



HIGHLIGHTS

National Risk Management Research Laboratory
Subsurface Protection & Remediation Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of January 13, 2003

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On January 9, 2003, Dr. Scott Huling (SPRD) provided Corrective Action Specialist Lael Butler with review comments concerning a Corrective Action Plan and RCRA Facility Assessment Report for the Honeywell-Waters Facility in Tampa, FL, with an emphasis on the applicability of chemical oxidation to remediate contaminated ground water at the site. Although, in general, the proposed remedial actions appeared appropriate, a few issues were identified which could improve the technical clarity and direction of the remedial actions. General comments referred to data presentation, hydraulic control, site characterization, and the possible advantages of using persulfate as an oxidant rather than permanganate. Specific comments were provided in a number of areas including soil investigations, and the limiting effects of metals on Fenton systems.

(03RC04-001)

(S. Huling(SPRD)580-436-8610)

Technical Assistance to Region X: On January 6, 2003, Dr. Randall Ross (SPRD) provided Ed Jones (WA St. Dept. of Ecol.) with comments concerning a preliminary design for the hydraulic control (engineered vertical barrier) of ground water. The documents represented a significant improvement over a previously reviewed work plan, and several topics were discussed, primarily with respect to performance monitoring. Included were issues related to the hydraulic conductivity of the barrier, importance of an adequate seal into the underlying silt unit, location of monitoring wells, and proposed drilling techniques.

(02RC10-001)

(R. Ross(SPRD)580-436-8611)

Technical Assistance to Region X: On January 6, 2003, Dr. Randall Ross (SPRD) and Dr. Milovan Beljin (Dynamac Consultant) provided RPM Lee Marshall with comments concerning a ground-water modeling work plan for the Boomsnub/Airco Superfund Site in Hazel Dell, WA. It was suggested that, in general, the document appeared to be acceptable, however, suggestions for its improvement were provided including identifying data gaps with respect to hydraulic properties of the aquitard. Other issues included an extension of the model domain and the ability of available monitoring wells to define the properties associated with this boundary, ground-water flow direction, and initial model calibration input values.

(03-R10-001)

(R. Ross(SPRD)580-436-8611)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of January 27, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On January 13, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (ManTech) provided RPM Galo Jackson with technical assistance regarding the oxidation of PCE by KMnO_4 in a pure system at the Southern Solvents Site in Tampa, FL. It was suggested that the proposed laboratory study, designed to investigate mass transfer and mass transport limitations at the PCE DNAPL interface in an ideal reactor, is limited in scope since there are numerous other factors which also contribute to chemical rebound. Therefore, the application of the results from the proposed experiment to the site would have limitations. A discussion of the mechanisms involved, the proposed test, field-scale implications, and pertinent reference citations were provided.

(00-R04-005)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IV: On January 21, 2003, Dr. Mary Gonsoulin (GWERD) and Mark Paddack and Barbara Wilson (Dynamac) provided Corrective Action Specialist Kimberly Clifton with technical review comments on a monitored natural attenuation report for the Triad International Maintenance Corporation in Lake City, FL. General comments included the need for more frequent monitoring, consequences of the plume having migrated downgradient from the area that can be monitored by the current monitoring network, lateral distribution of sampling points, and the continued need to sample for geochemical parameters. In addition to a number of specific comments, recommendations were offered with respect to future sampling activities, the need for a further delineation of the plume and source area, ground-water flow velocities, and additional monitoring wells.

(03-R04-001)

(M. Gonsoulin(GWERD)580-436-8616)

Technical Assistance to Region IV: On January 16, 2003, Dr. David Burden (GWERD) and Mark Paddack, Robert Dover, and Dr. Hai Shen (Dynamac) provided RPM Jon Bornholm with review comments and recommendations concerning a ground-water extraction system at the Benfield Superfund Site in Waynesville, NC. Based on the data provided, the current ground-water extraction system appears to be providing limited hydraulic plume containment. As an example, it was pointed out that the well screens are deeper than the plume mass which requires pumping large volumes of "clean" water to remove contaminated water located in the shallow alluvium. Another concern was increasing organic concentrations in some monitoring wells. Also discussed were several means of presenting data in future monitoring reports to assist reviewers in determining the effectiveness of the extraction system.

(03-R04-002)

(D. Burden(GWERD)580-436-8606)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of February 10, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On January 26, 2003, Dr. David Jewett (GWERD) and Dr. Mingyu Wang, Dr. Ke Liu, and Abu Noman Ahsanuzzaman (ManTech) provided RPM Derrick Golden with review comments on a ground-water flow model for the W.R. Grace Superfund Site in Acton, MA. The purpose of the model is to assess the extent of ground-water capture and to evaluate remedial alternatives during the feasibility study. A number of issues were discussed including model grid spacing, boundary conditions, hydraulic conductivity distribution, model calibration, and potentiometric surfaces.

(02-R01-002)

(D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region I: On January 30, 2003, Dr. Ralph Ludwig (GWERD) provided Regional Hydrologist Dick Willey and RPM Roger Duwart with review comments on a "Draft Chemical Treatment Wall Demonstration of Compliance Report" for the Somersworth Sanitary Landfill Superfund Site in Somersworth, NH. In general, the field data being collected to determine compliance of the chemical treatment appeared adequate and the conclusions of the report were reasonable. Other issues discussed included the length of ground-water monitoring transects, sampling frequency, apparent cause of ground-water mounding, and a sampling strategy to assess a potentially significant imperfection in the wall's construction.

(03-R01-001)

(R. Ludwig(GWERD)580-436-8603)

Technical Assistance to Region VIII: On January 22, 2003, Steve Acree and Dr. Rick Wilkin (GWERD) attended a meeting in Helena, MT, to discuss the design and construction of a pilot-scale permeable reactive barrier (PRB) at the Asarco-East Helena Superfund Site in East Helena, MT. The PRB is designed for the treatment of arsenic. Several issues were discussed including the management of construction wastes and the effects of the PRB on the ground-water flow field. Also attending the meeting were representatives from Region 8 and Asarco.

(01-R08-002)

(S. Acree(GWERD)580-436-8609)

Technical Assistance to Region IX: On January 28, 2003, Steve Acree and Dr. Eva Davis (GWERD) attended a meeting in Los Angeles, CA, to discuss treatability studies designed to evaluate thermal treatment technologies at the Montrose Superfund Site in Torrance, CA. Also attending the meeting were representatives from Region 9 and their contractors, contractors supporting the Montrose Corp., and the California Department of Toxic Substances. The discussion focused on the feasibility of applying steam injection or electrical resistance heating to remove DNAPLs from the subsurface.

(95-R09-015)

(S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Furukawa, Yoko, Jin-Wook Kim, and Janet Watkins (Naval Research Laboratory) and Richard Wilkin (GWERD). "Formation of Ferrihydrite and Associated Iron Corrosion Products in Permeable Reactive Barriers of Zero-Valent Iron." Environmental Science and Technology. Vol.36 (No. 24). 2002.

(R. Wilkin(GWERD)580-436-8874)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of February 17, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On February 5, 2003, Drs. Ann Keeley and Randall Ross (GWERD) and Dr. Milovan Beljin (Dynamac Consultant) attended a meeting at the Region 2 Office in New York City to discuss the PPG Industries RCRA Site in Guayanilla, Puerto Rico. Also attending the meeting were Region 2 RCRA, RCRA Brownfields and Superfund Brownfields personnel, PRPs and contractors supporting PPG Industries, and the site owner. The focus of the meeting was the current status of corrective action at the site. Central issues included the development of a strategy for additional monitoring and the feasibility of Monitored Natural Attenuation (MNA) as a potential corrective action alternative. The potential discharge of contaminants from ground water into surface water was extensively discussed. Additional discussions included Brownfields redevelopment opportunities.

(01RC02-001)

(A. Keeley(GWERD)580-436-8890)

Technical Assistance to Region IX: On February 7, 2003, Steven Acree and Dr. Eva Davis (GWERD) provided RPM Jeff Dhont with review comments on the "Field Sampling Plan, Reconnaissance DNAPL Assessment" for the Montrose Superfund Site in Torrance, CA. In general, it appeared that the proposed studies would provide sufficient information to define the extent of DNAPL contamination in the saturated portion of the upper aquifer. However, the current studies will provide no information regarding the extent of DNAPLs in the vadose zone. If the extent of vadose zone contamination is larger than in the saturated zone, it may impact the design of remedial alternatives. Other comments addressed proposed boring locations, screening soil samples for DNAPLs, collection and handling of soil samples, and problems associated with the use of bentonite grout when thermal remediation is under consideration.

(95-R09-015)

(S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Chattopadhyay, Sandip, Devamita Chattopadhyay, and William G. Lyon (ManTech) and John T. Wilson (GWERD). "Effect of Surfactants on the Survival and Sorption of Viruses." Environmental Science and Technology. Vol. 36. 2002.

(R. Cosby(GWERD)580-436-8512)

Wilkin, Richard T. and Robert G. Ford (GWERD). "Use of Hydrochloric Acid for Determining Solid-Phase Arsenic Partitioning in Sulfidic Sediments." Environmental Science and Technology. Vol. 36. 2002.

