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 10, 2004 -

TECHNICAL ASSISTANCE

Technical Assistance to Region VI: During November 29 - December 3, 2004, Dr. Ann Keeley, Frank Beck, and Russell Neil (GWERD) conducted a field trip to the Delatte Metals Superfund Site in Ponchatoula, LA, to collect core and ground-water samples as part of a continuing microbiological investigation of two pilot-scale PRBs. The reactive components of the PRBs include cow manure, limestone, and wood chips which were designed to promote microbially mediated sulfate reduction and subsequent metal sulfide precipitation. Cores were collected and processed on site in a glove box for biogeochemical parameters. Ground water samples were analyzed for field parameters focusing on sulfide concentrations and will be analyzed in the laboratory for relevant microbiological characterization.
(03-R06-001) (A. Keeley(GWERD)580-436-8890)

Technical Assistance to Region VII: On December 29, 2004, Steven Acree (GWERD) and Dr. Daniel Pope (Dynamac) provided RPM Nancy Swyers with a response to comments concerning a previous critique of a "Butane Biostimulation Pilot Study Report" for the General Motors Site in Sioux City, IA. In general, it appeared that the hydrogeology of the site as well as processes by which the Butane Biostimulation technology works to degrade contaminants may be poorly understood. The lack of detailed and extensive monitoring data and changes in operation parameters contribute to the difficulty of evaluating responses to the comments. It was suggested that at this point the project be considered at a research level. It will require a more detailed site characterization and far more detailed monitoring data during operation to significantly reduce uncertainty in the evaluation of its performance with respect to remediation goals.
(98-R07-002) (S. Acree(GWERD)580-436-8609)

Technical Assistance to Region IX: On December 20, 2004, Steven Acree (GWERD) and Dr. Norman Ahsanuzzaman, Dr. Mingyu Wang, and Rob Earle (Shaw Env.) provided RPM Greg Lovato with review comments on a document titled "Groundwater Model Development Report - Supplemental Data" prepared for the Carson Ground-Water Contamination RCRA Site in Carson, CA. Detailed comments were offered with respect to model calibration, boundary conditions, PEST variable analysis, aquifer and model layers, and injection and extraction well data.
(04RC09-001) (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 January 17, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On January 6, 2005, Dr. John Wilson (GWERD) provided RPM Debra Rossi with a technical review of the "Draft Final Remedial Design Work Plan for the Maryland Sand, Gravel & Stone Operable Unit 03, Elkton, Maryland." The review focused on the "Quality Assurance Project Plan" and the "Bioremediation Treatability Study Work Plan." In addition to a number of detailed comments on a variety of issues, suggestions were offered with respect to sample collection, analysis, and microcosm studies. Differences between laboratory and field results were discussed, particularly with respect to delivering adequate oxygen in field investigations.
(00-R03-002) (J. Wilson(GWERD)580-436-8534)

Technical Assistance to Region III: In a continuing technical assistance effort at the Maryland Sand, Gravel & Stone Site in Elkton, MD, Dr. John Wilson (GWERD) provided RPM Debra Rossi with comments on the development and performance of EPA's selected remedial action. The January 6, 2005, comments concerned many important design and implementation details that were not considered in the proposal. Of major concern was the design of a proposed injection/distribution piping system. Suggestions were offered to correct these deficiencies. Concerns were also expressed with respect to getting amendments, necessary to carry out the bioremediation remedy, through the unsaturated zone to the contaminated ground water. The proposed method of introducing propane and oxygen into the contaminated zone was also questioned. It was recommended that the area above the contaminated ground water not be used for a landfill until the bioremediation and natural attenuation remedy is complete.
(00-R03-002) (J. Wilson(GWERD)580-436-8534)

Technical Assistance to Region IX: On January 12, 2005, Steven Acree (GWERD) and Drs. Mingyu Wang and Noman Ahsanuzzaman (Shaw Env.) provided RPM Jeff Dhont with a review of "Initial Calibration and Data Gap Analysis Report" for the Montrose and Del Amo Superfund Sites in Torrance, CA. In general, the efforts described in the report are useful in understanding the predictive uncertainty of the baseline model with regard to meeting ROD objectives. There is concern, however, whether the conclusions, which were based on a single scenario, are valid for other remedial alternatives. Specific comments concerned model assumptions and limitations, calibration weights, partition coefficients, water-level measurements, and boundary conditions.
(95-R09-015) (S. Acree(GWERD)580-436-8609)

