



HUDSON-MOHAWK PROFESSIONAL GEOLOGISTS' ASSOCIATION

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Kathy Sanford, Editor
Vol. 8 No.5
January 2002

January 9, 2002: John Luttinger of Geomatrix Consultants to Speak

Applications of Geophysics to Environmental Investigations

January's speaker will review applications of environmental geophysical techniques to hazardous waste investigations and hydrogeological studies. Environmental geophysics involves applying remote sensing techniques to map features of interest in the subsurface. These non-intrusive methods are commonly used in hazardous waste investigations to map buried areas of waste or define subsurface stratigraphy prior to implementing ground disturbance surveys such as test pits or soil borings.

Case histories will be presented where High Resolution Electromagnetic (EM) methods were applied to map former manufactured gas plant site structures, buried waste lagoons, underground storage tanks, and steel drums. An example of the use of deeper penetrating EM techniques to map salt water encroachment will be presented. Shear wave seismic reflection techniques are discussed as they pertain to mapping shallow stratigraphy for a proposed nuclear waste storage facility. Azimuthal resistivity techniques will be reviewed and case histories discussed relative to characterizing bedrock fracture systems.

About the Speaker

John Luttinger is a senior geophysicist with the Buffalo, NY office of Geomatrix Consultants, Inc. He holds two Bachelors and a Masters degree in Geology, Electrical Engineering and Geophysics, respectively, and has over 12 years of experience with acquisition, analysis, and interpretation of geophysical data. John has carried out a wide variety of geophysical surveys for ground water contamination studies, ground water supply exploration, engineering and environmental geophysics investigations. Projects John has recently managed include seismic reflection study over the collapse of the Akzo Mine, NY. Among numerous other projects, he has also participated in data collection, processing and interpretation for a large multi-technique geophysical investigations in the Mojave Desert, in Seattle, and near Juneau, Alaska.

Where: Holiday Inn Turf
205 Wolf Road, Colonie

When: Second Wednesday of every month
except June, July and August.

Board of Directors Meeting	4:00 pm
Social Hour	5:00 pm
Dinner	6:00 pm
Program	7:00 pm

Dinner: \$10.00/person for student members
\$20.00/person for members
\$22.00/person for nonmembers

Vegetarian meal options are available with prior request.

*****Individuals will be responsible for the cost of dinner unless cancellation notice is received 24 hours prior to the meeting.*****

HMPGA Corporate Members

(See page 2 for contact names and phone numbers)

Adirondack Environmental Services, Inc.

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URS Corporation

Reservations: Call or e-mail Diane Welch at (518) 783-1805 or dwelch@alphageoscience.com by the previous Friday. Please register even if you are planning on attending only the talk.

**For HMPGA membership information,
please contact Curt Cappellano at
(518) 266-0310.**

About Our Meetings

N From the President's Desktop

by George Pafumi

Our annual Holiday party was another success! I hope everyone had a wonderful time; I was very pleased with the turnout. A big thanks to Parratt-Wolff Inc. for once again sponsoring this year's festivities.

As we begin 2002, I want to take a moment to reflect on where we are. The Hudson-Mohawk Professional Geologists' Association is now eight years in existence. We have a well-diversified membership; including geologists working in public sector jobs, private sector jobs, academicians and students. We continue to have the support of corporate members and advertisers. The quality of our presenters and the breadth of topics truly makes our organization a professional one. The upcoming cast of speakers appears to be just as impressive.

2001 was a year for the history books; 9-11 continues to affect us all. As an organization, we have changed venues twice. I want to acknowledge the efforts of the Officers and Directors for their time and input, sometimes in a flurry of e-mails and phone calls. This professional organization operates because of the extra efforts of its professional

membership; and as professionals we are often strapped for time. I would like to encourage members to contribute to their organization. Please join a committee or make it known that you would like to be part of the Board. Importantly, we are seeking a new editor for the newsletter. If you are interested please contact a board member or talk to Kathy Sanford directly.

Lastly, I am pleased to report that we have established a Student "fund." Those who have offered in the past are encouraged to contact a board member and make a contribution now. It was admirable to see the enthusiasm of members wanting to contribute to our "Take a kid to dinner" program. I would like each member to bring a guest during the spring 2002 season. If you know a geology student or professional interested in our events invite him or her to a meeting. Happy New Year!

HMPGA President George Pafumi is owner and Principal Hydrogeologist of Environmental Maintenance Technology of Schenectady.

