

This January, EPA's Technical Support Project (TSP) met with the U.S. Geological Survey (USGS) Toxic Substances Hydrology Program to discuss the progress, results, and future of five USGS research projects addressing point source contamination:

- ▶ Contamination in Fractured Rock Aquifers: Naval Air Warfare Center in West Trenton, NJ
- ▶ Petroleum Hydrocarbon Contamination: Bemidji Research Site, MN
- ▶ Organic and Inorganic Contamination in Wastewater Effluent: Cape Cod Research Site, MA
- ▶ Contamination from Landfill Leachate: Norman Municipal Landfill, OK
- ▶ Low-Level Radioactive Waste and Other Mixed Wastes in the Vadose Zone in the Arid Southwest: Amaragosa Desert Research Site, NV

In addition, the three forums of the TSP—the Engineering, Federal Facilities, and Ground Water Forums—hosted their own technical and business sessions. One session involved a field trip to the U.S. Navy's Space and Naval Warfare Systems Center for presentations on their environmental research and to the University of California San Diego for a tour spotlighting sustainability and green building practices.

This newsletter highlights these meeting activities. For more information on individual presentations, please visit the TSP webpage at [www.epa.gov/tio/tsp/meetings.htm](http://www.epa.gov/tio/tsp/meetings.htm) to download slides, or contact one of the regional forum representatives listed at the end of this newsletter. For a list of USGS presentations and more information, visit [http://toxics.usgs.gov/ps\\_meeting](http://toxics.usgs.gov/ps_meeting).

## Uncertainty Case Studies

Members of the Ground Water Forum presented overviews of the following recent and ongoing site investigations that were prompted as a result of earlier, incomplete site characterization activities, each of which led to implementation of ineffective remedies.

**Dealing With Uncertainty: A Hydrogeologic Model Case Study:** Brad Roberts (Kansas DHE) described how inadequate site characterization in the 1970s led to the construction of a hazardous waste landfill in an area where the water table rose periodically to the level of the buried waste. A corrective measures evaluation (CME) in 2007 showed that the pump and treat system—installed to contain plumes in two water-bearing zones—failed to keep contaminants above alternate concentration levels from reaching the point of compliance. The CME led to new corrective measures and more protective cleanup levels.

### Changing Remedial Landscape at a

**DNAPL Site:** Dick Willey (formerly Region 1, retired) summarized ground-water remedial efforts at a site where a nearby public supply well was shut down due to chlorinated volatile organic compound (CVOC) contamination. A pump and treat system was selected to restore ground water and manage plume migration. Subsequently, DNAPL was acknowledged and a technical impracticability (TI) waiver issued.

Containment with ground-water restoration beyond the TI boundary became the objective. Declines in CVOCs prompted a pumping test to determine whether the supply well could be used. Test results indicated that the remedial objectives were not being met, largely due to biofouling of the pumping wells. Remedial options proposed in a focused feasibility study are under review.



# HIGHLIGHTS

## Table of Contents

<b>1</b> Uncertainty Case Studies	<b>3</b> 2009 NARPM Conference
<b>2</b> Address from Headquarters	<b>4</b> New Co-Chair
<b>2</b> PRB Performance at Hill Air Force Base	<b>4</b> Update on Green Remediation
<b>2</b> Region 6 Vapor Intrusion Study	<b>4</b> Green Remediation Technical Resources
<b>2</b> Multi-Increment Sampling	Directory Planned
<b>3</b> Stipulated Penalties	<b>4</b> Recommendations to Supplement Technical Support
<b>3</b> Update from FFRRO	<b>4</b> Field Trip Summary
<b>3</b> Esquires Workgroup Update	<b>5</b> On-the-Spot Award
<b>3</b> Value Engineering	<b>6</b> Technical Support Project Regional Contacts

Dick Willey, recently retired from Region 1, was recognized for his 21 years of active participation on the Ground Water Forum. Dick is one of the original members of the forum, which was formed in 1987.