Technical Assistance to Groundwater Services, Inc.: On January 13, 2005, the GWERD Center for Subsurface Modeling Support (CSMoS) provided Ann Marie Spexet, P.E., with a review of a BIOPLUME IV Software Package and User's Manual. Participating in the review were Dr. David Jewett (GWERD) and Dr. Norman Ahsanuzzaman and Mingyu Wang, and Robert Earle (Shaw Env.). The review provides comments on the execution of the graphical user interface and model algorithms, the tutorial, and user's manual. Several fatal errors and minor bugs were identified during the course of the review and the review team provided suggestions and recommendations for correcting these problems.
(Misc.) (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 January 24, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On January 21, 2005, Dr. Randall Ross (GWERD) provided RPM Michelle Thornton with review comments on a draft "Ground Water Remedial Investigation" for the Alabama Ammunition Plant in Talladega County, AL. In general, the document is well written and provides a thorough presentation of the extensive characterization activities that have been conducted on and around the facility. The complex nature of the hydrogeologic setting and the large aerial extent of contamination presents unique problems while working toward the restoration of the site. The document demonstrates a detailed yet basic conceptual model of a very complex fractured carbonate aquifer that appears to be strongly influenced by dissolution features and conduit flow. It was suggested that the detection of COCs at particular locations around the site indicates that additional work may be necessary in defining the conceptual model with respect to the fate and transport of COCs in a carbonate aquifer.
(05-R04-002) (R. Ross(GWERD)580-436-8611)

Technical Assistance to Region IX: On January 20, 2005, Dr. Randall Ross (GWERD) provided Hydrogeologist Katherine Baylor with technical review comments on water data from the Tuba City Landfill RCRA Site in Tuba City, AZ. It was noted that ground-water contamination consists of elevated concentrations of nitrate and sulfate resulting from the use of nitric and sulfuric acid during the processing of uranium ore. It was not clear, however, if the same characteristics hold for tailings materials which may or may not have been disposed of at the site. Recommendations included the location of monitoring wells, collection of samples and sample parameters, potential contaminant source, and the assessment of vertical gradients.
(05RC09-001) (R. Ross(GWERD)589-436-8611)

Technical Assistance to Region X: On January 19, 2005, Steven Acree (GWERD) provided Dan Opalski (Region 10) with a review of an Environmental Impact Statement (EIS) for Orica Australia Pty Ltd., Banksmeadow, New South Wales, Australia. Although sufficient supporting data regarding site hydrogeology were not available for a thorough review, it appeared that the proposed remediation system may be adequately designed with respect to contaminant containment objectives. It was suggested that success, with respect to contaminant reduction objectives, will likely be dependent on the result of source removal efforts. Recommendations concerned DNAPL source removal, estimated time frame for an 80% reduction in contaminant levels, and performance monitoring.
(Misc.) (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 February 7, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region IX: On January 27, 2005, Steven Acree (GWERD) and Dynamac, an off-site contractor, provided Herb Levine with an evaluation of the use of a borehole flowmeter technique for the characterization of transmissive bedrock features at the Alark Hard Chrome Superfund Site in Riverside, CA. It was suggested that, in general, it may be possible to use this technique to identify transmissive intervals in site wells. However, the bedrock transmissivity appears to be relatively low which would severely limit the sustainable pumping rate, increase the time required for the test, and, possibly, decrease the sensitivity of the test. Based on site conditions, it is likely that an iterative approach to the test design would be required to produce acceptable results. It is also unlikely that the test results would be suitable for assigning interval-specific values for hydraulic conductivity as this would require the assumption that flow is occurring under porous-media conditions which appears to be questionable.
(04-R09-003) (S. Acree(GWERD)580-436-8609)

Technical Assistance to Region IX: On February 2, 2005, Steven Acree (GWERD) and Dr. Lifeng Guo (Dynamac Consultant) provided RPM Greg Lovato with comments on a "Groundwater Model Development Report - Geologic/Geophysical Supporting Data" for the Carson Ground-Water Contamination RCRA Site in Carson, CA. The reviewed logs generally support the geologic framework proposed for model development. As at most sites, some of the interpretations and simplifications are subject to professional judgment, and the results of the modeling studies may indicate that revisions are warranted, particularly in highly heterogeneous settings. In this respect, the modeling effort should be considered as a continuous process in which assumptions are re-examined, added, tested, deleted, and modified as the process continues through the calibration phase and beyond.
(04RC09-001) (S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Huling, Scott G. (GWERD), Patrick K. Jones (GWERD), Wendell P. Ela (Univ. of AZ), and Robert G. Arnold (Univ. of AZ). Feb. 2005. "Repeated Reductive and Oxidative Treatments of Granular Activated Carbon." Jour. Environ. Eng. © ASCE.