HMPGA Corporate Members

	<i>Contact</i>	<i>Phone</i>
Adirondack Environmental Services, Inc.	Steve Valle	(518) 434-4546
Aquifer Drilling & Testing, Inc.	Joe Miranda	(518) 464-2848
Earth Tech, Inc.	Frank Williams	(518) 458-1313
ERM Northeast	Edward Hinchey	(518) 452-4291
GeoTrans, Inc.	John Guswa	(978) 772-7557
Hydrogeologic, Inc.	Michael D. Jackson	(518) 782-3435
MARCOR Remediation, Inc.	Mark DeAngelo	(518) 456-5909
Parratt Wolff, Inc.	Steve Crook	(518) 827-7797
SJB Services, Inc.	Bill Bosworth	(518) 899-7491
Spectra Environmental Group, Inc.	Robert Lafleur	(518) 782-0882
URS Corporation	Stephen LeFevre	(518) 688-0015

HMPGA Supports the Joseph Henry Science Fair With \$250 Donation; Members Sought to Judge Top Science Projects

The Joseph Henry Science Fair celebrates its sixteenth year on April 26, 2002. This annual science fair is open to all 4th through 8th grade students attending public or private school in the City of Albany. Any HMPGA members who would like to volunteer to judge the students' projects, please contact George Pafumi. This year's Fair will be held in the University Heights Gymnasium of the Albany School of Pharmacy. George reports that it is an enjoyable and enlightening day.

Born in Albany in 1797, Joseph Henry is widely recognized as a pioneering scientist. Henry served on the faculty at the Albany Academy in the 1820's and 1830's, where he studied a vast array of natural sciences. While considered a pioneer in the study of New York geology, he became most famous for working on various aspects of electromagnetic induction. In 1831 at the Albany Academy,

he exhibited signals transmitted through more than a mile of wire by his electromagnet. This was the first example of the electromagnetic telegraph.

In 1846, Henry went on to be the First Secretary and Director of the Smithsonian Institution in Washington D.C., where he remained until his death in 1878. He is known as "the father of American science," and the unit of electromagnetic induction is called the "henry" in his honor.

Because of Joseph Henry's involvement in the geological sciences and the Fair's promotion of sciences for young people, the HMPGA Board voted unanimously to donate \$250 to the 2002 Science Fair. The Fair Committee has informed us that they will be awarding a prize for a geology project at the Fair.

Members Contribute to HMPGA Student Fund

Five members contributed \$70.00 to HMPGA's new student fund for student memberships and dinners at the November meeting. Three students became members and received dinner that night. One paid membership and two paid dinners remain available for students who attend upcoming meetings.

November's contributors were George Pafumi, Kathy Sanford, Laurie Scheuing, Robert Fakundiny and William Cooper. Student dues are just \$5.00 annually and dinner for student members is \$10.00. Contributions may be made by mail to HMPGA's post office box or to the treasurer at any dinner meeting.

N From the Secretary's Notepad Excerpts from Draft Minutes for December 12, 2001

by Eriko Fujita

Call to Order: President George Pafumi called the meeting to order at 4:10 pm. Officers Directors present were George Pafumi, Laurie Scheuing, Eriko Fujita, Bill Kelly, Mark Davin, Don Cadwell, Curt Cappellano, Mike Palleschi, and Kathy Sanford. Also present was Bill Dickerson.

Treasurer's Report: The current balance was reported to be \$4,745.92.

Ads and Corporate Memberships: George Pafumi reported that checks from ADT and Spectra were received. SJB Services also renewed its corporate membership.

Educational Outreach Committee: George Pafumi described his involvement with the Harmony Hills Elementary School. Bill Dickerson reported that he can provide copies of handouts for Earth Science teachers that he picked up from GSA to whoever wants them. Call or e-mail Bill at (518) 862-2168 or wjickerson@juno.com.

Geology Licensure: Bill Kelly reported that it has been proposed that the bill be revised to adopt language directly from the Engineer's bill for a "geologist-in-training" (GIT).

Program Committee: Laurie Scheuing, Bill Kelly, and Mike Palleschi will form a committee to handle arrangements for the May 8, 2002 program. A venue is needed.

Finance Committee: Laurie Scheuing moved that a Finance Committee made up of Curt Cappellano, Laurie Scheuing, George Pafumi and Bill Kelly be formed. Don Cadwell seconded and the Board voted in favor.

Next Meeting: January 9, 2002; 4:00 pm; Holiday Inn Turf.

HMPGA Secretary Eriko Fujita is a Project Geologist with URS Corporation.

