next two months. On October 20, we will have Dr. Jeff Daniels from The Ohio State University as our dinner speaker. He will talk to us about shale-gas development and fracking in Ohio and the Appalachian Basin. See the announcement in this Newsletter. On October 22, we will conduct our Fall Field Trip to the Lafarge quarry in Paulding County. The pyritized fossils are dazzling! Read the special notice in this Newsletter. And again, I remind our readers to sign up for our Annual Banquet Meeting that will take place on November 10. Remember that our Keynote Speaker will be Dr. P. Patrick Leahy, Executive Director of the American Geosciences Institute. See the detailed message in this Newsletter.

NEW OHIO SECTION WEBSITE!!—I offer a special thanks to Tim Greenway, CPG11192, his Ohio Section Website Committee, and Carol Swinehart for creation of the new AIPG Ohio Section Website! The updated and renewed Website is great. Take a look at it and send comments and suggestions to Tim Greenway at Tim.Greenway@Scotts.com.

**Karst Hydrology
Professional Development Conference
Kentucky AIPG, October 19 through 20, 2011**

The Kentucky Section of AIPG invites Ohio Section members to its Second Professional Development Conference titled Karst Hydrology, on Wednesday, October 19 and Thursday, October 20, 2011. For more information, directions, and registration see the Kentucky Section website: <http://ky.aipg.org/>

Ohio Section Fall Field Trip Fossil Hunting in the Devonian Silica Formation October 22, 2011



The Ohio Section will host a fossil-hunting field trip from **8 AM to 2 PM** on Saturday, October 22, 2011 at the Lafarge North America limestone quarry located a few miles northwest of Paulding, Ohio. Lafarge will blast a section of the rock face on Friday, allowing for fossil-hunting and collection on Saturday.

The primary target for fossil hunting will be the Middle Devonian Silica Formation. The Silica Formation consists primarily of calcareous shale layers with some interbedded limestone. The Silica Formation is renowned for an abundant and diverse fauna, including 40 cnidarian species, 40 species of bryozoans, 63 species of brachiopods, 21 species of bivalves, 7 species of gastropods, 6 species of cephalopods, 3 species of annelids, 6 species of trilobites, 4 species of malacostracans, 2 species of blastoids, 19 species of crinoids, 4 species of stelleroids, 1 edrioasteroid species, and a number of fish species (Camp & Hatfield, 1990). For more information click [Here](#).

RSVP President-Elect Greg Kinsall at: Greg_Kinsall@coxcolvin.com or (614) 526-2040

Required Safety Equipment

Participants will be required to attend a brief safety orientation prior to accessing the quarry, and must bring the following safety equipment:

- **heavy boots**
- **safety glasses**
- **hard hats**
- **reflective vests, Lafarge can provide vests as necessary**

Of course, a rock hammer may come in handy.