(R. Wilkin(GWERD)580-436-8874)

Lien, Hsing-Lung (NRC) and Richard Wilkin (GWERD). "Reductive Activation of Dioxygen for Degradation of Tert-Butyl Ether by Bifunctional Aluminum." Environmental Science and Technology. Vol. 36. 2002.

(D. Hutchings (GWERD)580-436-8596 and R. Wilkin(GWERD)580-436-8874)

Newell, Charles J., John A. Connor, and Julia A. Aziz (Groundwater Services), Hanadi S. Rifai and Monica P. Suarez (Univ. of Houston), and John T. Wilson (GWERD). "Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies." EPA Ground Water Issue Paper. EPA/540/S-02/500.

(J. Jones(GWERD)580-436-8593)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of March 3, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On February 24, 2003, Dr. Scott Huling (GWERD) and Drs. Ke Liu and Mingyu Wang (ManTech) provided RPM Joseph Lemay with comments on the potential role that non-equilibrium sorption may have on the fate and transport of contaminants downgradient from a source area and the impact on receptors at the Wells G&H Superfund Site in Woburn, MA. The analysis of this issue was complex and involved the use of an analytical technique to assess the relative role of contaminant desorption as well as transport and attenuation. As a result of the analysis, it does not appear that laboratory measurements are required to further quantify the transport of contaminants from the source area, the fate of these contaminants in the subsurface, and the potential impact on downgradient receptors. (03-R01-002) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IV: On February 25, 2003, Dr. David Burden (GWERD) and Barbara Wilson, Mark Paddack, Dr. Hai Shen, and Dr. Jin-Song Chen (Dynamac) provided Hydrogeologist Kay Wischkaemper with technical review comments on a number of reports associated with the Savannah River Site in Aiken, SC. In general, the construction of the conceptual flow and transport model is technically reasonable. However, it should be emphasized that further improvement of the hydrogeologic conceptual model is strongly needed. This is suggested because, as it exists, the model cannot explain the source of the northeastern portion of the plume, and it also failed in fully delineating transport patterns of the main part of the plume. In particular, the model predicts that PCE and TCE should have already reached the Pen Branch, which contradicts field observations. These unsuccessful applications suggest that the hydrogeologic conceptual model should be further calibrated and adjusted based on additional field study results. (03-R04-003) (D. Burden(GWERD)580-436-8606)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

An, Y.-J. (ORISE) and D.H. Kampbell (GWERD). "Monitoring Chlorophyll-*a* as a Measure of Algae in Lake Texoma Marinas." Bull. Environ. Contam. Toxicol. (2003) 70:606-611.

(D. Kampbell(GWERD)580-436-8564)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of March 24, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On March 3, 2003, Dr. Scott Huling (GWERD), Dr. Bruce Pivetz and Colin Basye (ManTech), and Dr. Jim Weaver (EPA, Athens, GA) provided RPM Karen Lumino with comments regarding a conceptual proposal to define mobile DNAPLs at the Solvents Recovery Service of New England Superfund Site in Southington, CT. Areas discussed include conceptual proposal, composition, multiphase flow, data interpretation, and aquifer parameters (particle size and distribution) which govern DNAPL transport and mobility.

(01-R01-002)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region VIII: On February 26, 2003, Dr. David Jewett (GWERD) participated in a technical meeting in Rapid City, SD, to review the status of remedial investigations and begin scoping the feasibility study for the Gilt Edge Mine Superfund Site in Deadwood, SD. Others attending the meeting were representatives from Region 8, US Bureau of Reclamation, SD Dept. of Environment and Natural Resources, SD Dept. of Fish and Game, CDM-Federal, and Gilt Edge TAGs. In addition to studies of waste materials at the site, off-site surface water, ground water, and aquatic ecological risk management assessments were discussed. Potential RI data gaps were also discussed along with proposed additional work for closing those gaps.

(01-R08-001)

(D. Jewett(GWERD)580-436-8560)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Puls, Robert (GWERD), and Robert Powell and Patricia Powell (Powell & Associates Science Service). "Cost Analysis of Permeable Reactive Barriers for Remediation of Ground Water." Proceedings of 3rd International Conference on Remediation of Chlorinated & Recalcitrant Compounds. May 20-23, 2002. Monterey, CA.

(R. Puls(GWERD)580-436-8543)

Kuder, T. (Univ. of OK), R.P. Philp (Univ. of OK), R. Kolhatkar (BP America Inc.), J.T. Wilson (GWERD), and J. Allen (Univ. of OK). "Application of Stable Carbon and Hydrogen Isotopic Techniques for Monitoring Biodegradation of MTBE in the Field." Proceedings of the 2002 Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Assessment, & Remediation, Conference & Exposition. November 6-8, 2002. Atlanta, GA.

(J. Wilson(GWERD)580-436-8534)

Wilkin, Richard T. (GWERD). "Permeable Reactive Barrier Performance Monitoring: Long-Term Trends in Geochemical Parameters at Two Sites." Proceedings of 3rd International Conference on Remediation of Chlorinated & Recalcitrant Compounds. May 20-23, 2002. Monterey, CA.

(R. Wilkin(GWERD)580-436-8874)

Jeong, Seung-Woo (NRC), and A. Lynn Wood and Tony R. Lee (GWERD). "Concurrent Injection of Cosolvent and Air for Enhanced PCE Removal." Proceedings of 3rd International Conference on Remediation of Chlorinated & Recalcitrant Compounds. May 20-23, 2002. Monterey, CA.

(D. Hutchings(GWERD)580-436-8596/L. Wood(GWERD)580-436-8552)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of March 31, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region VII: On March 18, 2003, Dr. Randall Ross (GWERD) and Dr. Milovan Beljin (Dynamac Consultant) provided RPM Nancy Swyers with technical review comments on an in-well stripper (IWS) treatability study evaluation at the 10th Street Site OU2 in Columbus, NE. It was pointed out that the effectiveness of a single IWS system depends on hydrogeologic factors, well characteristics, and the nature and distribution of contaminants. Detailed comments focused on the need for a series of wells in one or more lines oriented perpendicular to the ground-water flow direction. Also discussed were questions regarding the performance of the IWS system under site-specific conditions, additional site characterization activities prior to full-scale implementation, and the potentially protracted period of time required to meet regulatory goals.

(03-R07-001)

(R. Ross(GWERD)580-436-8611)

Technical Assistance to Region X: On March 25, 2003, Steven Acree and Dr. Randall Ross (GWERD) and Dr. Milovan Beljin (Dynamac Consultant) provided RPM Lee Marshall and Hydrologist Bernie Zavalla with comments concerning a conceptual design report for the Boomsnub/Airco Superfund Site in Hazel Dell, WA. Since the basic information often used to support an in-well stripper (IWS) system design, as well as the basis for proposed well spacing was not provided, detailed comments and recommendations could not be given. Comments were offered, however, concerning the effective dimensions of re-circulating cells formed by the IWS systems, the effect of variations in water table elevations on system design, the need for additional monitoring wells, and the rationale for selecting proposed well locations. Suggestions were made with regard to the modeling study discussed during a conference call on March 19, 2003.

(03-R10-001)

(S. Acree(GWERD)580-436-8609/R. Ross(GWERD)580-436-8611)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Azadpour-Keeley, Ann (GWERD). "Envirogen Propane Biostimulation Technology for In-Situ Treatment of MTBE-Contaminated Ground Water." EPA Report. EPA/600/R-02/092. November 2002.

(A. Azadpour-Keeley(GWERD)580-436-8890)

Wood, A.L and T.R. Lee (GWERD), C.G. Enfield (NRMRL), M.C. Brooks (U.S. Army, Vicksburg, MS), and T.J. McHale (U.S. Air Force, Dover, DE). "Field Evaluation of DNAPL Extraction Technologies: Project Overview." Proceedings of 3rd International Conference on Remediation of Chlorinated & Recalcitrant Compounds. May 20-23, 2002. Monterey, CA.

(L. Wood(GWERD)580-436-8552)

Lien, Hsing-Lung (NRC) and Richard Wilkin (GWERD). "MTBE Oxidation by Bifunctional Aluminum." Proceedings of 3rd International Conference on Remediation of Chlorinated & Recalcitrant Compounds. May 20-23, 2002. Monterey, CA.

(D. Hutchings(GWERD)580-436-8596/R. Wilkin(GWERD)580-436-8874)

Wilson, Barbara H. (Dynamac) and John T. Wilson (GWERD). "Remedial Costs for MTBE in Soil and Ground Water." (AEHS) Contaminated Soil Sediment & Water, 2002, Oxygenated Fuel Issue, July/August.

(J. Wilson(GWERD)580-436-8534)

Kolhatkar, Ravi (Group Environmental Management Company), and Tomasz Kuder, Paul Philp, and Jon Allen (Univ. of OK) and John Wilson (GWERD). "Use of Compound-Specific Carbon Isotope Analyses to Demonstrate Natural Biodegradation of MTBE in Ground Water at a Gasoline Release Site." Environmental Science & Technology, Vol.36, No. 23, 2002.

