



Association of Environmental and Engineering Geologists
California Central Coast Chapter, Southern California Section

www.aegsc.org/chapters/centralcoast

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August 30, 2006 MEETING

**IN-SITU ENHANCED BIOREMEDIATION OF
FREON 11/FREON 113 GROUNDWATER
CONTAMINATION USING HYDROGEN RELEASE
COMPOUND**

by
James R. Steele, P.G., C.E.G., C.Hg.
TetraTech, Inc.

Wednesday, August 30, 2006

Rusty's Pizza, Goleta

(RSVP/Directions below)

6:00 pm- 7:00 pm Social Hour
7:00 pm – 8:00 pm Chapter Meeting

The May meeting is sponsored by:

No meeting sponsor. Interested in becoming a meeting sponsor? Please contact the Chapter President. Thank you.

Speaker:

Mr. James R. Steele, P.G., C.E.G., C.Hg.

Speakers' Brief Biography:

Mr. Steele is a professional geologist with over 18 years experience performing multidisciplinary projects involving hydrogeologic assessment, environmental assessment and remediation, and engineering geology. His credentials include:

- A B.A in Geological Sciences and Geography from the University of California Santa Barbara;
- A Certificate in Hazardous Material Management from the University of California Santa Barbara University Extension; and

- A California Professional Geologist license with certificates in engineering geology and hydrogeology.

Mr. Steele is currently a Principal at Tetra Tech, Inc. His areas of expertise include geotechnical engineering, geohazard analysis, landfill operations, landfill closure/post closure monitoring, environmental site assessments, hydrogeologic studies, and environmental assessment and remediation projects. Mr. Steele has developed and implemented numerous environmental remediation projects for soil and groundwater contamination problems utilizing a wide variety of techniques, including excavation and disposal, land farming, groundwater extraction/treatment, vapor extraction, air sparging, hydrologic barriers, chemical oxidation, and augmented bioremediation. Most recently he has been involved in the development and implementation

of *in-situ* groundwater remediation projects for fuel and chlorinated solvent groundwater contamination using enhanced natural attenuation techniques to stimulate indigenous microbial degraders and chemical oxidation techniques.

Abstract

Chemicals used in the illegal manufacturing of drugs are creating an increasing legacy of solvent contaminated sites. Each year the number of illegal drug labs increases significantly, each using dangerous solvents in the manufacturing process and disposing of the spent solvents illegally. Tetra-Tech as leader in environmental assessment and remediation teamed with the San Luis Obispo Regional Water Quality Control Board and Regenesis to design and implement a remedial response to high levels of Freon 11/Freon 113 in groundwater at a former illegal drug lab site.

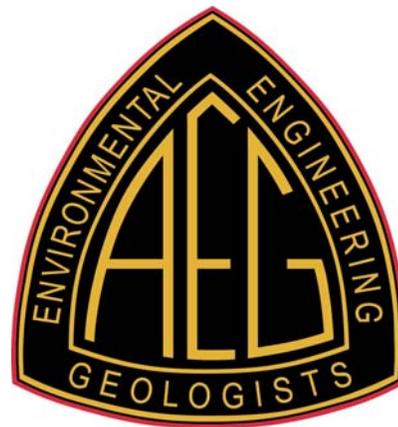
The Site provided challenges in both assessment and remedial design due to the presence of multiple sources and very difficult rural working terrain. Regnesis' hydrogen release compound (HRC) has been shown to be effective in treatment of a mixed Freon 11/Freon 113 plume in previous studies and provided a cost effective remedial alternative which could be implemented in the rough rural terrain.

Conventional active remediation methodologies for chlorinated hydrocarbon groundwater contamination, such as pump and treat technologies, can be costly and often require long term operation. In addition, active treatment methodologies can be difficult to implement at sites with sensitive natural resources constraints, where seasonal conditions may damage or compromise operation of remediation equipment, or where remediation equipment operation may conflict with site operations. Using HRC to enhance *in situ* anaerobic biodegradation of chlorinated hydrocarbon groundwater contamination offers a comparatively simple, and cost effective remediation alternative that can be

implemented with minimal impact to natural resources or conflict with site operations. Because the HRC process does not require equipment operation, there are no associated equipment operation costs, there is no need to consider the effect of seasonal constraints such as weather conditions or flooding on equipment operation, and the site area is not impacted by long term operation of remediation equipment.

HRC is a proprietary polylactate ester that upon being released into the subsurface, slowly releases lactic acid. The lactic acid is slowly metabolized by naturally occurring microorganisms, resulting in the creation of anaerobic aquifer conditions and the production of hydrogen. Naturally occurring microorganisms capable of reductive dechlorination then use the hydrogen to progressively remove chlorine atoms from chlorinated hydrocarbon contaminants.