A Comparison of Drilling Methods And Well Yields in a Fine-grained Aquifer – East Syracuse, New York - Part 2

by Joel V. Parratt, William H. Morrow and Michael D. Ellingworth
Parratt-Wolff, Inc., 5879 Fisher Road, East Syracuse, NY 13057

(Editor's Note: HMPGA Director Steve Crook provided this feature article for our newsletter. Part 1 – which included the abstract and introduction and described the scope of work – was presented in the December 2001 newsletter. Contact Steve for figures and attachments.)

Findings

Site Geology

Soils at the site were found to consist primarily of loose fine to medium grained sands with varying amounts of silt (between 10 to 30 percent). Soils consisting primarily of silt were observed directly below grade to depths of six to ten feet bgs. In addition, soil horizons of primarily fine materials (silt and clay) were noted in borings FR-6, FR-10 and HSA-10 at depths of 12 to 16.5 feet bgs and 18 to 20 feet bgs, respectively. Refer to Tables 1 and 2 for additional information.

Grain size analysis of samples obtained from each boring from a depth of 10 feet bgs to 12 feet bgs were compared in order to determine consistency between the three borings. Results of the analysis are shown in Table 1. An additional

comparison was made of samples obtained from each boring in the depth range of 20 to 22 feet bgs. Results of the analysis are shown in Table 2.

Comparison of Drilling Methods

Several differences were noted between the methods in regards to time required to complete the borings and the amount of waste materials generated. The boring advanced using hollow stem augers was completed in the shortest amount of time (± 6 hours), while the borings completed using spun casing and fluid rotary methods took approximately 10 hours to complete. With regard to the investigative derived waste (IDW) generated, both the hollow stem auger and fluid rotary methods were found to generate approximately three fifty-five gallon drums of IDW. The boring advanced using the spun casing method generated approximately five fifty-five gallon drums of IDW.

Boring	Coarse Sand	Medium Sand	Fine Sand	Silt/Clay
FR-6	0.0	8.1	61.8	30.1
FR-10	0.0	7.8	68.4	23.6
SC-6	0.1	9.2	72.5	18.2
HSA-10	0.0	10.5	63.8	25.7

Table 1: Grain size analysis of soil samples obtained from 10 to 12 feet bgs (percentage retained)

Boring	Coarse Sand	Medium Sand	Fine Sand	Silt/Clay
FR-6	0.1	0.7	76.4	22.9
FR-10	0.1	0.5	84.5	16.0
SC-6	0.0	1.0	89.3	9.7
HSA-10	0.2	3.6	68.4	27.8

Table 2: Grain size analysis of soil samples obtained from 20 to 22 feet bgs (percentage retained)

Pump Test	HSA-10	FR-10	FR-6	SC-6
Prior to Development	1.7 gpm/ft	0.9 gpm/ft	1.7 gpm/ft	3.7 gpm/ft
After two hours of surging	2.0 gpm/ft	2.0 gpm/ft	2.6 gpm/ft	3.7 gpm/ft
After three hours of surging and the addition of dispersant	2.6 gpm/ft	2.9 gpm/ft	3.7 gpm/ft	5.5 gpm/ft

Table 3: Specific capacities.

Specific Capacity Measurements

Significant differences in specific capacity measurements were observed between the four wells (see Table 3). The

initial pump testing of the four wells following their installation indicated that the boring completed using the spun casing method yielded a specific capacity 118% greater than the other two wells.

Following the initial round of surging the specific capacities of wells FR-6, FR-10 and HSA-10 were found to increase by 53%, 122% and 18%, respectively. The specific capacity of SC-6 was unchanged. The specific capacity of each well was found to further increase following the addition of dispersant and a second round of surging. Increases of 42%, 45% 30% and 49% were noted for FR-6, FR-10, HSA-10 and SC-6, respectively.

The overall increase in specific capacity for the wells FR-6, FR-10, SC-6 and HSA-10 were 118%, 222%, 49% and 53%, respectively. Most notable however was the significantly higher specific capacity of SC-6. The specific capacity of SC-6 was double HSA-10 and a third greater than FR-6.

Summary and Conclusions

Results of the study indicate that the well installed in the boring made using spun casing yielded a greater initial specific capacity than those completed using fluid rotary and the hollow stem augers. Even after three hours of development, the specific capacity SC-6 was 53% and 33% greater than HSA-10 and FR-6, respectively. By the very nature of the drilling process, the spun casing method minimizes formation damage and removes many of the fine-grained particles from the borehole wall while drilling. The largest practical diameter well that can be installed using spun

casing is 6", with an installation depth of 30' or less. A 4" diameter well could be installed to a significantly deeper depth.