J. Wilson(GWERD)580-436-8534)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of April 7, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On March 27, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz provided RPM Farnaz Saghafi with technical review comments concerning a pilot Fenton oxidation test plan for the Chemical Leaman Tank Lines, Inc. Site in Bridgeport, NJ. Although it was recognized that the vendor has considerable experience implementing this technology safely at other sites, suggested modifications and issues were raised to improve the proposed treatment process and the ability to accurately assess its performance. These issues included field screening for DNAPLs, chemical oxidation tests, pre-treatment characterization conditions, soil sampling and analysis, and process monitoring parameters.

(00-R02-002)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IV: In a continuing technical assistance effort at MacDill AFB in Tampa, FL, Dr. David Jewett (GWERD) reviewed a transport model status technical memorandum at the request of RPM Patricia Goldberg. The March 28, 2003, response presented issues of concern including the source of input data for all parameters in the transport model, questionable use of simulations having long projection periods, calculation of first-order rate constants, and model calibrations.

(01-R04-003)

(D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region VI: During March 24-27, 2003, Steven Acree and Dr. David Burden (GWERD) participated in the development and implementation of an assessment plan for site soil and ground-water at the former Huffman Wood Preserving facility in Broken Bow, OK. Also participating were representatives from Oklahoma Department of Environmental Quality, EPA Region 6 and their contractors, and the City of Broken Bow. The primary objective is to rapidly identify areas of the site that may be suitable for immediate redevelopment based on contaminant concentrations in soil.

(02BF06-001)

(S. Acree(GWERD)580-436-8609/D. Burden(GWERD)580-436-8606)

Technical Assistance to Region VI: During March 27-28, 2003, Dr. Ralph Ludwig (GWERD) provided technical assistance at the Delatte Metals Site in Ponchatoula, LA, with the evaluation of two pilot-scale limestone/compost permeable reactive barriers (PRBs) designed to treat acidity and lead contamination in ground water. The evaluation is to determine if the PRBs are appropriate for use at full-scale. Recommendations were made concerning the hydraulic conductivity of the PRBs and the need for obtaining geochemical data.

(03-R06-001)

(R. Ludwig(GWERD)580-436-8603)

Technical Assistance to Region IX: On March 28, 2003, Steven Acree (GWERD) and Dr. Daniel Pope (Dynamac) provided Laura Young (Hawaii Department of Health) with comments on a remediation plan at the former GASCO Site in Honolulu, HI. Although the plan is currently at the conceptual stage, recommendations were offered for consideration during the design phase of the remediation. Methods for the introduction of biotransformation stimulants were discussed along with the distribution of contaminants, monitoring system, frequency and location of sampling, and a protracted treatment period due to the presence of NAPLs.

(02RC09-001)

(S. Acree(GWERD)580-436-8609)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of April 14, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On April 4, 2003, Dr. Randall Ross (GWERD) and Dr. Milovan Beljin (Dynamac Consultant) provided RPM Darryl Luce with responses to questions raised regarding previous comments on a “Draft Revised Groundwater Model Summary” for the Dover Municipal Landfill Site in Dover, NH. The issues included the distribution and assignment of hydraulic conductivity values used in the models, increased ground-water flow along the eastern boundary of the model, node spacing and aspect ratios, and dispersivity.

(02-R01-006)

(R. Ross(GWERD)580-436-8611)

Technical Assistance to Region IX: On April 1, 2003, Drs. David Jewett and Rick Wilkin (GWERD) provided Mike Gill (Hazardous Substances Technical Liaison) with a review of “Geochemical Evolution of the Pit Lake” which is a part of the draft work plan for the Yerington Mine - Anaconda Copper Company Site in Yerington, NV. In general, it appeared that the work plan was developed around the preconceived outcome that the pit lake is a terminal system with non-degrading or improving water quality conditions. It was suggested that, in addition to the various hydrologic exchange mechanisms considered in the water balance, geochemical and biogeochemical reactions associated with each of the compartments in the conceptual model should also be considered. Detailed comments were provided in a number of areas including ground-water flow patterns, anomalies in presented data, and the proposed collection of additional hydrologic data.

(01-R09-004)

(D. Jewett(GWERD)580-436-8560)

Technical Assistance to Vermont Department Environmental Conservation: On April 1, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (ManTech) provided Michael Smith (VDEC) with a review of the document “Technology Overview, An Introduction to Characterizing Site Contaminated with DNAPLs” prepared by the Interstate Technology and Regulatory Council (ITRC) DNAPLs Team. It was pointed out that the document provides only a general discussion of the technical issues regarding DNAPL site characterization. It was recommended that a central objective should be to direct the reader to specific scientific literature to obtain more detailed information.

(Misc.)

(S. Huling(GWERD)580-436-8610)

PUBLIC SERVICE ACTIVITIES

On April 4, 2003, the following individuals served as judges at the 2003 Oklahoma State Science and Engineering Fair at East Central University: Special Award Judges - Drs. Ann Keeley and Scott Huling (GWERD); and Category Award Judges - Dr. John Wilson, Joe Williams, Dr. Paul Mayer, and Tim Canfield (GWERD), Dr. Bruce Pivetz (ManTech), and Dr. Ron Drake, Barbara Wilson, Dr. Daniel Pope, and Wendy Ringels (Dynamac).



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of April 28, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region V: On April 18, 2003, Steven Acree (GWERD) and Dr. James Mercer (Dynamac Consultant) provided RPM Nabil Fayoumi with comments on a DNAPL characterization and remediation study work plan for the Sauget Area 1 Superfund Site in Sauget, IL. In general, the plan appeared responsive to the request for additional DNAPL descriptive information and the potential types of remedial options that may be appropriate. General comments addressed the distribution of DNAPLs and the need to construct structural maps on low-permeability layers to identify stratigraphic traps for potential monitoring well locations.

(02-R05-001)

(S. Acree(GWERD)580-436-8609)

Technical Assistance to Region VI: On April 16, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (ManTech) provided RPM Ernest Franke with review comments on a "Feasibility Study Report for Remedial Alternatives" for the Sol Lynn/Industrial Transformer Superfund Site in Houston, TX. Discussed in detail was the likelihood that natural attenuation alone would result in remediation in a reasonable time frame, additional source characterization investigations, the need for a more detailed discussion of natural attenuation data, parameter values in model simulations, conducting an evaluation of MNA using the EPA protocol, and the possible occurrence of natural reductive dechlorination.

(99-R06-002)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IX: In a continuing technical assistance effort at the Montrose Superfund Site in Torrance, CA, Steven Acree and Dr. Eva Davis (GWERD) provided RPM Jeff Dhont with comments concerning a DNAPL reconnaissance plan. The April 17, 2003, response addressed the number and location of vadose zone cores needed to determine the extent of the DNAPL zone. A question was also raised regarding other volatile and semivolatile chemicals that may be co-located with the chlorobenzene/DDT DNAPLs. It was requested that, once finalized, the schedule for performing the proposed investigations be provided to facilitate a review of incoming data and to consider a site visit during the reconnaissance.

(95-R09-015)

(S. Acree(GWERD)580-436-8609/E. Davis(GWERD)580-436-8548)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

An, Y.-J. (ORISE) and D.H. Kampbell (GWERD). "Monitoring Chlorophyll-a as a Measure of Algae in Lake Texoma Marinas." *Bulletin of Env. Contamination & Toxicology*. March 2003. Vol. 70, Iss. 3. Published by Springer-Verlag, New York.

(D. Kampbell(GWERD)580-436-8564)

Khan, Faruque A. (EPA-OPP) and Robert W. Puls (GWERD). "In Situ Abiotic Detoxification and Immobilization of Hexavalent Chromium." *Ground Water Monitoring & Remediation*. Winter 2003.

(R. Puls(GWERD)580-436-8543)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of May 12, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On May 2, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (ManTech) provided RPM Galo Jackson with review comments on a document titled "Draft Field Sampling Plan Addendum - Membrane Interface Probe Investigation for Southern Solvents OU #1, Tampa, Florida." The addendum presents a proposal for additional site characterization to further delineate contamination in an area where a chemical oxidation pilot-scale treatability test will be conducted. A number of issues were discussed including the DNAPL degradation process, probe grid spacing, 3-dimensional plots showing soil lithology and presence of DNAPLs, and a correlation of probe readings and actual concentrations in soil and ground water.

(00-R04-005)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region VII: On April 30, 2003, Steven Acree (GWERD) and Mark Paddack, Barbara Wilson and Dr. Hai Shen (Dynamac) provided RPM Nancy Swyers with review comments on the "Butane Biostimulation Pilot Study Report" for the General Motors Site in Sioux City, IA. In general, it was concluded that the butane biostimulation technology would have limited effectiveness in degrading chlorinated hydrocarbons at the site. Lines of evidence to support this conclusion included steady butane concentrations during the pilot study, the absence of essential nutrients for microbial co-metabolism, and no overall trend that indicated decreases in chlorinated hydrocarbon concentrations.

(98-R07-002)

(S. Acree(GWERD)580-436-8609)

Technical Assistance to Region IX: On April 30, 2003, Dr. David Jewett (GWERD) provided RPM Bonnie Arthur with a review of responses to EPA's comments on the "Draft Groundwater Conditions Work Plan" at the Yerington Mine Site in Yerington, NV. Several major concerns remain including the appearance that the work plan is designed to support a specific conceptual site model rather than address site characterization. Although there is general agreement that more data are necessary to accurately depict ground-water flow patterns, the distribution of monitoring locations is not appropriate for determining lateral and vertical ground-water movement. Concerns were also expressed with respect to the limited discussion of methods used in the proposed activities as well as data interpretation.

