



HIGHLIGHTS

HIGHLIGHTS OF THE FALL 2005 TECHNICAL SUPPORT PROJECT MEETING

Members and guests of the three forums that comprise the Technical Support Project (TSP)—the Engineering Forum, Federal Facilities Forum, and Ground Water Forum—held their Fall 2005 meeting in San Antonio, TX, October 23-27. The meeting featured a full-day seminar on long-term monitoring optimization, including a demonstration of the software MAROS, and a half-day session spotlighting the implementation of the Triad approach at various site investigations and cleanups. A wide range of technical presentations were also given on new site characterization techniques, such as electrical resistivity imaging and alternatives to laboratory-based dioxin analysis, and cleanup technologies, such as a trenchless permeable reactive barrier installation and the in-situ bioremediation of perchlorate.

Below are highlights from the forums' technical and business sessions. For more information on the topics discussed, you may either download the slides of the technical sessions from the TSP's webpage at www.epa.gov/tio/tsp/meetings.htm, or contact your regional TSP representative listed at the end of this newsletter.

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New Members

The TSP is always seeking new members to participate in activities of the Ground Water, Engineering, and Federal Facilities Forums. If you are interested, please contact your regional TSP representative or a forum co-chair listed at the end of this newsletter. A complete list of contact information is available at www.epa.gov/tio/tsp/member.htm.

Technical Sessions

The technical sessions of the Fall 2005 meeting covered a range of topics. To view or download the slides from any of the topics highlighted below, please visit www.epa.gov/tio/tsp/meetings.htm.

Hurricane Katrina Aftermath: Bernie Zavala (Region 10) summarized his recent experience with assessing water treatment systems in the New Orleans area following Hurricane Katrina.

Permeable Reactive Barrier (PRB) Pilot Test: Judy Canova (South Carolina DHEC) reported on a bench-scale and follow-up field-scale demonstration of a PRB at a micronutrient production site where ground water exhibits low pH and contains elevated levels of sulfate and metals. Using technology commonly used to treat acid mine drainage, the field-scale demonstration was constructed in the most contaminated

portion of the plume and was able to meet remedial goals within the barrier after one month of operation. Longevity estimates for the system indicated it will likely meet performance goals for 15-20 years. Initial cost estimates indicate a total cost savings of the PRB of at least \$4 million relative to pump and treat over the life of the treatment system.

Electrical Resistivity Imaging: Mats Langmanson (Advanced Geosciences, Inc.) explained how electrical resistivity surveys and imaging software can be used to assess subsurface geology and ground-water flow systems. He provided case studies of how the technology has been used to find underground caves, delineate landfills, and locate water-bearing fracture zones in bedrock. In addition, time-lapse surveys can be performed to monitor the progress of site cleanups, and aquatic resistivity

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Next Meeting

The Spring 2006 TSP meeting will be held in conjunction with the annual conference of the National Association of Remedial Project Managers (NARPM) in June in New Orleans, LA. In addition to their regular business sessions, forum members plan to participate in NARPM technical sessions and workshops as well as present training and panel discussions.



If you are interested in participating in TSP sessions at this meeting, contact your regional forum representative listed at the end of this newsletter.

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imaging can be used to study salt water/fresh water interactions.

Comparison of Direct Push (DP) and Conventional Monitoring Wells:

William Major (Naval Facilities Engineering Service Center) summarized the results of field demonstrations comparing analyte concentrations and water quality measurements from DP wells with values from adjacent, conventionally installed, hollow-stem auger wells. Long-term performance, spatial variability of adjacent duplicate wells, and the variability of hydraulic conductivity measurements in DP and conventional wells were also examined. Statistical analyses of the results showed several favorable comparisons as well as some significant differences.