## Address from Headquarters

Arnold Layne (Director, Technology Innovation and Field Services Division [TIFSD]) and John Reeder (Director, Federal Facilities Restoration and Reuse Office [FFRRO]) opened the joint forum plenary session by welcoming TSP members to the 2009 TSP meeting and expressing their appreciation for the work undertaken by TSP members throughout the past year.

Arnold remarked that he has been at EPA for more than 20 years (most recently as Director of the Executive Resources Division), but is new to OSWER. He said he is enthusiastic about the past accomplishments of all three forums, and is personally committed to supporting the forums as the new director of TIFSD.

John noted that 2008 was an exciting year for FFRRO, particularly in light of the increased attention the organization received from Congress and the press. The Depart-

(continued on page 3)

### *Solvents Prepackaging Facility, Portland Harbor, OR:*

Howard Orlean and René Fuentes (Region 10) described a cleanup at a RCRA interim status facility. By 2008, soil vapor extraction and pump and treat systems, implemented as interim corrective measures in 1995, had removed over 22,000 pounds of VOC mass. However, concentrations of total VOCs in source-area ground water remained as high as 230,000 µg/L in one well in late 2007, and NAPL was observed in soil borings. An estimated range of 200 to 800,000 pounds of total mass may still remain. The results emphasized the importance of continued characterization of the source area and optimization of the treatment systems.

### *Mercury in the South River, Waynesboro, VA:*

Joel Hennessy (Region 3) described an investigation to determine how mercury used at a former manufacturing facility ended up contaminating water, sediment, and fish in the South River and the surrounding floodplain sediments. The initial remedy of natural recovery and monitoring did not decrease mercury in fish tissue over the years, as hoped. Furthermore, sampling events on a small portion of the floodplain (a farm 3 miles downriver) found an estimated 2200 kg of mercury in the soil. The effects of this contamination on terrestrial biota and a possible remedy are still being investigated.

## PRB Performance at Hill Air Force Base

Sandra Bourgeois (Region 8, Engineering Forum) summarized recent performance issues with a permeable reactive barrier

(PRB) installed at Hill Air Force Base in 2004. The 660-foot long PRB, which is constructed of a granular iron and sand mixture, has reduced the trichloroethene (TCE) mass below Operable Unit 12 by 50% in three years, but has never treated TCE to below the maximum contaminant level of 5 ppb. Recent testing has shown that TCE concentrations downgradient of the PRB are increasing after initially decreasing. Modeling and sampling indicate that the increase in TCE concentrations may be from a loss of the barrier's iron reactivity, possibly from the formation of precipitate following exposure to nitrates in the ground water. The next step is to identify the source of the nitrate and reduce its concentration while attempting to reactivate the iron in the barrier, possibly by means of electron supplementation.

## Region 6 Vapor Intrusion Study

Gary Miller (Region 6, Engineering Forum) discussed the results of a soil vapor intrusion study conducted at four sites selected based on input from states, community groups, and RCRA staff. The Trace Atmospheric Gas Analyzer (TAGA) mobile laboratory was used to assist in the selection of indoor air sampling locations at three of the sites. TAGA obtained real-time sub-slab and crawl space data, thereby allowing for quick indoor air sampling decisions based on predetermined criteria. Based on initial results, additional sampling will be conducted at two of the sites (the former Delfasco Forge site in Grand Prairie, TX, and Kelly Air Force Base in San Antonio). Region 6 will assist the Arkansas Department of Environmental Quality with a new site study in early 2009.

## Multi-Increment Sampling

Roger Brewer (Hawaii Department of Health) explained how multi-increment sampling (MIS) can provide more accurate estimations of representative contaminant concentrations than discrete sampling of exposure-area decision units, thereby improving decision-making. Roger summarized the field and laboratory procedures for MIS. He also presented case studies of MIS applications in the field for a range of site sizes and contaminants and identified lessons learned.

Following the presentation, Roger, Paul Hadley (California Department of Toxic Substances Control), Alan Hewitt (U.S. Army Cold Regions Research and Engineering Lab), and Anita Singh (Lockheed Martin) participated in a panel session to answer questions regarding MIS. Questions included: For which types of sites and compounds is MIS appropriate? What statistical methods can be used for MIS? and What is the role of a valid conceptual site model and data quality objectives in developing stratified decision unites for MIS?