(01-R09-004)

(D. Jewett(GWERD)580-436-8560)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Jorgensen, Eric E. and Paul M. Mayer (GWERD), Ann E. West (ORISE), Mary E. Gonsoulin (GWERD), and Susan J. Tunnell, Jay E. Clark, Jennifer Parsons, David M. Engle, and Eric C. Hellgren (Ok. St. Univ.). "Early Indicators of Nitrate Stress: Effects to Ecosystems of Chronic Exposure to Low Doses of Bioavailable Nitrogen." Published on CD only as proceedings of the National TMDL Science & Policy Conference, Water Environment Federation, Phoenix, AZ. Nov. 2002.

(E. Jorgensen(GWERD)580-436-8545)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of May 19, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On May 9, 2003, Dr. David Jewett (GWERD) provided RPM Patricia Goldberg with a review of the "Basewide Water Level Measurement Effort Report for MacDill Air Force Base, Tampa, FL." Concerns were expressed about the development of ground-water flow and solute transport models to evaluate MNA solely instead of a variety of corrective measures; reliability of modeling efforts using a single set of water level measurements; need for site-specific lithologic, hydraulic, and chemical data; and the use of linear regressions to generate approximate average ground-water elevation data.

(01-R04-003)

(D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region V: On May 12, 2003, in a continuing technical assistance effort at the Sauguet Superfund Site in Sauguet, IL, Steven Acree and Dr. Randall Ross (GWERD) provided RPM Nabil Fayoumi with comments concerning the construction of a slurry wall ground-water barrier. It was suggested that the overall effectiveness of the physical barrier will depend on a number of factors including the extent to which the bedrock is fractured and the resulting gradient across the wall. It was recommended that the monitoring system include piezometers installed in the bedrock to monitor the hydraulic gradient that develops across the wall.

(02-R05-001)

(S. Acree(GWERD)580-436-8609/R. Ross(GWERD)580-436-8611)

Technical Assistance to Region X: On May 5, 2003, Steven Acree and Dr. Randall Ross (GWERD), and Dr. Milovan Beljin (Dynamac Consultant) provided Project Manager Lee Marshall and Hydrologist Bernie Zavalla with comments concerning the Prefinal Design Report, Non-Time-Critical Removal Action, and Groundwater Modeling Work Plan for the Boomsnub/Airco Superfund Site in Hazel Del, WA. In general, most of the earlier GWERD comments regarding ground-water modeling appear to have been adequately addressed. Detailed comments concerned the spacing of monitoring wells downgradient of the in-well stripper (IWS) re-circulation cells, determining the effective dimensions of the cells, IWS influent monitoring to determine removal effectiveness, and the effect of water table variations on the performance of the system.

(03-R10-001)

(S. Acree(GWERD)580-436-8609/R. Ross(GWERD)580-436-8611)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Heron, Gorm (Steam Tech Environmental Services), Barton Faulkner, Susan Mravik, and Lynn Wood (GWERD), John S. Gierke (Michigan Technological University), and Carl G. Enfield (NRMRL). "Pulsed Air Sparging in Aquifers Contaminated with Dense Nonaqueous Phase Liquids." Ground Water Monitoring & Remediation. Fall 2002.

(L. Wood(GWERD)580-436-8552)

Wilson, John T. (GWERD). "Fate and Transport of MTBE and Other Gasoline Components." Book Chapter. MTBE Remediation Handbook. ISBN 1-884940-29-3. Amherst Scientific Publishers.

(J. Wilson(GWERD)580-436-8534)

Wilson, John T. (GWERD). "The Role of Natural Biological Processes in the Natural Attenuation of Contaminants in Ground Water." European Conference on Natural Attenuation. October 15-17, 2002. Heidelberg Convention Center. Published by Die Deutsche Bibliothek.

(J. Wilson(GWERD)580-436-8534)

Ferrey, Mark (Minnesota Pollution Control Agency) and John Wilson (GWERD). "Complete Natural Attenuation of PCE and TCE without Vinyl Chloride and Ethene Accumulation." Remediation of Chlorinated and Recalcitrant Compounds - 2002. Proceedings of the Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds. Monterey, CA. 2002. ISBN 1-57477-132-9. Battelle Press.

(J. Wilson(GWERD)580-436-8534)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center**

Status Report for the Week of June 9, 2003

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On May 28, 2003, Dr. David Jewett (GWERD) provided RPM Patricia Goldberg with a review of a ground-water flow modeling report for MacDill Air Force Base in Tampa, FL. Several concerns were expressed including the lack of supporting evidence related to model development, use of the ground-water flow and solute transport modeling effort to support monitored attenuation as a remedial strategy rather than comparing various treatment technologies, and the need to establish long-term trends and seasonal variability with respect to water levels. Specific comments were offered in a number of areas including the site's conceptual model, grid discretization and layering, model calibration, and vertical and horizontal hydraulic conductivities.

(01-R04-003)

(D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region V: On May 30, 2003, Steven Acree (GWERD) and Dr. James Mercer (GeoTrans, Inc.) provided RPM Nabil Fayoumi with responses to comments dated April 18, 2003, concerning the work plan for a DNAPL characterization and remediation study for the Sauget Superfund Site in Sauget, IL. In general, it appears that the work plan has been revised to address the previous comments. Two minor issues discussed were the need to include free product recovery as one of the remedial alternatives, and the inclusion of DNAPL mobilization and migration in a discussion of the results of work plan tasks.

(02-R05-001)

(S. Acree(GWERD)580-436-8609)

TECHNICAL PRESENTATIONS

A training session was presented by Jim Cummings (EPA, TIO) and Dr. Scott Huling (GWERD) at the National Remedial Project Managers Association National Conference in Colorado Springs, CO, May 19-23, 2003. The title of the four hour training session was "In-Situ Fenton and Permanganate Oxidation: Policy, Critical Analysis, and Case Studies." Meeting participants included EPA Remedial Project Managers from the Regional offices.

(J. Jones(GWERD)580-436-8593)

Barton Faulkner (GWERD) and Earl Greene (USGS, Baltimore, MD) gave a poster presentation entitled "A Bayes Likelihood Information Theoretic Approach for the Exogenous Aggregation of Regional Ground Water Quality Data," at Using Science to Assess Environmental Vulnerabilities, A ReVA-MAIA Conference, U.S. EPA, May 13-15, 2003, Valley Forge Hilton, King of Prussia, PA.

(B. Faulkner(GWERD)580-436-8530)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Wilkin, Richard T. (GWERD), Dirk Wallschlager (Trent Univ.), and Robert G. Ford (GWERD). "Speciation of Arsenic in Sulfidic Waters." *Geochemical Transactions*, v.4, n.1. 2003.

(R. Wilkin(GWERD)580-436-8874)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of June 16, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On June 3, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Joseph Lemay with comments and recommendations concerning proposed bioaugmentation procedures at the Resolve Superfund Site in North Dartmouth, MA. The plan is to inoculate bio-filter/phytobed pilot trenches with microbial cultures. It was suggested that bioaugmentation could be easily converted to a full-scale system if the results of the pilot-scale study indicate that it is warranted. It was also pointed out that bioaugmentation will complicate data interpretation since no quantitative information will be collected to determine the influence of bioaugmentation.

(01-R01-002)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region I: In a continuing technical assistance effort at the Dover Municipal Landfill Site in Dover, NH, Drs. Randall Ross and Ann Azadpour-Keeley (GWERD) and Dr. Milovan Beljin (Dynamac Consultant) provided RPM Darryl Luce with review comments on a "Draft Revised Groundwater Focused Feasibility Study." In the June 13, 2003, response, it was pointed out that the document is comprehensive and represents a significant improvement over previous materials; however, additional effort may be required to demonstrate that monitored natural attenuation (MNA) will be protective of human health and the environment. Detailed comments and suggestions were offered with respect to ground-water modeling, monitoring, and MNA.

(02-R01-006)

(R. Ross(GWERD)580-436-8611)

Technical Assistance to Region VIII: On June 11, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Judith McCulley with comments concerning a draft off-site treatability study work plan for the Lowry Air Force Base Superfund Site in Denver, CO. The comments focused on a proposed in-situ chemical oxidation pilot study. In addition to general comments, extensive recommendations were provided related to contaminant hydrology, KMnO_4 oxidation, field application plan for potassium permanganate injection, baseline and phase I performance monitoring, radius of influence, well installation, and sampling and analysis.

(03-R08-001)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IX: On June 13, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Eric Yunker with a review of "Report of Findings, Evaluation of KMnO_4 for the Removal of COCs from Groundwater" and "Final Report Treatability Study for TCE with High Sulfate Levels using HRC and HRC with Slow-Release Iron Compound" prepared for the Cooper Drum Company Site in Southgate, CA. In addition to general technical comments, other areas of discussion included sample handling and preparation, KMnO_4 ground-water and soil demand, and the concentrations of COCs.