Triad Training: Linda Fiedler (U.S. EPA Technology Innovation and Field Services Division [TIFSD]), David Miller (Argonne National Laboratory), and Travis Shaw (U.S. Army Corps of Engineers) presented training on the Triad approach as a way to save time and money in site cleanups. The Triad approach integrates systematic

planning, a dynamic work plan, and real-time measurement technologies. The training focused on case studies implementing the approach at Hurlburt Field, FL, to characterize TCE in ground water and at March Air Reserve Base to resolve competing conceptual site models. Linda announced that TIFSD is seeking Superfund sites in each region at which to implement Triad with assistance from EPA Headquarters and Office of Research and Development (ORD). More information on Triad is available at www.triadcentral.org.

Alternatives to Laboratory-Based Dioxin Analysis and a Demonstration of X-Ray Fluorescence Techniques: Steve Billets (U.S. EPA, ORD) summarized the results of a demonstration of five different immunoassays and aryl hydrocarbon receptor-based assays for dioxin analysis. The demonstration, designed by the Superfund Innovative Technology Evaluation (SITE) Program, involved the analysis of soil and sediment samples with a range of concentrations from several sites across the country. Accuracy, precision, and comparability data were collected, as well as cost information and

observations on ease of use, portability, etc. The SITE Program is also conducting a demonstration of six x-ray fluorescence instruments for analyzing 13 target compounds. The results are expected to be published at the end of this year.

Trace Atmospheric Gas Analyzer (TAGA) to Resolve Vapor Intrusion Issues: Dave Mickunas (U.S. EPA, Environmental Response Team [ERT]) detailed examples of how ERT's mobile TAGA can be used to resolve vapor intrusion issues, such as identifying subsurface intrusion sources, lifestyle sources, atmospheric sources, and ambient sources of contaminants in indoor air. TAGA is a vehicle-mounted laboratory instrument capable of direct air sampling and analysis of organics in indoor and ambient air. Results of the 1-minute TAGA onsite analyses and laboratory analyses of 24-hour Summa canisters for indoor air samples were shown to be comparable. Analyses of Tedlar bag grab samples using TAGA were also comparable to Summa canisters.

Tar Creek Superfund Site Case Study: Mike McAteer (Region 6) summarized EPA's response actions at the Tar Creek Superfund site—a mega site in Oklahoma contaminated with lead, cadmium, and zinc from hardrock mining. EPA removed contaminated surface soil from residential properties and high-traffic areas and replaced it with clean soil and new sod. This resulted in a significant drop in children's blood lead levels. EPA has also installed diversions and dikes to address the discharge of acid-mine drainage to surface water and is looking at ways to address chat piles and other mine waste sources at the site.

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Trenchless PRBs: Jim Ortman (GeoSierra) discussed a trenchless PRB installation method capable of treating ground water at depths greater than 100 feet. Iron filings mixed with gel and a cross linker (for extra viscosity) are injected into the subsurface via frac casings to propagate a fracture in the soil perpendicular to the flow of ground water. Packers are used to isolate target zones in the frac casing filling the fracture with the iron mixture from the bottom of the borehole up. An enzyme in the cross linker breaks down the gel to water and sugars leaving a permeable iron barrier in the subsurface to treat contaminant plumes. Case studies of barriers installed to treat chlorinated solvents and metals were presented.

Metals Releases During Sediment Dredging: Heather Shipley (Hazardous Substance Research Center/South and Southwest) described the center's design of a new Dredge Elutriate Test (DRET) that measures the in-situ available metals resulting from metals release during sediment dredging. The new DRET was found to be a good predictor of the metal concentrations released during a resuspension, which might be a better prediction of the amount of metals available to biota. Further testing of the new DRET on samples with varying sediment characteristics and metals is planned.

In-Situ Bioremediation of Perchlorate: Thomas Krug (GeoSyntec Consultants) reported on two ongoing demonstrations of the in-situ bioremediation of perchlorate in ground water—one using an active approach for delivering the electron donor (continuous addition and recirculation),

and one using a semi-passive delivery (intermittent addition and recirculation). The "biobarriers" created by injection and recirculation of an electron donor were found to significantly decrease downgradient concentrations of perchlorate, although modifications to the semi-passive system were needed to improve distribution of electron donor. The best approach for a site will depend on site conditions, objectives, and costs.