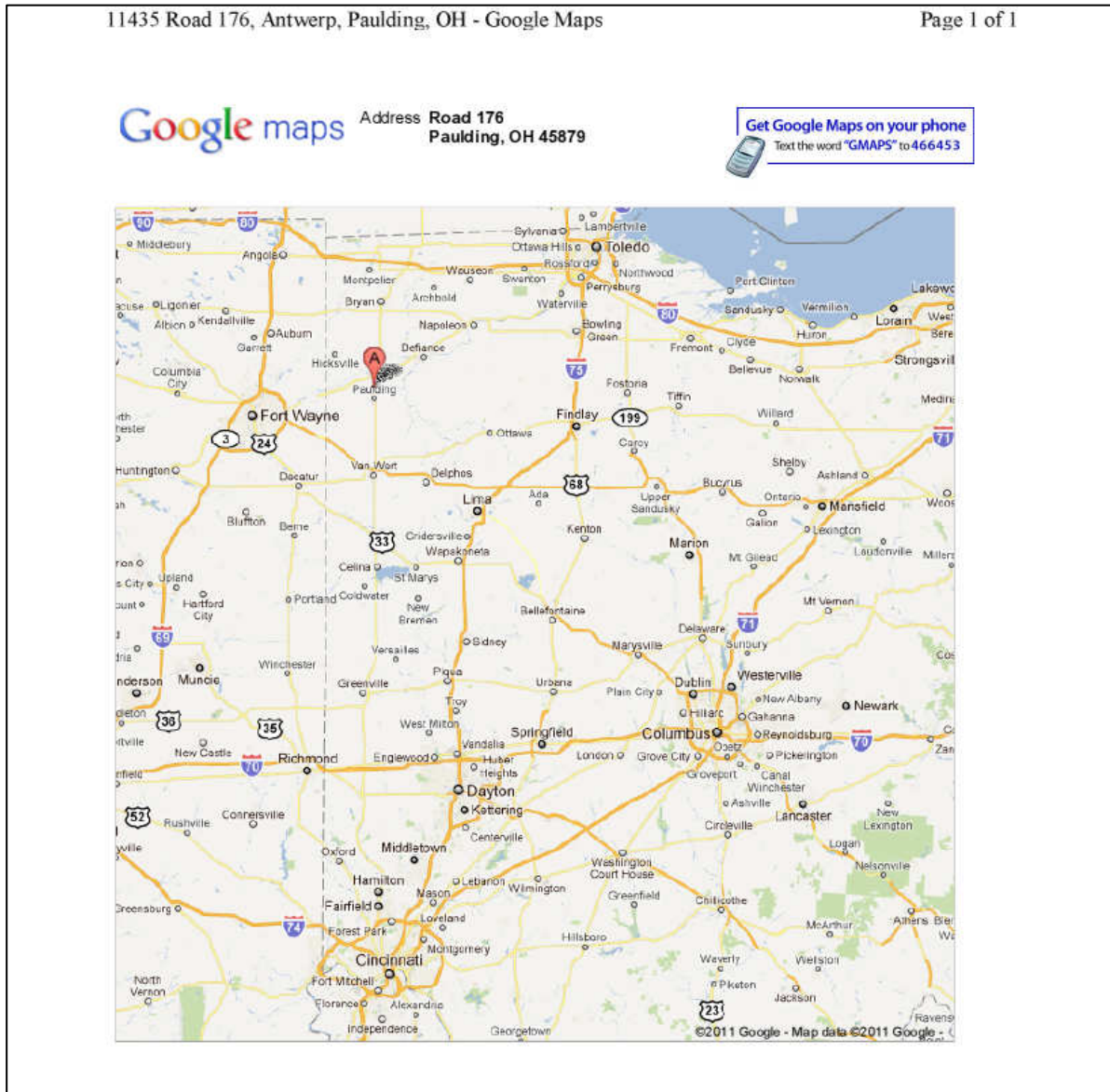
Travel will be the responsibility of each participant. Given the distance, car pooling is recommended. Ohio Section will provide lunch consisting of sub sandwiches, chips, and soft drinks.

Directions

The main entrance to the quarry property is located at 11435 County Road 176. Field trip participants will congregate inside the second plant entrance in the large parking lot at **8 AM** for the safety orientation. The plant is just west of the intersection with State Route 127 just a few miles northwest of Paulding, Ohio (see attached maps).

1. From points south, take Rt. 33 northwest to Rt. 127. Follow Rt. 127 north through Van Wert and through Paulding. Road 176 will be 2 to 3 miles north of Paulding (turn left).

- From points north, there are various routes, but from Defiance, take Rt. 24 southwest to Rt. 127. Take Rt. 127 south and travel approximately 2 to 3 miles. Turn right onto Road 176





Address **Road 176**
Paulding, OH 45879

Get Google Maps on your phone
Text the word "GMAPS" to 466453



Ohio Section Annual Meeting Dinner Presentation November 10, 2011

Dr. Patrick Leahy, National Executive Director, American Geosciences Institute

Challenges and Strategies for the Future Global Geoscience Workforce

Location: LaScala Italian Bistro;
<http://www.lascalaitalianbistro.com/LaScala.html>

Schedule: Social Hour 5 pm; Dinner 6 pm; Presentation 7 pm

RSVP: President-Elect Greg Kinsall, (614) 526-2040
Greg_Kinsall@coxcolvin.com



A critical question facing the geoscience profession today is: “Who will be the geoscientists in the future to address the challenging societal questions that all nations face?” Mitigating geologic hazards, supplying society with adequate earth resources, while at the same time maintaining a sustainable and healthy environment are becoming more challenging for humankind. The knowledge and insights provided by geoscientists play a critical role in crafting strategies to address these increasingly complex issues.