(03-R09-001)

(S. Huling(GWERD)580-436-8610)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of June 30, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On June 16, 2003, Drs. Dominic DiGiulio and Robert Ford (GWERD) provided RPM Darryl Luce with comments on a “Draft Focused Feasibility Study” for the Dover Municipal Landfill Superfund Site in Dover, NH. Overall, it was believed that the use of a sparge trench to treat ground water contaminated with volatile organic compounds and arsenic has merit. Detailed comments were given with respect to ferrous iron oxidation-precipitation concomitant with arsenic sorption/co-precipitation as well as the stripping capacity of the aerobic treatment trench.
(02-R01-006) (D. DiGiulio(GWERD)580-436-8605/R. Ford(GWERD)580-436-8872)

Technical Assistance to Region I: On June 20, 2003, Dr. Scott Huling (GWERD), Dr. Bruce Pivetz and Mark Paddack (Dynamac), and Rob Earle and Dr. Abu Ahsanuzzaman (ManTech) provided RPM Dick Goehlert with comments on an in-situ chemical oxidation testing work plan at the Savage Municipal Well Superfund Site in Milford, NH. In general, in-situ KMnO_4 oxidation of chlorinated compounds in ground water appears to be a viable candidate for remediation. The existing monitoring well network will facilitate a good performance evaluation and the work plan presents useful information and a good conceptual understanding of the proposed activities. Comments and recommendations were provided to identify a few ambiguous areas that require clarification. The results of a modeling exercise were provided which simulated the injection and subsequent migration of a tracer under two pumping scenarios.
(03-R01-004) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region II: On June 18, 2003, Dr. Dominic DiGiulio (GWERD) provided RPM Michael Zeolla with technical review comments on a work plan for a vapor extraction system at the D’Imperio Property Superfund Site in Hamilton Township, Atlantic County, NJ. The response discussed limitations of the radius of influence based design and suggested an alternative approach based on the attainment of a minimum pore-gas velocity. Also discussed were gas permeability testing, vapor probes to monitor the vacuum and conduct flow interruption testing, and respiration testing.
(03-R02-003) (D. DiGiulio(GWERD)580-436-8605)

Technical Assistance to Region IX: On June 17, Steven Acree (GWERD) and Drs. Mingyu Wang and Ke Liu (ManTech) participated in meetings in Santa Ana, CA, to discuss refinements of ground-water flow and contaminant transport models developed during the remedy selection phase of projects at the Montrose and Del Amo Superfund Sites in Los Angeles, CA. Modifications to model construction and calibration are being considered to increase the reliability for use during the remedial design. Also attending the meetings were representatives from EPA Region 9, California Environmental Protection Agency, Montrose Corporation, Shell Oil Company, and consultants.
(95-R09-015)(94-R09-006) (S. Acree(GWERD)580-436-8609)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of July 7, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region V: On June 26, 2003, Dr. Scott Huling (GWERD) provided RPM Allen Debus with comments concerning the feasibility of the chemical oxidation of contaminants in ground water at the PGG Contractors Landfill in Barberton, OH. Since it appears that chloroform is one of the main contaminants, and it is not reactive with permanganate, the proposed remediation would have limited results with respect to oxidation and could result in the mobilization of heavy metals. It was suggested, however, that sodium persulfate is an experimental form of oxidant that may serve a useful purpose at this site. Also discussed was the possibility of enhanced contaminant transfer due to significant quantities of oxygen and heat resulting from the injection of hydrogen peroxide.

(03RC05-001)

(S.Huling(GWERD)580-436-8610)

Technical Assistance to Region IX: On June 24, 2003, Dr. Dominic DiGiulio (GWERD) provided RPM Jim Sickles with review comments concerning a proposal to use emulsified zero valent iron in lieu of soil vacuum extraction (SVE) to remediate the vadose zone at the Phoenix/Goodyear Airport Site in Phoenix, AZ. Areas of discussion included SVE effectiveness in removing VOCs from the vadose zone and ground water, offsite vapor migration, treatment goals of SVE balanced with ground-water remediation, and an SVE vapor mass flux treatment system. It was suggested that SVE should not be discontinued at this site.

(02-R09-001)

(D.DiGiulio(GWERD)580-436-8605)

Technical Assistance to Region X: On June 24, 2003, Dr. Randall Ross (GWERD) and Dr. Milovan Beljin (Dynamac Consultant) provided RPM Lee Marshall with review comments on a ground-water modeling summary report for the Boomsnub/Airco Superfund Site in Hazel Dell, WA. While most of the previously identified issues regarding the ground-water flow model appear to have been addressed, several fundamental problems limit the utility of the solute transport modeling effort. Issues discussed include modeling results of natural attenuation, crucial importance of understanding the vertical transport of contaminants, TCE and chromium decay constants, and contaminant retardation by adsorption on the soil matrix.

(03-R10-001)

(R.Ross(GWERD)580-436-8611)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of July 14 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On July 2, 2003, Dr. Dominic DiGiulio (GWERD) provided RPM Joseph Gowers with an evaluation of soil vapor data for the soil vacuum extraction (SVE) system at the Swope Oil and Chemical Company Superfund Site in Camden County, NJ. Discussed in considerable detail were the limitations of using asymptotes in vapor extraction wells to determine remediation progress, and the use of vapor probes to determine the time for soil sampling and respiration testing.

(03-R02-002)

(D. DiGiulio(GWERD)580-436-8605)

Technical Assistance to Region III: On July 7, 2003, Dr. John Wilson (GWERD) provided RPM Debra Rossi with review comments on an optimization study and plan to address ground-water conditions in the vicinity of the Army Creek and Delaware Sand and Gravel Landfills in New Castle County, DE. The review focused on prospects for the natural biological degradation of bis (2-chloroethyl) ether, benzene, and 1,2-dichloroethane. Graphic figures were provided depicting the attenuation of COCs with distance along the centerline of flow as well as with time at a selected downgradient monitoring well. It was suggested that the primary mechanisms for attenuation at this time are dilution and dispersion. It was also suggested that air injection, soil vacuum extraction, and in-situ aerobic biodegradation in the source area should be considered.

(01-R03-002)(03-R03-001)

(J. Wilson(GWERD)580-436-8534)

Technical Assistance to Region IX: In a continuing technical assistance effort at the BKK Landfill in West Covina, CA, Steven Acree (GWERD) and Dr. Kelly Hurt (Dynamac) provided Project Manager Carmen Santos with technical review comments on the "Groundwater Corrective Measures Implementation Plan." In the July 7, 2003, response it was suggested that the impact of a proposed golf course should be integrated into the site conceptual model including infiltration and the effects of herbicides, pesticides, and fertilizers which will be applied to the land. Also discussed were well tests, statistical measures for evaluating performance, and the efficacy of natural ground-water divides as barriers.

(98RC09-001)

(S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Azadpour-Keeley, Ann and Barton R. Faulkner (GWERD), and Jin-Song Chen (Dynamac). "Movement and Longevity of Viruses in the Subsurface" Ground Water Issue Paper. EPA/540/S-03/500. April 2003.

(A. Azadpour-Keeley(GWERD)580-436-8890)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of August 4, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On July 24, 2003, Dr. Ralph Ludwig (GWERD) provided Regional Hydrologist Dick Willey and RPM David Newton with review comments on a document titled "Evaluation of Technical Impracticability of Groundwater Restoration for Arsenic" prepared for the Peterson/Puritan Superfund Site in Cumberland, RI. The report presented a "weight-of-evidence" argument that arsenic remediation to previously agreed criteria is not practical. The detailed comments addressed a number of issues needing additional support including: arsenic correlations with ferrous iron and oxygen, for example; injection of oxygenated water; obtaining soil/sediment samples outside the limits of the site to demonstrate that arsenic is naturally occurring; and phosphate and sulfate competition with arsenic for adsorption sites. Also discussed was the construction of a permeable reactive barrier at the site.

(03-R01-006)

(R. Ludwig(GWERD)580-436-8603)

Technical Assistance to Region III: On July 14, 2003, Dr. John Wilson (GWERD) provided RPM Romuald Roman with comments on a draft monitoring plan for the Ohio River Park Superfund site on Neville Island in the Ohio River at Pittsburgh, PA. Among the areas discussed were the location of the screen in a new well with respect to the location of residual hydrocarbons, attenuation parameters including methane and sulfate, interpretation of rates of attenuation, and sampling methods and frequency in terms of minimizing data variability.

(03-R03-002)

(J. Wilson(GWERD)580-436-8534)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Wilson, John T. (GWERD). "Aerobic In Situ Bioremediation." In MTBE Remediation Handbook, Amherst Scientific Publishers, MA.

(J. Wilson(GWERD)580-436-8534)

An, Youn-Joo (ORISE) and Donald H. Kampbell (GWERD). "Total, Dissolved, and Bioavailable Metals at Lake Texoma Marinas." Environmental Pollution 122 (2003).

(D. Kampbell(GWERD)580-436-8564)

Jorgensen, Eric E. (GWERD). "Small Mammals: Consequences of Stochastic Data Variation for Modeling Indicators of Habitat Suitability for a Well-Studied Resource." Ecological Indicators 1 (2002).