## Stipulated Penalties

Stuart Hunt (Federal Facilities Enforcement Office) gave an overview of draft guidance on assessing stipulated penalties for Federal Facility Agreements (FFAs) and how disputes over stipulated penalties are resolved. He discussed using the draft model FFA Stipulated Penalty Assessment Notice letter. He stressed that formal resolution of stipulated penalties can only address whether failure occurred (e.g., failure to submit a primary document or failure to comply with a term or condition of the FFA relating to a remedial action), not the amount of the penalty. Stuart guided participants through the stipulated penalty process for three sample scenarios.

## Update from FFRRO

John Reeder (Director, FFRRO) expressed interest in gathering information from members of the Federal Facilities Forum on how FFRRO responds to the requests of federal facility remedial project managers (RPMs). He discussed his plans to issue a survey to gather this information. The FFF agreed to work with John to prepare and issue this survey as well as a national federal facility RPM contact list. In preparation for the transition to a new administration, the Regional Administrators need to prepare one-page letter summaries of the important upcoming decisions and issues in the regions. John suggested that members be prepared with issues to include. He also noted that Administrator Jackson has committed to creating a plan to address sites at which current human exposures are not under control, and added that the Military

Munitions Response Program (MMRP) likely will be included in this plan.

John explained FFRRO's strategic plan for federal facilities cleanup. He presented the various challenges faced by the program and the proposed strategy to address them. Challenges include strengthening technical and policy support to the regions, strengthening data management, strengthening policy coordination with other agencies, improving the hazardous waste docket, strengthening communications with tribes and states, defining roles and responsibilities for federal mines and Formerly Utilized Defense Sites, developing a munitions policy, and identifying enforcement and program legislative proposals.

## Esquires Workgroup Update

Brian Nishitani (Region 3, Federal Facilities Forum) recapped the DOD/EPA dispute regarding the issuance of imminent and substantial endangerment (ISE) orders under RCRA and SDWA and what constitutes a model FFA. In May 2008, DOD referred to the Office of Management and Budget (OMB) the dispute about what constitutes a model FFA. OMB had internal differences of opinion between the security side, which apparently sided with DOD's position, and the environment side, which apparently sided with EPA's position. As a result, OMB did not issue an opinion to resolve the inter-agency dispute. Also, DOD referred to DOJ's Office of Legal Counsel four issues relating to EPA's issuance of ISE orders and FFA language. Counsel sided with EPA's position on all four issues.

## Value Engineering

Lindsey Lien (U.S. Army Corps of Engineers) gave an overview of a value engineering (VE) initiative that the Corps has been conducting for EPA at Superfund sites. He discussed the policy directives that guide VE activities at fund-lead sites, the planning process for conducting and funding VE studies, the role of RPMs in the process, and the methods by which the Corps determines and expresses value.

*(continued from page 2)*  
*ment of Justice (DOJ) recently upheld four EPA unilateral orders at federal facilities under the control of the Department of Defense (DOD). FFRRO also proposed for listing the first federal facility in the U.S. since the 1990s (Fort Dietrich, MD). In addition, FFRRO has been busy implementing the cross program revitalization measures and determining acres ready for reuse at federal facilities. Finally, John mentioned that FFRRO is developing a new federal facilities strategy that has a broader scope than the current strategy.*

*Each of the three TSP Forums presented a summary of the past year's accomplishments, current projects, and anticipated future efforts and products.*

## 2009 NARPM Conference

*The 2009 conference, scheduled for June 1-5 in Atlanta, will mark the 5<sup>th</sup> consecutive year the TSP forums provide training support to the National Association of Remedial Project Managers (NARPM). This year, courses sponsored by the forums will include a five-year review panel discussion, radiation training, and green remediation training, among several others.*

*Dr. Bart Chadwick exhibits a Trident sediment sampler during the tour of the Navy's Space and Naval Warfare Systems Center Pacific.*