For the last few decades, the profession has faced a crisis in student interest. There are many causes, including student and parental perceptions relative to the rigor of the geosciences, concern about long-term employment opportunities, and a general lack of interest in science and mathematics. At the same time, there is a generational shift in the geoscience workforce. The baby boomer generation is leaving the workforce in all sectors providing opportunities for replacement by a younger generation. The American Geosciences Institute (AGI) expects in the U.S. alone, that given expected graduations rates in the geosciences, the demand will outstrip supply by approximately 150,000 to 200,000 positions in the geoscience workforce within ten years. Although some suggest that non-U.S. trained geoscientists can fill this gap, AGI, as part of an international task force on workforce, suggests that this notion may not be fully accurate. The demand for geoscientists in the developing world will increase and compete for the global supply of geoscientists.

The solutions to these problems require a comprehensive understanding of both the supply and demand of the geoscience workforce as well as an understanding of the dynamics of career choice at work in the U.S. and the world. The AGI and other scientific and professional societies have been exploring and implementing a multifaceted strategy to alleviate the

impending talent crises in the geosciences. Perhaps the biggest challenge of all is: Is there enough time and enough effort to have impact in the next decade?

Biography

In March of 2007, Dr. P. Patrick Leahy was named Executive Director of the American Geological Institute (AGI) of Alexandria, Virginia, a nonprofit federation founded in 1948 of 50 geoscientific and professional associations that represent more than 120,000 geologists, geophysicists, and other earth scientists. Prior to his current position, Dr. Leahy served as Associate Director for Geology at the U.S. Geological Survey where he had responsibility for Federal basic earth science programs, which include worldwide earthquake hazards monitoring and research, geologic mapping of land and seafloor resources, volcano and landslide hazards, and assessments of energy and mineral resources. In 2005-2006, Dr. Leahy served as acting Director of the U.S. Geological Survey. Dr. Leahy retired from the U.S. Geological Survey after 33 years having served in various technical and managerial positions. He has authored or co-authored more than 70 publications on a wide array of earth-science topics. Dr. Leahy was born in Troy, New York. He holds undergraduate and graduate degrees in geology (1968) and geophysics (1970) from Boston College. He received his doctorate in geology (1979) from Rensselaer Polytechnic Institute where he specialized in regional ground-water studies and hydraulics. He is both a certified professional hydrogeologist and professional geologist.

Dr. Leahy is a Fellow and Trustee of the Geological Society of America and a member of the American Geophysical Union, the American Institute of Hydrology (Former President), International Association of Hydrogeologists (Former U.S. President), Sigma XI, the American Association for the Advancement of Science, the American Association of Petroleum Geologists, the National Ground Water Association, and the Geological Society of Washington. Dr. Leahy is also a commissioner for the United States Commission for the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Dr. Leahy was the recipient of the 1996 Boston College Alumni Association Award of Excellence in Science, the 1995 Alumni Association Fellow in Science for Rensselaer Polytechnic Institute, the 1996 Department of the Interior Meritorious Service Award, and the 2006 Department of Interior Distinguished Service Award, and he was recognized by President George W. Bush in 2003 with a Meritorious Senior Executive Award and again in 2007 as a Distinguished Senior Executive. Dr. Leahy received the Khan Medal (the highest award for a non-Afghan citizen awarded by Afghanistan) from President Hamed Karzai. His most recent award was the 2009 John T. Galey, Sr., Memorial Public Service Award from the American Institute of Professional Geologists.



OGS MEETING

Thursday, November 3rd

Development of the Shale Plays and Disposal of the Oilfield Wastes in Ohio

By

Tom Tomastik

ODNR Division of Mineral Resources Management

11am-1pm

(pizza lunch provided)

Sharon Memorial Hall
137 E Dublin Granville Rd
Worthington, OH 43085

**Seating is limited - please RSVP to Bill Arnholt at
barnholt@northwoodenergy.com or 614-457-1024**

Some Aging Ohio Oil Fields Still Hold Promise of Large Reserves

Written by: news editor
6/6/2011 1:00:00

a new technical report released by the ODNR, Division of Geological Survey suggests that existing oil fields beneath eastern Ohio could potentially produce hundreds of millions of additional barrels of oil.