(E. Jorgensen(GWERD)580-436-8545)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of August 11, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On July 31, 2003, Dr. David Jewett (GWERD) and Dr. Mingyu Wang, Abu Noman, and Rob Earle (Shaw Environmental, Inc.) provided RPM Derrick Golden with comments on a response to an earlier review of a ground-water flow model for the W.R. Grace Superfund Site in Acton, MA. Among the issues discussed were grid spacing size, model calibration, the use of literature values for hydraulic conductivity in lieu of site specific data, vertical hydraulic conductivity, recharge, and boundary conditions.
(02-R01-002) (D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region IV: On August 1, 2003, Dr. David Jewett (GWERD) provided RPM Patricia Goldberg with comments on a response to an earlier review of a ground-water flow modeling effort at MacDill Air Force Base in Tampa, FL. General and specific comments were addressed on a variety of issues including sources of data, water-level measurements, boundary conditions, recharge, hydraulic heads and conductivities, model calibration, and suggested editorial changes.
(01-R04-003) (D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region IX: On July 28, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Eric Yunder with review comments on four separate documents concerning the Cooper Drum Company Site in Southgate, CA. Several suggestions and recommendations were given for developing a pilot-scale treatability test for DCE and VC dechlorination. The possibility of using an oxygen release compound (ORC) followed by a hydrogen release compound (HRC) was discussed based on its success at another site. Depending on the site geochemistry, however, oxygenating anaerobic ground water could result in the precipitation of iron and manganese resulting in a decrease in aquifer permeability. Detailed comments were provided in a number of other areas including HRC injection, pilot test monitoring and natural attenuation screening, soil oxidant demand, and the need for additional bench-scale testing.
(03-R09-001) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IX: In a continuing technical assistance effort at the Montrose Superfund Site in Torrance, CA, Steven Acree (GWERD) and Dr. Mingyu Wang, Dr. Noman Ahsanuzzaman, and Rob Earle (Shaw Environmental, Inc.) provided RPM Jeff Dhont with a review of a preliminary ground-water modeling report. The July 30, 2003, response focused on the conclusions presented and how they are supported, and the model used in the simulations. Discussed in detail were model refinements and re-calibration, plume volume reduction using the refined model, parameters not included in the sensitivity analysis, and variability in hydraulic conductivity values.
(95-R09-015) (S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Kommineni, S. (Malcolm Pirnie, Inc.), W.P. Ela and R.G. Arnold (U. AZ), S.G. Huling (GWERD), and B.J. Hester and E.A. Betterton (U. AZ). "NDMA Treatment by Sequential GAC Adsorption and Fenton-Driven Destruction." Environmental Engineering Science. Vol. 20, No. 4, July/August 2003.
(S. Huling(GWERD)580-436-8610)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of August 18, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On August 1, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Dick Goehlert with a review of the “Draft Work Plan and QAPP for In Situ Chemical Oxidation Testing at the OK Tool Source Area, Savage Municipal Well Superfund Site, Milford, New Hampshire.” The review was conducted to determine if concerns and recommendations expressed in previous review comments had been addressed. Since it appeared that the proposed KMnO_4 loading was insufficient, calculations leading to the proper oxidant dose were provided. Other issues discussed included oxidant delivery methods, water levels and gradients, and analytical sampling and analysis.

(03-R01-004)

(S.Huling(GWERD)580-436-8610)

Technical Assistance to Region IX: On August 1, 2003, Dr. Randall Ross (GWERD) and Robert Dover (Dynamac) provided Region 9 representatives Mike Gill, Carol Weinstein, and Carolyn Douglas with technical review comments on a preliminary assessment/site inspection report for the Cyprus Tohono Mine Site in Casa Grande, AZ. In addition to pointing out the need for recent water level data, other issues included the limited ground-water data presented in the report, risk due to uranium in ground water, sulfate/uranium correlations, and recommendations for additional studies.

(03-R09-002)

(R.Ross(GWERD)580-436-8611)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Wilkin, Richard T. and Robert W. Puls (GWERD) and Guy W. Sewell (ECU). “Long-Term Performance of Permeable Reactive Barriers using Zero-Valent Iron: Geochemical and Microbiological Effects.” *Ground Water*, 41(4): 493-503. 2003.

(R.Wilkin(GWERD)580-436-8874)

Su, Chunming and R. W. Puls (GWERD). “In Situ Remediation of Arsenic in Simulated Groundwater using Zerovalent Iron: Laboratory Column Tests on Combined Effects of Phosphate and Silicate.” *Environmental Science and Technology*, 37(11): 2582-2587. 2003.

(C.Su(GWERD)580-436-8638)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of August 25, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region V: On August 20, 2003, Dr. David Jewett (GWERD) and Dr. Mingyu Wang and Abu Noman Ahsanuzzaman (Shaw Environmental, Inc.) provided RPM Lolita Hill with comments concerning a ground-water flow model for the Chem-Dyne Superfund Site in Hamilton, OH. Inconsistencies were noted in a number of areas including ground-water gradients and hydraulic conductivity, and the results of model calibration activities were questioned. It was suggested that a mathematical expression for calculating relative sensitivity be provided with a more detailed description to better understand the results of the analysis.

(01-R05-001)

(D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region VIII: During August 10-15, 2003, Steven Acree, and Drs. Randall Ross and Chunming Su (GWERD) visited the Asarco-East Helena Superfund Site in East Helena, MT, to complete site characterization activities prior to the design of a pilot-scale permeable reactive barrier (PRB). In addition to sampling existing monitoring wells, pneumatic slug tests were performed to estimate hydraulic conductivity of geologic materials in the vicinity of the proposed PRB. The project is designed to evaluate PRB technology for in-situ treatment of arsenic.

(01-R08-002)

(S. Acree(GWERD)580-436-8609)

Technical Assistance to Region IX: In a continuing technical assistance effort at the Del Amo Superfund Site in Torrance, CA, Steven Acree (GWERD) and Drs. Kelly Hurt and Bruce Pivetz (Dynamac) provided RPM Dante Rodriguez with review comments on a Program Summary Report. The August 22, 2003, comments addressed the uncertainty of projections concerning the effectiveness of aggressive contaminant removal technologies at the site due to the high degree of geologic heterogeneity. Also discussed were the benefits associated with partial NAPL removal with respect to contaminant flux from the source area and downgradient contaminant concentrations.

(94-R09-006)

(S. Acree(GWERD)580-436-8609)

Technical Assistance to Concurrent Technologies Corp.: On August 21, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided Dr. Dawn Kaback with technical review comments on a document titled "A Decision-Making Framework for Cleanup of Sites Impacted with Light Non-Aqueous Phase Liquids (LNAPL)." The document was prepared to provide a guide to practicable and reasonable approaches for long-term management of LNAPL petroleum hydrocarbons in the subsurface for large, complex sites. It appeared to adequately present a framework for addressing LNAPL sites. Its strength is in compiling and summarizing the steps necessary to manage LNAPL sites rather than the specific technical aspects of characterization and remediation.

(Misc.)

(S. Huling(GWERD)580-436-8610)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of September 15, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On September 11, 2003, Dr. David Burden (GWERD) and Noman Ahsanuzzaman and Rob Earle (Shaw Environmental, Inc.) provided RPM Terry Connelly with review comments on a revised work plan for the Kellogg-Deering Wellfield Superfund Site in Norwalk, CT. It was suggested that additional site-specific input parameters need to be determined in order to produce acceptable results from the model, including the saturated hydraulic conductivity of the vadose-zone soil, soil classification, and water table depth. Also discussed were sensitivity analyses, soil sampling plan, and the equations used for defining the mixing of the leaching solution with ground water.

(03-R01-003)

(D. Burden(GWERD)580-436-8606)

Technical Assistance to Region V: In a continuing technical assistance effort at the Chem-Dyne Superfund Site in Hamilton, OH, Dr. David Jewett (GWERD) provided RPM Lolita Hill and Site Coordinator Matt Justice with further comments regarding modeling modifications which were discussed during a site visit on August 28, 2003. The September 11, 2003, comments focused on concerns related to the vertical movement of ground water and contaminants on and immediately adjacent to the site. Other issues included the use of additional data, calibration statistics, and a software package to evaluate uncertainty in model input and output.

(01-R05-001)

(D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region IX: In a continuing technical assistance effort at the BKK Landfill RCRA Site in West Covina, CA, Dr. Dominic DiGiulio (GWERD) provided Environmental Scientist John Beach with recommendations concerning sub-slab vapor sampling, along with a summary of research being conducted on the subject. The September 10, 2003, response also discussed in detail sub-slab vapor probe construction and installation, as well as sub-slab sampling.

(93RC09-005)

(D. DiGiulio(GWERD)580-436-8605)

RESEARCH IN PROGRESS

Dr. Steve Hutchins, Dr. Elise Striz, and Joe Williams (GWERD) met with EPA Region 6 (WQ-SG) and Natural Resources Conservation (NRCS) personnel in Fort Worth, TX, during August 19-20, 2003. NRCS has formed a Water Quality Task Team in response to a request initiated by Nancy Dorsey (EPA Region 6) for more information and/or research with respect to the NRCS process for developing Comprehensive Nutrient Management Plans (CNMPs) for CAFOs. Under the new CAFO rule, CNMPs will be developed for all CAFOs, and EPA Region 6 has expressed concerns that the plans may not be sufficiently protective of ground water impacted by land application. GWERD personnel presented their research on a site-specific example of ground-water contamination by nitrates through land application practices at an Oklahoma swine CAFO, and NRCS presented the basics of their CNMP process and the differences between the states in this region. The group collectively agreed that nitrate contamination of ground water could be a problem if CNMPs were not properly implemented, and that some additional guidelines may be necessary for private contractors charged with developing CNMPs on NRCS guidance. The meeting concluded with several initiatives including proposing to formalize an interagency Land Application Water Quality Task Team (LAWQTT) consisting of GWERD, EPA Region 6, NRCS, and Agricultural Research Station personnel; preparation of appropriate research proposals to evaluate the efficacy of current practices; and, preparation of an issue paper highlighting the importance and vulnerability of ground-water issues in relation to CNMPs for land application. A number of future issues and processes were discussed and will be addressed by LAWQTT as well.