Results for a case study of HRC remediation at a site with Freon 11/Freon 113 groundwater contamination from an illicit drug manufacturing operation will be presented. The site is in an area bordering an estuary in rural coastal Central California where sensitive habitat and seasonal constraints (weather conditions and flooding) preclude using conventional pump and treat methodologies. The case study summary includes a benefit-cost data analysis for the project.



Announcements

Please email announcements to lavapoet@verizon.net, thank you.

INTERESTED IN ATTENDING A SOIL LOGGING CLASS?

The AEG CA Central Coast Chapter is interested to know the level of interest from members interested in participating in a Soils Logging Class.

The course would be instructed by **Dr. Glenn Borchardt**, *Soil Tectonics, Inc.*, whom will teach soil logging techniques that will empower geologists in their descriptive and interpretive soil logging abilities. These techniques are valuable for trench logging, identifying man-made fill from native soil, and relative age-dating techniques.

It is estimated that the course may cost from \$300 to \$350 per attendee. If you are interested and believe you would attend such a technical short course, please email Robert Urban (lavapoet@verizon.net). If there is enough interest, the Chapter will proceed with organizing the technical short course.

AEG-2006 Annual Meeting - "Northeast Engineering Geology: From Till to Fill"

Boston, Massachusetts, October 30 through November 4, 2006

From: Julie Keaton, Meetings Director

The deadline for receiving abstracts for the 2006 annual meeting held in Boston has been extended to July 7. If you have not already done so and are interested in presenting a talk in Boston, please send your abstract to me at aegjuliek@aol.com

The Boston meeting will be held October 30 through November 4. This annual meeting has a different schedule than past meetings. Be sure to see AEG's web site (www.aegweb.org) for the changes.

If you have any questions, please do not hesitate to contact me.

Julie Keaton

Julie C. Keaton

Meetings, Continuing Education, and Advertising Director

Association of Environmental & Engineering Geologists

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www.aegweb.org

Be sure to join us for our AEG-2006 Annual Meeting "Northeast Engineering Geology: From Till to Fill" in Boston, Massachusetts, October 30 through November 4, 2006

AEG CA Central Coast Chapter Dr. John W. Williams Scholarship

The CA Central Coast Chapter is currently seeking donations for the Dr. John W. Williams Scholarship fund. This scholarship is awarded to deserving students pursuing education and careers in fields directly applicable to environmental and engineering geology. This scholarship provides awareness of the contributions Dr. Williams to the profession of engineering geology and awareness of AEG in the development of our profession.

To make a donation to the Dr. John W. Williams Scholarship fund, please contact Robert Urban at robert_urban@urscorp.com. All scholarship donors will be recognized on our Chapter's newsletter and website.

Chapter Sponsors



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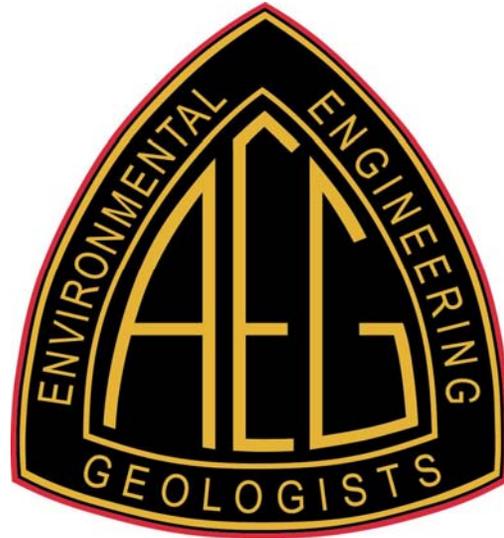


STL

STL Los Angeles

1721 South Grand Avenue
Santa Ana, CA 92705
Phone: 714-258-8610
Fax: 714-258-0921
ATTN: Wendy Pierce

The Association of Environmental & Engineering Geologists CA Central Coast Chapter is currently seeking monthly meeting sponsorship. Benefits of becoming a monthly meeting sponsor include: 1) sponsor's name or logo placed on our Chapter website indicating the month of sponsorship, 2) listing as a Corporate Sponsor in our monthly newsletter, and 3) recognition at the monthly meeting. Our Chapter is asking for a donation of \$150 for becoming a monthly meeting sponsor . . . a small price for the recognition that you contribute to the professional society that best embodies our professional practice.



Directions to Meeting

Monthly Meetings

Monthly meetings will take place on the last Wednesday of every month at Rusty's Pizza in Goleta. Social hour begins at 6 pm; the meeting begins at 7pm.

For more information or to be added to the CA Central Coast Chapter email list, please contact Robert Urban via email at robert_urban@urscorp.com.