New report calls for innovative recovery techniques

COLUMBUS, OH – While much attention is being placed on the development of Ohio’s shale oil and gas reserves, a new technical report released by the Ohio Department of Natural Resources (ODNR), Division of Geological Survey suggests that existing oil fields beneath eastern Ohio could potentially produce hundreds of millions of additional barrels of oil.

According to the report, the East Canton oil field has produced about 100 million barrels of oil (4.2 billion gallons), which geologists say is less than 10 percent of its potential reserves. The Division of Geological Survey estimates that more than 1 billion barrels of oil remain in the ground in this field, a large portion of which could be recovered using carbon dioxide-assisted secondary recovery techniques. These processes, commonly used in the Western United States, extend a field’s productive life by injecting carbon dioxide (CO₂) into the formation, displacing oil and driving it to a production wellbore.

Because of the geologic nature of the East Canton oil field reservoir rock — or “Clinton” sandstone — a CO₂-assisted secondary recovery program might best produce additional oil reserves. The recently released report shows the first results from a study, funded in part by the U.S. Department of Energy that examined the potential effectiveness of CO₂-assisted secondary recovery in this formation. The results suggest that if fully employed this field alone could produce between 76 and 279 million barrels of additional oil. And there are many other “Clinton” sandstone reservoirs in the region.

“The East Canton field is nearing the end of its primary life,” says Larry Wickstrom, ODNR division chief and state geologist. “The original reservoir pressure is all but gone and extracting more oil is going to be difficult without secondary recovery. Now is the time to plan for such operations before the existing wells and infrastructure are abandoned.

“A number of technologies can be employed, from simple water floods to advanced polymer floods, but a CO₂-assisted flood may hold the best efficiency for this particular reservoir.”

Discovered in 1947, the East Canton oil field is Ohio’s largest, still-producing oil field and covers nearly 175,000 acres in Carroll, Harrison, Stark and Tuscarawas counties. The sources for the CO₂ needed for secondary recovery operations could come from nearby ethanol plants, steel mills, power plants, cement kilns, or even landfills. In addition to increasing oil production, such use of CO₂ could reduce carbon emissions into the atmosphere.

A digital version of the report, OFR 2011-2, is available in PDF format as a free download from the Division of Geological Survey website: www.OhioGeology.com. Due to its large file size, the report also is available on CD-ROM for \$25.00 (plus sales tax and shipping). To order, contact the Geologic Records Center at (614) 265-6576.

The ODNR ensures a balance between wise use and protection of our natural resources for the benefit of all. Visit the ODNR Web site at www.ohiodnr.com.

Updated Abandoned Mine Map Available on CD-ROM

Written by: news editor
5/6/2011 1:00:00

ODNR, Division of Geological Survey has released a digital version map of, Known Abandoned Underground Mines of Ohio, on CD-ROM.

Ohio Geological Survey releases digital data

COLUMBUS, OH – The Ohio Department of Natural Resources (ODNR), Division of Geological Survey has released a digital version of Map EG-3, Known Abandoned Underground Mines of Ohio, on CD-ROM. Along with a PDF file of the map, which can be printed by users, the CD-ROM features geographic information system (GIS) data on abandoned underground mines throughout Ohio.

As part of the Division of Geological Survey's continuing effort of maintaining database records of Ohio's inactive mines, Map EG-3 shows the approximate locations and extents of abandoned mines throughout the state. The new CD-ROM includes data on mine names, locations, and elevations; abandonment dates; and names of the last known mine operators at each location, as well as a simple, easy-to-use map viewer. The GIS data will be updated periodically.

Land planners and developers, government agencies, environmental groups and geotechnical professionals will find the GIS data particularly useful for construction projects, remediation efforts and engineering tasks. Mineral resource professionals also use abandoned underground mine maps when planning new mining and drilling operations.

At 1:500,000 scale, Map EG-3 grew out of the underground mine interactive mapping system initiated by ODNR. Since 2004 the agency has increased its knowledge of Ohio's thousands of historic abandoned mines — some dating from 1800. In total the division has archived more than 20,000 individual mine maps and detailed abandonment maps from 5,090 mines.