(S. Hutchins(GWERD)580-436-8563)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of September 22, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On August 27, 2003, Dr. Scott Huling (GWERD), Dr. Bruce Pivetz and Mark Paddack (Dynamac) provided RPM Galo Jackson with comments on a scope of work for a remedial design at the Hollingsworth Solderless Terminal Site in Fort Lauderdale, FL. In general, the scope of work provided the framework for a more detailed work plan but was deficient in providing enough detail to describe bench-scale testing procedures, and contained some methods and materials that are not recommended. Detailed comments were offered in a number of areas including study objectives, sample collection, experimental control, and sample analysis.

(03-R04-004)

(S.Huling(GWERD)580-436-8610)

Technical Assistance to Region V: On August 28, 2003, Dr. David Jewett (GWERD) and Abu Noman Ahsanuzzaman (Shaw Environmental, Inc.) participated in technical review discussions on ground water flow modeling at the Chem-Dyne Superfund Site in Hamilton, OH. Also attending were representatives from EPA Region 5, Ohio EPA, Chem-Dyne Trust, and consultants. The focus of the meeting was previous comments on the current version of the numerical flow model and steps required to resolve issues of concern.

(01-R05-001)

(D.Jewett(GWERD)580-436-8560)

Technical Assistance to Region V: On September 9, 2003, Dr. Scott Huling (GWERD), Dr. Bruce Pivetz and Mark Paddack (Dynamac) provided RPM Richard Boice with review comments on a treatability work plan for the Forest Waste Disposal Superfund Site in Otisville, MI. In general, the document provided the framework for a more detailed work plan but did not provide sufficient details for the proposed bench-scale testing procedures. Since information about contaminant types and concentrations, site hydrogeological conditions, or chemical data characterizing the aquifer material were not included, it was recommended that a more detailed work plan be prepared prior to the treatability studies being considered. Detailed suggestions were offered with respect to sample acquisition, initial site characterization, oxidizing agents most commonly used, and microcosm tests.

(03-R05-001)

(S.Huling(GWERD)580-436-8610)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of October 6, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On September 30, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz and Mark Paddack (Dynamac) provided RPM Kevin Willis with review comments on a document discussing the acceptability of ground-water samples, containing volatiles, being collected at depth using a vacuum-pressurized Westbay sampler. It was suggested that the overall conclusion of the report appeared to be valid: that there would not be an adverse effect due to the evacuation of the sample headspace to 0.1 atmosphere. The report examined several aspects of the issue including headspace volume and gas solubility.

(03-R02-004)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region III: On September 24, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz and Mark Paddack (Dynamac) provided RPM Hiliary Thornton with technical review comments on proposed remediation technologies at the Stanford Chlorine of Delaware Site in New Castle County, DE. In general, the reviewed information suggested that in-situ chemical oxidation may serve a useful purpose at this site while providing the framework for a more detailed bench-scale work plan. Although Fenton oxidation appeared to be the focus of the proposal, permanganate oxidation and thermal remediation should also be considered. It was also suggested that different remedial technologies to treat different portions of the site may serve a useful purpose.

(03-R03-004)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region III: On September 30, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz and Mark Paddack (Dynamac) provided RPM Robert Sanchez with comments concerning a proposed plan outlining alternatives for the remediation of chlorinated solvents in soil and ground water at the Spectron Superfund Site in Elkton, MD. In general, the type, distribution, and concentration of DNAPLs did not appear to be well defined. Despite these uncertainties, the in-situ treatment and reduction of material and mass flux from the source area appeared feasible although the selection of a treatment technology may be improved by a better DNAPL delineation. It was recommended that different in-situ treatment technologies such as a Hydrogen Release Compound (HRC) or similar technologies conducive to the biodegradation of chlorinated compounds be evaluated.

(03-R03-006)

(S. Huling(580-436-8610)

Technical Assistance to Region V: In a continuing technical assistance effort at the Sauget Area 1 Superfund Site in Sauget, IL, Steven Acree (GWERD) and Dr. Daniel Pope (Dynamac) provided RPM Nabil Fayoumi with review comments on a DNAPL characterization and remediation study work plan. The September 29, 2003, comments concerned the relationship between changes in DNAPL mass and the concentration of contaminants in solution. It was pointed out that dissolved contaminant concentrations may reach an upper limit based on the maximum solubility of a pure product or, for a DNAPL mixture, based on the mole fraction of a given contaminant. It was recommended that the work plan provide alternative approaches to estimating DNAPL removal rates and times of remediation.

(02-R05-001)

(S. Acree(GWERD)580-436-8609)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of October 20, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On September 30, 2003, Dr. David Jewett (GWERD) and Dr. Jin-Song Chen (Dynamac) provided Environmental Scientist Mary Ballew with a modeling study of radionuclide fate and transport in the unsaturated and saturated zones at the Maine Yankee Nuclear Plant in Wiscasset, ME. The focus of the study was a comparison of results using RESRAD, EPACMTP, and HYDRUS-2D models. A sensitivity analysis also was conducted as part of the study to help interpret differences in the results of the three models. The study indicated that the models generally provided similar results with respect to leaching from the contaminated zone, outlined differences in radionuclide concentrations in a receptor well, and determined that effective porosity was a key parameter contributing to differences in predicted radionuclide concentrations.

(03RC01-001)

(D. Jewett(GWERD)580-436-8560)

Technical Assistance to Region X: On October 6, 2003, Drs. Randall Ross, John Wilson, and Rick Wilkin (GWERD) and Dr. Milovan Beljin (Dynamac consultant) provided RPM Lee Marshall with review comments on a natural attenuation work plan at the Boomsnub/Airco Superfund Site in Hazel Dell, WA. A number of issues were discussed in detail including mass contaminant calculations, TCE mass reduction between 1995 and 2002, abiotic transformations, the potential for biological degradation of TCE, the use of dispersion as a viable attenuation mechanism for inorganic contaminants, and processes affecting the mobility of chromium.

(03-R10-001)

(R. Ross(GWERD)580-436-8611)

FY 2003 GWERD ACTIVITIES

During FY03, there were 77 Superfund **Technical Assistance** activities at 42 sites and 10 RCRA activities at 9 sites. There were 28 Superfund and 3 RCRA requests for assistance entered into the Technical Support Center tracking system during FY03. Of these, 15 Superfund and 3 RCRA sites were at new locations. No new Brownfields Sites were added to the tracking system. Two **Miscellaneous Technical Assistance** activities were provided to the State of Vermont and Concurrent Technologies Corporation. These involved review comments on a document discussing the characterization of sites contaminated with DNAPLs, and a document discussing long-term management of sites contaminated with LNAPL petroleum hydrocarbons. The Center for Subsurface Modeling Support (**CSMoS**) distributed about 12,000 models. In addition, about 378 technical assistance responses were provided in response to telephone and E-Mail requests. The Subsurface Remediation Information Center (**SRIC**) provided 885 SPRD publications in response to 298 requests to all levels of government, private consultants, industry, educational institutions, and foreign countries. There were 46 **Publications** in scientific journals, EPA research reports, briefing documents, and issue papers.

(D. Jewett(GWERD)580-436-8560)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of November 10, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On October 22, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Joseph F. Lemay with review comments concerning a proposal to heat and insulate Bio-Filter/Phytobed trenches for a phytoremediation field pilot study at the ReSolve Superfund Site in Dartmouth, MA. It was pointed out that enhancements at pilot scale must also be considered reasonable at full scale and would tend to make modeling results less applicable. With respect to insulating ability, the use of additional soil cover appeared to be more feasible than using tarps.

(01-R01-002)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IV: On November 6, 2003, Dr. Scott Huling (GWERD), and Dr. Bruce Pivetz and Mark Paddock (Dynamac) provided RPM Gena D. Townsend with technical review comments and recommendations on a draft pilot study work plan at Camp Lejeune, NC. The plan proposed in-situ chemical oxidation using air sparging followed by air and ozone from a horizontal well to remediate chlorinated contaminants (primarily TCE) in ground water. It was suggested that air sparging and in-situ ozonation not be used at this site. As an alternative, it was recommended that in-situ permanganate oxidation be investigated as it is further developed, better documented, and has fewer limitations than the proposed technologies.