Location:

Rusty's Pizza, 270 Storke Road, Goleta
(Santa Barbara)

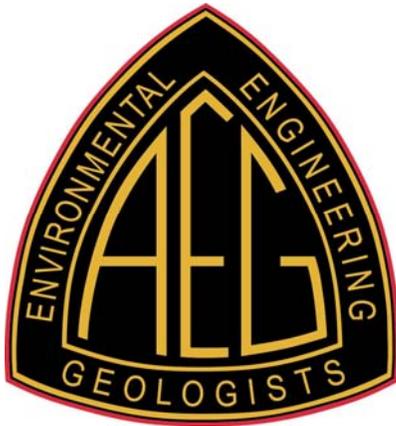
Directions:

1. Driving Northbound or Southbound on Highway 101;
2. Exit on Storke Road;
3. Turn Left (if you were traveling northbound), Right (if you were traveling southbound);
4. Turn Left at the first stoplight past Hollister Road;
5. Rusty's is on the left.

Donation/Cost:

AEG members = \$15; non-AEG members = \$20; Students = \$5

Please: If you plan on attending the meeting, please email lavapoet@verizon.net a confirmation of your attendance by the Tuesday preceding the meeting date. This greatly helps in ordering the food for attendees. However, if you forget to email, please still do attend the meeting. Thank you.

**JOB POSTINGS**

If you would like to place a job announcement, please email the listing to lavapoet@verizon.net, thank you!



Lawson & Associates
Geotechnical Consulting, Inc.

Lawson & Associates Geotechnical Consulting, Inc.

2045 Royal Avenue, Ste. 125

Simi Valley, CA 93065

Tele: (805) 579-3434 Fax: (805) 579-3435

Email: kesmond@lgcgeo.com

Website: www.lgcgeo.com

LGC is looking for dynamic individuals to join our team and work on some of Orange, Los Angeles, Ventura, San Bernardino, Santa Barbara and Kern Counties' most interesting and technically challenging projects. If you are an experienced geotechnical professional, or just starting your career, please do not hesitate to contact us. All inquiries will be considered in the utmost confidence. We look forward to hearing from you.

Lawson and Associates looking for Project Engineer

Work under the supervision of registered geotechnical engineer to perform field geotechnical investigations, analysis and design of shallow & deep foundation, seismic hazard assessments, liquefaction analysis, and static and pseudo-static slope stability analysis; prepare geotechnical reports; participate in inspecting existing engineering projects and formulating recommendation on project design improvements; present the engineering aspect of the project to clients and interact with clients on the technical parts of the projects.

Requirement: MS degree in Civil Engineering with specialization in Geotechnical Engineering.

Send resumes to 2045 Royal Avenue, Suite 125, Simi Valley, CA 93065



URS Corporation is seeking top professional geologists and graduating students for career positions at our Santa Barbara and Santa Maria offices. For further information, please contact Mr. David Bernal, PG by email at:

David.Bernal@urscorp.com

URS Corporation
130 Robin Hill Road, Suite 100
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COUNTY OF SANTA BARBARA

The Santa Barbara County Planning and Development Department is currently seeking a full-time engineering geologist to supervise and perform engineering geology work and to review plans for conformance with county ordinances dealing with soil and earth stability.

Registration as a professional engineering geologist in the State of California and a valid California Class C driver's license are required.

The salary range is \$69,139-\$84,406 approximately per year. The County also offers a generous benefits package that includes a \$4946/year benefit allowance.

With a mild climate and spectacular setting that includes scenic coastline, beautiful valleys, and rugged mountain peaks, Santa Barbara County is one of the most desirable places in the world to live and work.

To learn more about the position and to apply on line, visit www.sbcountyjobs.com, or call (805) 568-2800. This position is open until filled.



PACIFIC SOILS ENGINEERING, INC.

Pacific Soils Engineering, Inc. is seeking all levels of engineering geologists for large land development projects in Los Angeles/Orange/San Diego/San Bernardino/Riverside/Ventura Counties. Knowledge of current grading standards and geologic engineering principles, good verbal communication and writing skills, and leadership skills are helpful. Registration not required. Salary and compensation package commensurate with experience and skills. Please fax resume to (714) 220-9589, or email: info@pacificsoils.com. Attention: Manager of Geotechnical Services.

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EUC

Eberhart / United Consultants, a southern California geotechnical consulting firm serving its clients for over 25 years, has the following career opportunities:

PROJECT GEOLOGIST: position requires BS with 3 years experience in public/civil works, commercial and residential projects. Duties include field mapping, subsurface exploration, office analysis, proposal and report preparation, and project management.

SENIOR ENGINEERING GEOLOGIST: position requires CEG registration and 8 years experience in public/civil works, commercial and residential projects. Duties include managing/performing geologic investigations, field mapping, subsurface exploration, office analysis, proposal and report preparation, and project management.

We offer a competitive compensation & benefits package for qualified candidates. For immediate consideration, mail, FAX, or email your resume & salary history to:

Eberhart / United Consultants
1031 Segovia Circle
Placentia, CA 92870
FAX (714) 632-0955
dre@euc-inc.com

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VACANT

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