Long-Term Monitoring Optimization (LTMO) Training: TIFSD has assembled a training on LTMO for ground-water monitoring programs that will tour the regions within the next couple of years. Kathy Yager (TIFSD) introduced a version of the 1-day training to the TSP and requested suggestions to improve future offerings. Following overviews of qualitative and quantitative methods used in LTMO Mindy Vanderford (Groundwater Services, Inc.) demonstrated the use of the Monitoring and Remediation Optimization Software (MAROS)—one of the several quantitative methods available—and provided case studies on its use. She also distributed copies of MAROS on CD-ROM, noting that it can also be downloaded for free at <http://www.gsi-net.com/software/Maros.htm>. Dave Becker (U.S. Army Corps of Engineers) presented a case study on Parson's three-tiered approach for LTMO. He also summarized what reviewers of LTMO plans need to know. Phil Hunter (Air Force Center for Environmental Excellence) summarized the Air Force's experience in using LTMO at its sites. Following the presentations, the speakers participated in a question-and-answer panel.

Engineering Forum

The Engineering Forum has been busy reviewing ORD's updated engineering issue papers on in-situ soil treatment, biodegradation technologies for remediation, and and management and treatment of water from hardrock mine sites. Forum members have submitted comments to ORD for revision. An oxygenates issue paper also is in the final stages of preparation and will likely be published in the next few months. In addition, drafts of issue papers on in-situ thermal treatment, remediation of PCBs, in-situ chemical oxidation, and design and construction for the mitigation of vapor intrusion are in various stages of development and have been assigned lead reviewers. A paper on capping is also being developed with forum input. Ed Mead (U.S. Army Corps of Engineers) anticipates finalizing a paper, *Selecting Treatment Process Design Parameters to Collect at Hazardous Waste Sites*, within the next few months.

Last year, the forum distributed a survey to RPMs to gauge the level of engineering expertise within EPA and identify training needs. The survey results have been compiled and analyzed, and the forum plans to publish a

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New Co-Chairs

Congratulations to the newest forum co-chairs elected in San Antonio. Glenn Bruck (Region 9) will be replacing outgoing Ground Water Forum co-chair, Jeff Johnson (Region 7), and Mike Overbay (Region 6) will be replacing Federal Facilities Forum co-chair Jim Kiefer (Region 8). Thanks to the outgoing co-chairs for their hard work!

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summary report before the end of the year.

Bernie Zavala (Region 10) provided an update of efforts of the Waste Research Coordination Team and presented a ranking of OSWER research needs and ORD work as determined by a workgroup consisting of regional representatives and Superfund and RCRA program staff. The top engineering, containment, and soil treatment research priorities included metals research, technical assistance to sites through the Engineering Technical Support Center in Cincinnati, alternative designs and materials for landfill caps and barrier walls, and mining issues. The forum may tap into this list of priorities when determining future issue papers.

The Engineering Forum will propose training topics for the upcoming 2006 NARPM conference, including engineering design considerations for mitigation of vapor intrusion, and engineering case studies focusing on remediation technologies, such as permeable reactive zones sheet pile walls, in-well strippers, and electrical resistance heating for remediation of dense non-aqueous phase liquids (DNAPLs).

Ground Water Forum

Business session topics of the Ground Water Forum included discussions of ground-water issues, reports from work groups, and issue paper updates, as follows:

Ground-Water Issues

Decommissioning Multi-Level Wells: Kevin Willis (Region 2) reported on

difficulties encountered when decommissioning multi-level wells in rural Dover Plains, NY. Complications resulting from an inability to easily remove the Viton-clad Kevlar packers resulted in a substantial increase in cost that was not originally budgeted. Kevin recommended including decommissioning costs when costing out a monitoring well program. Costs to remove such a system will be substantially higher than decommissioning a single-screen well.