Map EG-3 is available in a print-on-demand, paper format for \$15.00; the new CD-ROM is available for \$25.00 (plus sales tax and shipping). To order, contact the Geologic Records Center at (614) 265-6576 or visit the www.OhioGeologyStore.com.

The Division of Geological Survey estimates that thousands of historic abandoned underground mines either were never recorded or their records were never submitted to the state. The search for these mine works is an ongoing mission of ODNR. More information about the AUM mapping program and access to the Ohio Abandoned Mine Locator interactive map is available via the Division of Geological Survey Web site at www.OhioGeology.com.

The ODNR ensures a balance between wise use and protection of our natural resources for the benefit of all. Visit the ODNR Web site at www.ohiodnr.com.

Like

3

For more information, contact:
Geologic Records Center, ODNR Geological Survey
614. 265. 6576
Jason Fallon, ODNR Office of Communications
614. 265. 6842

Ohio Geological Survey Launches Online Store

The Ohio Department of Natural Resources (ODNR), Division of Geological Survey, has launched its new online store: www.OhioGeologyStore.com. Geologists, engineers, industry, public agencies, educators, and rock hounds of all types will find many useful products, including maps, guidebooks, technical reports and geologic investigations, books, and posters. Customers can browse selected publications, featuring images and descriptions of each product, from the comfort of a home or office. Customers also can easily move from the online store to the division's website to access free downloads, interactive maps, and additional news and information about Ohio's geology. While publications still can be ordered by phone or by visiting the Geologic Records Center on the ODNR main campus in Columbus, the Ohio Geology Store provides a valuable, modernized means of accessing more than 170 years of geologic information and data.

Ohio Geological Survey Releases Open-File Report (OFR) 1941-1: *The Sharon Coal Mines of Trumbull and Mahoning Counties*

The report documents the 1941 summer field work of Survey geologists J. Osborn Fuller and Myron T. Sturgeon to locate mine shafts associated with the Sharon coal and Sharon conglomerate. Recently uncovered in the Survey's vast archives, OFR 1941-1 is of practical and historical significance for the mapping of abandoned underground mines (AUMs) throughout Ohio. Featuring descriptions and locations of over 150 mines and mine drains, five 15-minute topographic maps, and 19 photos documented during Fuller and Sturgeon's summer field work, the report can be used to show changes in the regional landscape since that time and to assist with mine subsidence investigations.

OFR 1941-1 is available for free download in PDF format from the Ohio Geological Survey website at

http://www.dnr.state.oh.us/Portals/10/pdf/OpenFileReports/OFR_1941-1.pdf.

For further information about the Survey's abandoned mine mapping program, visit the AUM program page at <http://www.dnr.state.oh.us/geosurvey/tabid/22935/Default.aspx>.

If you have specific questions or information about Ohio's abandoned mines, please contact geologist Jim McDonald by phone at (614) 265-6601 or by e-mail at

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Featured Article

Ohio Geological Survey in Financial Peril

Peter MacKenzie, CPG-10698

Despite its many important roles in Ohio's economic development, the Ohio Geological Survey is in financial peril. The Survey, established in 1837 and in continuous operation since 1900, is the statutory agency responsible for managing information relating to Ohio's natural resources.

Despite the latest news touting the Utica Shale oil and gas play, and the significant role it stands to have in Ohio's economic recovery, the primary agency supplying research and data to the public may soon face layoffs, and possibly extinction. The Survey has been researching the Utica Shale for a number of years and has created many of the maps and data helping us understand and characterize this potentially huge play. It maintains valuable historic data and supports other Ohio regulatory agencies. Its geologists are well respected and are in high demand to speak at professional meetings across the nation. The Survey is working in high gear to provide answers to inquiries from the general public, media, environmental groups, and other agencies. Yet, because of the tight state budget, this quiet division of the Ohio Department of Natural Resources had its primary funding totally eliminated in July 2010 and has yet to receive any relief. It exists mainly on federal and state research grants, many of which will end soon. This means the Survey is increasingly unable to service the needs of the State, public, media, industry, et al., at a time when increasingly their services are needed to frame public policy and understanding.