## **New Co-Chair and Co-Chair Awards**

*Congratulations to Stephanie Vaughn (Region 2), the new co-chair of the Engineering Forum. She replaces outgoing co-chair Mike Gill (Superfund Technical Liaison, Region 9). Both Mike and Luanne Vanderpool (Region 5, Ground Water Forum) received awards for their outstanding service as co-chair during the past two years.*

## **Update on Green Remediation**

Carlos Pachon (TIFSD) presented an overview of TIFSD's green remediation efforts and discussed opportunities for collaboration between the different cleanup programs and TSP. He reviewed existing tools and technical resources, such as the Clu-In green remediation website ([www.cluin.org/greenremediation](http://www.cluin.org/greenremediation)), green remediation-focused Internet seminars, and the primer, *Green Remediation: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites*. OSWER is developing a green remediation strategy that will benchmark and document green remediation best management practices, assemble a toolkit, build networks of practitioners, and develop performance metrics and tracking mechanisms. Carlos asked the forums for help in developing in-house focused knowledge on green remediation, providing a first level "go-to" service to RPMs, tracking and documenting projects of value to peers, and leveraging resources to produce case studies.

## **Green Remediation Technical Resources Directory Planned**

The Engineering Forum discussed ways to facilitate incorporation of environmentally friendly concepts, such as the use of renewable energy sources, into future remedial project designs. The forum hopes to compile a list of green remediation

resources available to RPMs, complete with a list of contacts for each specialty area. The Engineering Forum will consider presenting the resource guide at the 2009 NARPM conference. Nate Nemani (Region 5), Mike Gill (Region 9), Kira Lynch (Region 10), and Julie Santiago (Region 4) will serve on a subcommittee to develop the directory.

## **Recommendations to Supplement Technical Support**

Steven Chang (Office of Superfund Remediation and Technology Innovation) discussed his proposal to increase voluntary, short-term collaboration with all the laboratories of EPA's Office of Research and Development (ORD) to supplement the assistance provided to the Superfund program by the ORD Technical Support Centers. Due to diminishing resources, he thinks there may be ways to explore additional ORD technical support for the Regions.

## **Field Trip Summary**

Chuck Katz led the Engineering and Federal Facilities Forums on a tour of the Navy's Space and Naval Warfare Systems Center (SSC) Pacific. Chuck gave an overview of the Advanced Systems and Applied Sciences Division's Environmental Sciences Branch (ESB), which draws on a broad range of in-house expertise and partnerships with industry, academia, and other government agencies to support the Navy with research, development, testing, evaluation, and demonstration of environmental technologies. The ESB is divided into teams, each of which supports one of four environmental focus areas: 1) Modeling, Simulation and Information Technologies; 2) Detection, Sensors and Systems Technologies; 3) Applied Assessment, Monitoring and Restoration; and 4) Environmental Compliance.

Field trip participants visited SSC Pacific's floating dock, where Dr. Ken Richter described his work in applying electrochemical methods to develop chambered benthic microbial fuel cells to power ocean instrumentation, including acoustic listening devices and hydrophones that can be used to track green sea turtles and other aquatic animals.

Next, Dr. Bart Chadwick demonstrated several instruments that can be used to survey, quantify, and describe contaminated ground-water discharge from hazardous waste sites into neighboring harbors, bays, estuaries, and wetlands including: a benthic flux chamber; monitoring sampler (comprising a Trident probe and an integrated in situ seep monitor/water sampler); and probe equipped with a specialized microphone that can be used to estimate sediment particle size and composition based on acoustic profiles.

Forum members visited one of SSC Pacific's toxicity labs, where Gunther Rosen described the Sea Ring, a tool used to determine toxicological effects of chemicals on aquatic organisms in the field. He also demonstrated an instrument that can be used to determine if toxins are present in samples using bioluminescence of dinoflagellates.