Ground-Water and Surface-Water Characterization Issues at the Former Occidental Chemical Facility: Curt Black and Jonathan Williams (Region 10) reported that contamination at the site predominantly consists of volatile organic compounds and elevated ground-water pH. Site remediation activities have included installing a pump and treat system, dredging and treating more than 36,000 cubic yards of sediment, and placing treated sediment in a nearshore confined disposal area. Williams and Black stressed the need to develop a comprehensive, 3-dimensional conceptual site model, and to update the model to reflect new data and insights. In this instance, geophysics played an important role in refining the conceptual site model.

Workshop on Nanotechnology for Site Remediation: Steve Mangion (Region 1 Hazardous Substances Technical Liaison) noted that the recent EPA workshop in Washington, DC, focused primarily on the use of nanoscale zero-valent iron to clean up contaminants. Potential health effects of introducing nanoparticles into the environment also were discussed. Forum members discussed surveying the regions to compile a comprehensive list of sites where nanotechnologies are being used.

2006 NARPM Conference Topics: The forum is proposing a DNAPL panel discussion and a training course on ground-water/surface-water interactions. The forum also plans to develop and offer a basic geology/hydrogeology course for RPMs.

Reports from Work Groups

Capture Zone Guidance and Training: Training is scheduled for Region 1 in November. Case studies may be added to the guidance document, thereby delaying the peer review process.

Interstate Technologies & Regulatory Council (ITRC): In December, ITRC will open enrollment to new members. Several forum members expressed interest in joining the Sampling, Characterization, and Monitoring Team.

Unified Statistical Guidance: Although the guidance has undergone both internal and external peer review, additional funds are needed to address the external reviewer comments.

Issue Paper Updates

Ground-Water Sampling and Monitoring with Direct Push Methodologies: After Bernie Zavala (Region 10) finishes addressing comments on the draft report, he will send the document to EPA's ORD for publication.

Field Parameters Issue Paper: Bernie Zavala forwarded comments on the paper to ORD. Once the contractor incorporates these comments, the draft will be sent out for external peer review.

ASTM Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality:

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EPA's representative to ASTM voted not to concur with the final document; as a result, ASTM will change the document in response to some of the forum's comments. ORD is awaiting a summary of the comments on the draft and will review the comments before ASTM votes on the revised standard.

DNAPL Fact Sheet: Kathy Davies (Region 3) is reviewing comments she received from ORD and the forum on the fact sheet she is writing with Dr. Bernie Kueper of Queen's University.

Evaluating Ground-Water/Surface-Water Transition Zones in Ecological Risk Assessment: External peer review comments must be incorporated into this joint issue paper between the Ground Water Forum and the Ecological Risk Assessment Forum.

Ground-Water Uncertainties: Ruth Izraeli (Region 2) has addressed numerous comments on this paper and sent the revised draft to ORD. She anticipates both a forum review and peer review of the paper within the next six months.

Site Characterization for Monitored Natural Attenuation: A draft is almost complete and will be distributed to the forum within the next few months.

OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Ground Water and Soils: Once the final draft is completed, it will be sent to the forum for review.

Federal Facilities Forum

During the business sessions of the Federal Facilities Forum, Renee Wynn

of EPA's Federal Facilities Restoration and Reuse Office (FFRRO) summarized headquarters' response to many of the issues facing federal facility RPMs in the regions. The FY2006 budget for the oversight of federal facilities on the National Priorities List and Base Realignment and Closure (BRAC) list is \$3M short of what the regions requested.

Renee explained to forum members why performing the checklist for institutional control and land use control reviews is important even though it adds time to the ROD review. Because some of the Department of Defense (DoD) services believe that EPA has no post-ROD authority, EPA prepared the checklist to ensure that institutional controls are sufficiently enforceable and protective. She also indicated that, if appropriate, EPA can choose to do its own 5-year review of a site.