And it isn't just science and research. An economic impact study conducted on the Survey was recently completed by Kleinhenz and Associates of Cleveland. This investigation reveals that this small agency has a big impact on the economy of the State. The analysis was based on 2010 costs and benefits (a peak year of the recession) and shows that the products, services and data provided by the Survey contribute an estimated \$575 million to the Ohio economy annually – and this was before the current shale frenzy. The study also reveals:

1. Approximately 8,740 projects were undertaken utilizing items requested from the Survey. Without these items, the projected average per-project replacement cost was \$65,800.
2. Without Survey maps and data, 17% of project costs would be needed to cover additional information gathering or research—totaling \$1.5 billion per year.
3. For every \$1 in state revenue it receives, the Survey receives 80 cents in federal grant money, not unlike an exporter of goods—bringing funding into the state and expanding the Ohio economy.

Should the Survey lose federal revenue, Ohio businesses would lose \$2.5 million in sales, and Ohio payroll would be reduced by \$1.6 million.

Oil and gas is not the only industry that benefits from the Survey. Its products and expertise are also employed by mining companies, the Ohio EPA, the Ohio Department of Transportation, other divisions within the ODNR and governmental agencies, university researchers, K–12 educators, non-governmental organizations, realtors, and a cross section of environmental and geotechnical engineering consultants. Individual landowners, municipalities, townships, and counties all benefit from the Survey's archives.

The Survey receives a small percentage of mineral severance taxes collected from the oil, gas, and mining industries (the bulk of this tax goes to regulate these industries). In fact, this is its primary source of state funding. This funding alone would only support a staff of about six, including all overhead. And, any increase in funding from severance taxes due to the expected boost in production from the shale plays will take up to two years to make it into their coffers. Plus, it will be 5-10 years before Ohio begins to see the full production results of the shale drilling that is just now starting.

In the view of many of the Survey's frequent users and services, it should receive support from the general revenue fund (GRF). Those funds come from all Ohioans, who benefit greatly from a strong state geological survey. Understanding the geology under our feet helps us make better decisions about where and how to build roads, sewers, tunnels, shopping centers and homes as well as helping us find where the oil, gas, coal, limestone, sand and gravel are best located to build and power our society. This same agency with its archives of geologic records is simply our best resource for information on where not to build, to protect us from geologic hazards such as shore erosion, abandoned underground mines, landslides, and karst sinkholes. These archives are irreplaceable and invaluable.

Just ten years ago this proud agency had 50 employees and a GRF budget of \$2.2 million. It is now down to 23 employees with zero GRF, but still valiantly trying to cover its legislative mandates AND provide increased public service in response to the shale plays. Unlike other government agencies, the Survey does not regulate activities, build roads, operate parks, or take money to re-distribute it elsewhere, so it may not get noticed as much by the general public. The Survey quietly supports, and in many cases is the primary information source for so much within our society. Restore funding to the Survey, it is in the interest the State of Ohio, of public safety, of common sense.

Biography *Peter MacKenzie owns MacKenzie Land & Exploration, Ltd., an independent geology, geophysics, and engineering consultancy in Worthington. He was previously Vice-President of geophysics for CGAS in Columbus. In 1994 he earned a Geological Sciences B.S. from Ohio State following active duty service in the US Army. At OSU he worked in the Orton Museum with a principal focus on Paleozoic Conodonts, culminating with a field season in Permian and Triassic clastics in the Geologists Range in Antarctica. His current focus is natural gas exploration in the Appalachian Basin. He is a Certified Petroleum Geologist (AAPG) and a Certified Professional Geologist (AIPG). He is currently Chair of the AAPG GeoDC Governance Board, Member of the AAPG Datapages, Inc. Board (digital publishing arm of AAPG), a Trustee of the Ohio Oil & Gas Association, and a member of the Ohio Geology Advisory Council.*

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The Ohio Section welcomes and encourages membership discourse via the Section newsletter on relevant geopolitical and geological topics, in accordance with our chartered purpose. Contributing authors are requested to abide by the following guidelines to ensure civility and professionalism.

1. Scientific interpretations should include accurate and effective references.
2. Opinion pieces should be presented with reasoning. Fellow members may choose to comment or challenge a submittal with their own contribution.
3. Authors must abide by the AIPG Code of Ethics. Any author who violates this code will not be published. Authors must be respectful to fellow members, all political parties, officials and candidates.
4. Letters to the Editor should be under one page in 12 pt. Arial font.
5. Member authors should provide their name and certification number.
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