Dr. Jim Leather presented an integrated forensics approach to fingerprint PCB sources using rapid screening characterization and advanced chemical fingerprinting techniques. Dr. P.F. Wang discussed an aquatic model for predicting sediment transport in Pearl Harbor and the total maximum daily load for three creeks emptying into San Diego Bay.

Maggie Souder and Dave Weil (University of California, San Diego [UCSD]) led a walking tour of the UCSD campus. The tour focused on the campus' sustainability efforts and green building projects. Tour highlights included solar panel arrays (also known as "solar trees") installed on top of a parking garage, a solar power inverter, green roofs, and a multimedia "Sustainability Walk," which includes monitors that display real-time information on campus energy use, savings, and environmental impacts for existing and future green projects.

Dr. Keith Pezzoli and Hiram Sarabia of the UCSD Superfund Basic Research Program (SBRP) provided an overview of the program and highlighted several current research projects, including a multi-year effort to address priority environmental health issues affecting communities along the U.S./ Mexico border. Camille Konopnicki and David Lee gave presentations on their research into determining toxicity exposure levels in humanized mice and



*Dave Weil describes the Geisel Library's green roof during the UCSD campus sustainability tour.*

phytoremediation/phytostabilization, respectively.

The final stop on the field trip was the UCSD cogeneration plant, which uses natural gas to produce electricity and heat for 80% of campus. The plant is one of the largest, most efficient, low-smog-emissions plants in the California university system. It saves UCSD nearly \$8 million per year in electricity costs. The plant's pollution control system reduces the amount of smog generated by 75% when compared to conventional natural gas power plants.

## **On-the-Spot Awards**

*Congratulations to Raji Josiam, Harry Craig, and Bernie Zavala, this year's recipients of TSP On-the-Spot Awards. As a new member of the Engineering Forum representing Region 6, Raji is already leading the forum's efforts on green remediation, including representing the forum on Headquarters' Superfund Green Remediation Workgroup. As the Region 10 representative to the Federal Facilities Forum, Harry has been leading the forum's training efforts on MIS as well as the MMRP. Bernie Zavala, also of Region 10, has led the Ground Water Forum in its sponsorship of case study presentations at the TSP annual meetings.*

# Technical Support Project Regional Contacts

	GROUND WATER FORUM	FEDERAL FACILITIES FORUM	ENGINEERING FORUM
REGION 1	Bill Brandon Yoon-Jean Choi	Carol Keating Ginny Lombardo* Christine Williams	Jim Brown
REGION 2	Robert Alvey* Richard Krauser Michael Scorca Kevin Willis	Paul Ingrisano*	Stephanie Vaughn*
REGION 3	Kathy Davies Joel Hennessy	Joshua Barber Steve Hirsh Frank Vavra	Kevin Bilash Fred MacMillan Donna McCartney Andrew Palestini Hilary Thornton*
REGION 4	Ben Bentkowski Dave Jenkins Bill O'Steen Kay Wischkaemper*	Jim Barksdale	Jon Bornholm Leo Romanowski Julie Santiago-Ocasio
REGION 5	Gwen Massenburg Dave Petrovski Luanne Vanderpool	Timothy Fischer Karen Mason-Smith	Nate Nemani Bernard Schorle David Seely
REGION 6	Dave Abshire Greg Lyssy Vince Malott	Richard Mayer Stephen Thzone*	Terry Burton Raji Josiam Gary Miller*
REGION 7	Dave Drake Lisa Gotto Jeff Johnson Dan Nicoski Bill Pedicino Brian Zurbuchen	Scott Marquess Clint Sperry	Don Bahnke Michael B. Davis
REGION 8	Helen Dawson Kendra Morrison	Jim Kiefer	Sandra Bourgeois Larry Kimmel Bill Rothenmeyer
REGION 9	Kathy Baylor Glenn Bruck Rich Freitas Herb Levine	John Hamill Sarah Kloss Rich Muza Kathy Setian	Harold Ball Michael Gill
REGION 10	Curt Black René Fuentes Marcia Knadle Howard Orlean Jonathan Williams Bernie Zavala	Harry Craig	Ellie Hale Kira Lynch

\* Denotes Forum Co-Chair