Expect privatization sites, issues with access to insurance, and limited leasing opportunities in BRAC '05. In addition, the Air Force Real Property Agency now assigns price tags to properties based on environmental commodities such as wetlands and air credits.

David Kling (Director of the Federal Facilities Enforcement Office [FFEO]) recently sent a memorandum to RCRA Enforcement Managers and counsels in response to letters from the U.S. Army Corps of Engineers regarding munitions on closed military ranges and an incorrect interpretation of the Military Munitions Rule. The memo explained that the military services are obligated to clean up such munitions at closed ranges pursuant to state and federal statutory environmental cleanup authorities and that military cleanup of munitions is statutorily subject to state and EPA oversight.

Mike Carter (FFRRO) has drafted a policy statement based on input from the regions regarding performance-based contracts that clarifies that EPA is not responsible for providing oversight of DoD contractors.

Renee announced that within the next few weeks, FFRRO plans to issue a new military construction guidance document on emerging contaminants updating the list announced in 2002. She added that DoD has a guidance for installation managers on how to deal with chlordane, which was placed under buildings for pest control, during building demolition. The guidance incorrectly states that if the structure or surrounding soil is transferred to another location, managers do not have to disclose the presence of chlordane to the transferee. Renee hopes that DoD will insert into the guidance a caveat she recently provided clarifying this point.

Region 3, FFEO, FFRRO, and military services are developing a streamlined version of the Remedial Action Completion Report, which will possibly be implemented by the end of the calendar year. The cost and performance data in the report will be removed because they will be tracked and reported another way.

The Federal Facilities Forum plans to review the reuse handbook for federal facilities and will help plan training sessions and presentations for the 2006 NARPM conference. Proposed projects include reviewing Triad guidance, helping to identify sites (one per region) to volunteer for Triad application, and raising the issue of performance-based contracting and the need for additional resources.

Technical Support Project Regional Contacts

| | GROUND WATER FORUM | FEDERAL FACILITIES FORUM | ENGINEERING FORUM |
|------------------|---|---|--|
| REGION 1 | Bill Brandon Ernie Waterman Richard Willey | Christine Williams* | Ray Cody Sharon Hayes* |
| REGION 2 | Robert Alvey Andy Crossland Ruth Izraeli Kevin Willis | Paul Ingrisano | Position vacant |
| REGION 3 | Kathy Davies Joel Hennessy | Steve Hirsh Michelle Price-Fay | Andrew Palestini Hilary Thornton Frank Vavra |
| REGION 4 | Dave Jenkins Bill O'Steen Kay Wischkaemper | Julie Corkran Carl Froede Patsy Goldberg Michelle Thornton | Jon Bornholm Carmen Santiago-Ocasio Leo Romanowski |
| REGION 5 | Gwen Massenburg Luanne Vanderpool | Gene Jablonowski Karen Mason-Smith | Tony Holoska Bernard Schorle* David Seely |
| REGION 6 | Dave Abshire Greg Lyssy Vince Malott | Mike Overbay* Chris Villarreal | Gene Keeper* Gary Miller Carlos Sanchez |
| REGION 7 | Dave Drake Lisa Gotto Dan Gravatt Jeff Johnson Bill Pedicino Brian Zurbuchen | Scott Marquess | Steve Kinser |
| REGION 8 | Helen Dawson Kendra Morrison | Jerry Cross Jim Kiefer | Frances Costanzi Bill Rothenmeyer |
| REGION 9 | Kathy Baylor Glenn Bruck* Rich Freitas Herb Levine | Lida Tan | Harold Ball |
| REGION 10 | Curt Black René Fuentes Marcia Knadle Howard Orlean* Jonathan Williams Bernie Zavala | Harry Craig* | Neil Thompson |

* Denotes Forum Co-Chair