(03-R04-005)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IX: In a continuing technical assistance effort at the Montrose and Del Amo Superfund Sites in Torrance, CA, Steven Acree (GWERD), and Noman Ahsanuzzaman, Rob Earle, and Mingyu Wang (Shaw Environmental, Inc.) provided RPM Jeff Dhont with review comments concerning a work plan for the development of a ground-water model for remedial design. The October 27, 2003, comments suggested that the work plan is comprehensive, however, further clarification and improvements for some components are warranted. Additional comments addressed steady state and transient flow conditions, validation of calibrated flow and solute transport models, data gaps, and expected uncertainty in model predictions.

(95-R09-015)

(S. Acree(GWERD)580-436-8609)

Technical Assistance to Region IX: On November 4, 2003, Dr. Scott Huling (GWERD), and Mark Paddock and Dr. Bruce Pivetz (Dynamac) provided RPM Eric Yunker with review comments on a pilot-scale treatability work plan for the Cooper Drum Company Site in South Gate, CA. In general, the work plan appeared satisfactory and does not require significant corrections or clarifications. Areas of discussion included ground-water velocity and time of travel, possible contamination of those portions of the subsurface undergoing treatment from a perched aquifer as a continuing source of downward migrating contaminants, and aerobic biodegradation of the less chlorinated compounds.

(03-R09-001)

(S. Huling(GWERD)580-436-8610)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

McInnes, Daniel (ECU) and Don H. Kampbell (GWERD). "A Practical Application of Henry's Law: Bubble Stripping to Determine Hydrogen Concentrations in Ground Water." Journal of Chemical Education. Vol. 80, No. 5. May 2003.

(D. Kampbell(GWERD)580-436-8564)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of December 1, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On November 12, 2003, Drs. Ann Keeley and Randall Ross (GWERD) provided RPM Luis Negron with comments on a work plan for additional sampling at the PGG Industries RCRA Site in Guayanilla, Puerto Rico. Specifically, the comments addressed questions regarding the continued technical feasibility of monitored natural attenuation (MNA) of VOCs at the site. A primary concern was if the two proposed rounds of sampling would be sufficient to statistically demonstrate the occurrence of MNA. Although VOC concentrations appeared to be decreasing over time, there remain questions as to whether this is attributable to source removal or natural attenuation. Additional concerns were the lack of an adequate number of monitoring points in light of the area's complex hydrogeology and tidal influences.
(01RC02-001) (A. Keeley(GWERD)580-436-8890)

Technical Assistance to Region IV: In a continuing technical assistance effort at the Southern Solvents Superfund Site in Tampa, FL, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Galo Jackson with the results of tests to determine the total permanganate oxidant demand in aquifer cores taken from the site. On November 21, 2003, a description of the methods and materials used as well as the final results of the tests were provided in the report. Recommendations and details of a conceptual work plan to implement a pilot-scale in-situ permanganate oxidation study were provided.
(00-R04-005) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region V: On November 14, 2003, Dr. Scott Huling (GWERD), and Dr. Bruce Pivetz and Mark Paddock (Dynamac) provided RPM Richard Boice with review comments on a revised treatability work plan for the Forest Waste Disposal Site in Otisville, MI. In general, the work plan adequately outlined the steps needed to conduct a permanganate oxidation bench-scale study. Comments and recommendations were offered in a number of areas including differences between bench and field studies in terms of determining the effective concentration of oxidant required for treatment, site characterization information, oxidant delivery design, using MNA for portions of the dissolved-phase plume, and the possibility that KMnO_4 could be discharged into a downgradient lake.
(03-R05-001) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region VI: During November 18-20, 2003, Drs. Ralph Ludwig, Rick Wilkin, Chunming Su, Ann Keeley, and Mr. Frank Beck (GWERD), and Patrick Clark (NRMRL) visited the Delatte Metals Superfund Site in Ponchatoula, LA, to collect ground-water samples and cores. Water samples were collected from monitoring well transects as part of a performance evaluation of two pilot-scale PRBs and one full-scale PRB. The PRB systems consisting of combinations of cow manure, limestone, and wood chips were designed to remove metals from ground water primarily through a process of sulfate reduction and subsequent metal sulfide precipitation. Ground-water samples were analyzed for various field parameters and will be analyzed in the laboratory for pertinent geochemical and microbiological parameters. Cores collected from within the PRB systems, as well as from upgradient and downgradient locations, will similarly be analyzed for relevant geochemical and microbiological parameters. The samples will be used to evaluate the short and long term performance of the PRB systems in removing lead, cadmium, nickel, arsenic, and iron from ground water.
(03-R06-001) (R. Ludwig(GWERD)580-436-8603)



HIGHLIGHTS

**National Risk Management Research Laboratory
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Status Report for the Week of December 15, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On December 5, 2003, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Dick Goehlert with comments on two documents prepared for the Savage Well Superfund Site in Milford, NH. Issues discussed included problems associated with the use of specific ion electrode measurements of chloride, differences between bench-scale and field-scale matrix oxidant demand tests, selection of indicator wells, data presentation, performance sampling, and a possible reduction in sampling frequency for VOCs and MnO_4^- .

(03-R01-004)

(S. Huling(GWERD)580-436-8610)

Technical Assistance to Region III: During November 5-7, 2003, Dr. Randall Ross (GWERD) and Dr. Milovan Beljin (Dynamac Consultant) attended a meeting at the Region 3 Office and toured the Aberdeen Proving Ground Site in Aberdeen, MD. Activities focused on a modeling study and site documentation. It is anticipated that an additional meeting will take place to discuss the final report and modeling results.

(03-R03-003)

(R. Ross(GWERD)580-436-8611)

Technical Assistance to Region V: On December 4, 2003, Steven Acree (GWERD) and Dr. Daniel Pope (Dynamac) provided RPM Nabil Fayoumi with remarks concerning previous comments on a work plan for a DNAPL characterization and remediation study at the Sauguet Area 1 Superfund Site in Sauguet, IL. Discussed issues included estimates of the time required for remediation, relationship between source zone NAPL mass change and mass flux of contaminants in ground water, and available models for source response. It was suggested that the various models should be discussed in the final report in order to assess the applicability of the assumptions for this site.

(02-R05-001)

(S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Faulkner, Barton R. (GWERD), William G. Lyon (ManTech), Faruque A. Khan (EPA Headquarters), and Sandip Chattopadhyay (Battelle). "Predicting Attenuation of Viruses During Percolation in Soils: 1. Probabilistic Model." EPA Report. EPA/600/R-02/051a.

(B. Faulkner(GWERD)580-436-8530)

Lyon, William G. (ManTech), Barton R. Faulkner (GWERD), Faruque A. Khan (EPA Headquarters), Sandip Chattopadhyay (Battelle), and Jerome B. Cruz (Washington State Univ.). "Predicting Attenuation of Viruses During Percolation in Soils: 2. User's Guide to the Virulo 1.0 Computer Model." EPA Report. EPA/600/R-02/051b.

(B. Faulkner(GWERD)580-436-8530)

Mravik, S.C., A. L. Wood (GWERD), G.W. Sewell (ECU), and R. K. Sillan (LFR-Levine Fricke). "Field Evaluation of the Solvent Extraction Residual Biotreatment Technology." Environ. Sci. Technol. 37(21): 5040-5049. 2003.

(S. Mravik(GWERD)580-436-8553)



HIGHLIGHTS

**National Risk Management Research Laboratory
Ground Water and Ecosystem Restoration Division
Robert S. Kerr Environmental Research Center
Status Report for the Week of December 29, 2003**

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: During December 9-12, 2003, Steven Acree and Dr. Randall Ross (GWERD) characterized the hydraulic conductivity distribution of material within and in the vicinity of a recently installed permeable reactive barrier (PRB) at the Columbia Nitrogen Site in North Charleston, SC. The tests were performed using pneumatic slug testing methods. In addition, dataloggers were installed to monitor temporal fluctuations in hydraulic gradients in the vicinity of the PRB.

(00-R04-003)

(S.Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Fine, Dennis D. (Shaw Env.), G. Peter Breidenbach (ManTech), Treaver L. Price (MCAAP), and Stephen R. Hutchins (GWERD). 2003. "Quantitation of Estrogens in Ground Water and Swine Lagoon Samples Using Solid-Phase Extraction, Pentafluorobenzyl/Trimethylsilyl Derivatizations and Gas Chromatography-Negative Ion Chemical Ionization Tandem Mass Spectrometry." *J. Chromatogr. A*, 1017:167-185.

(S.Hutchins(GWERD)580-436-8563)

Lin, Zhixun (Shaw Env.), John T. Wilson (GWERD), and Dennis Fine (Shaw. Env.). 2003. "Avoiding Hydrolysis of Fuel Ether Oxygenates During Static Headspace Analysis." *Environ. Sci. Tech.* 37(21): 4994-5000.

(J.Wilson(GWERD)580-436-8534)

Kampbell, Don H. (GWERD), Youn-Joo An (ORISE), Matthew Smith (ECU), and Marvin M. Abbott (USGS). 2003. "Impact of Oil Production Releases on Some Soil Chemical Properties at the OSPER Sites." pp. 105-112. In: Y.K. Kharaka and J.K. Otton (Eds.), *Environmental Impact of Petroleum Production: Initial Results from the Osage-Skiatook Petroleum Environmental Research Sites, Osage County, Oklahoma*. USGS Water-Resources Investigations Report, 03-4260.

(D.Kampbell(GWERD)580-436-8564)