The fluid rotary boreholes had a low initial specific capacity. However, after only three hours of development, the yield of the wells more than doubled. This drilling method is particularly good for fined-grained or inter-bedded formations, lacking significant gravel horizons. Fluid rotary methods have been used to install very large diameter wells to depths exceeding 1,000 feet.

The boring completed using hollow stem augers had the lowest specific capacity of the three wells. This is believed to have been due to "smearing" of the formation by the auger flights. In addition, the relatively thick sand pack decreased the effectiveness of development by increasing the distance between the well screen and the borehole wall. The energy delivered to the well screen by the surge block was "dampened" by the thick sand pack. The opposite was true of the 6" diameter fluid rotary and spun casing boreholes. Their thin sand packs permitted the surging action to impact the damaged formation and remove the smeared, fine-grained particles.

When well development time and IDW management are factored into an environmental drilling program, spun casing is the least expensive drilling method, with fluid rotary second. Augers are often the fastest drilling method, but require many additional hours of well development to potentially achieve the expected results.

***Next newsletter deadline:
January 25, 2002***

Send WordPerfect documents or e-mail text to harrier@worldnet.att.net.

Any content that appears to express an opinion on behalf of HMPGA will be reviewed by the President prior to publication.

To advertise in this newsletter, contact Steve Crook (518-827-7797).

Rates (per issue):

Full page	\$100
Half page	50
Quarter page	25
Business card	10

Advance purchase of a full page for one year (10 issues, \$1000) includes one Corporate Membership (value \$100). Purchase of a half page for one year (\$500) offsets half the cost of one Corporate Membership.

Events Calendar

HMPGA

<http://members.aol.com/hmpga>

January 9, 2002

Geophysical Applications to Environmental Problems
John Luttinger, GeoMatrix

February 13, 2002

History of Hudson River Marshlands
Dorothy Peteet, Lamont-Doherty Earth Observatory

March 13, 2002

To Be Announced

April 10, 2002

Grand Unifying Theory of Zinc Ore Deposits at Balmat, NY
Bill deLorraine, Zinc Corporation of America

May 8, 2002 - Technical Symposium

Daytime Program

Full Day DNAPL Seminar
Dr. Bernie Kueper, Queens University
Dr. Jack Guswa, GeoTrans, Inc.

Evening Program

To Be Announced

Buffalo Association of Professional Geologists

<http://www.bapg.org>

January 16, 2002

Sand Management Practices
Shanon A. Chader, U.S. Army Corps of Engineers

Central New York Association of Professional Geologists

<http://www.dreamscape.com/cnyapg/>

January 10, 2002

Wall-and-Curtain Treatment of Contaminated Groundwater
Dr. David A. Lee, Atomic Energy of Canada, Ltd.

February 12, 2002

Adventures in the Antarctic
Dr. Amy Leventer

April 6, 2002

Lackawanna Coal Mine Tour & Anthracite Heritage Museum

Long Island Geologists

<http://pbisotopes.ess.sunysb.edu/lig>

April 20, 2002

Ninth Conference on Geology of Long Island and Metropolitan New York

Deadline for submission of titles February 1
Deadline for submission of abstracts March 1

New York State Geological Association: Annual Meetings

April 5-7, 2002 (Rescheduled from Fall 2001)
The Hudson River: Historical and Environmental Geology
Hosted by Lamont Doherty Earth Observatory

September 27 - 29, 2002
Hosted by Colgate University
Lake George, NY

Fall 2003 Hartwick College and SUNY-Oneonta
Fall 2004 Hosted by SUNY-Potsdam

Northeastern Section - Geological Society of America

<http://www.geosociety.org/sectdiv/northe/02nemtg.htm>

March 25 - 27, 2002
Springfield, Massachusetts

Preregistration deadline February 15, 2002
Cancellation deadline February 22, 2002

Program Chair Needed

Contact Laurie Scheuing at 518-373-1200

Help Wanted

Professional Geologist: established local geology firm serving the mining and construction industry is seeking an experienced geologist for an immediate full time position. FAX resume to George L. Marshall, LLC Engineering Geologists, 518-674-8417, or call 518-674-2028.

2001 - 2002 Board of Directors

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Laurie Scheuing, Vice President	(518) 373-1200	lescheuing@aol.com
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Upcoming Deadlines

January meeting reservations:	1/04/02
February newsletter:	1/25/02

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Albany, NY 12205-0506

FORWARDING SERVICE REQUESTED

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