(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 February 21, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On February 11, 2005, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Joseph Lemay with technical review comments on a "Bio-Filter/Phytobed Flow Restriction Coring Program Report" for the ReSolve Superfund Site in North Dartmouth, MA. The report concludes that a flow restriction in a treatment trench was likely due to the sand/gravel mixture drainage layer in the trench having a lower than expected permeability. A number of suggestions were offered with respect to the differences in permeability including statistical limitations due to the number of samples tested, the possible presence of filter fabric in the soil core, sampling procedures, microbial growth or mineral precipitation, and the sorting of material during handling and transportation.
(01-R01-002) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region II: On February 22, 2005, Dr. Ann Keeley (GWERD) and Dr. Lifeng Guo (Dynamac) provided RPM Paul Ingrisano with comments on a five-year progress report on natural attenuation of study areas I & J at the Naval Air Engineering Station Lakehurst Superfund Site in Lakehurst, NJ. It was suggested that the reported intrinsic biodegradation rates appear to be over-estimated, probably due to a part of the data set being collected under conditions which were non-steady state, and that a one-dimensional flow was assumed for the site. It was recommended that the rate estimations be based on a sub set of data with comparable ground-water elevation values. It was also recommended that transverse dispersivity be taken into account in the biodegradation rate estimation with a more realistic representation of the ground-water flow system as being two- or three-dimensional if site data can support such an analysis.
(99-R02-003) (A. Keeley(GWERD)580-436-8890)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Su, Chunming and Robert W. Puls (GWERD), 2004. Significance of Iron(II, III) Hydroxycarbonate Green Rust in Arsenic Remediation Using Zerovalent Iron in Laboratory Column Tests. Environmental Science and Technology, 38: 5224-5231.

(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 February 28, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On February 22, 2005, Dr. Ann Keeley (GWERD) and Dr. Daniel Pope (Dynamac) provided RPM Nigel Robinson with review comments on the "Post-Remedial Sampling Report with the Focused Remedial Assessment of Soil at CW-3" for the Chemical Control Corporation Site in Elizabeth, NJ. Specifically, the comments focused on routine site monitoring and remedy maintenance procedures, effects of a Hydrogen Release Compound (HRC) injection program, and results of core sampling tests. Generally, the amount and type of data collected appeared to be at least minimally sufficient to make some decisions regarding future site activities. Since the operations and maintenance procedures seemed reasonable, the comments were largely directed toward the results and conclusions concerning the HRC injection program, and the testing of soil cores.
(04-R02-004) (A. Keeley(GWERD)580-436-8890)

Technical Assistance to Region II: On February 24, 2005, in a continuing technical assistance effort at the PPG Industries RCRA Site in Guayanilla, Puerto Rico, Dr. Ann Keeley (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Luis Negron with comments on a supplemental RCRA Facility Investigation and Interim Measures Report. The report was found to be clear and well organized in presenting information in a logical manner with the geological conceptual model being its strong point. It appeared, however, that the report greatly overestimated the effectiveness of natural attenuation as a corrective action by not adequately addressing the heterogeneity and complexity of the site, nor the impact of a potential presence of NAPLs. In this respect, most of the discussion was found to be general in nature by describing the basics of contaminant fate and transport mechanisms, sometimes inappropriately. In addition to a number of general comments, specific considerations were offered in a variety of areas including data validation, potential sources of vinyl chloride, hydrodynamic dispersion, NAPL dissolution, calculation of contaminant mass, and the evaluation of monitored natural attenuation.
(01RC02-001) (A. Keeley(GWERD)580-436-8890)

Technical Assistance to Region VI: During February 14 - 19, 2005, Dr. Ann Keeley, Frank Beck, and Russell Neil (GWERD) conducted a field trip to the Delatte Metals Superfund Site in Ponchatoula, LA, to collect core and ground-water samples as part of a continuing microbiological investigation of two pilot-scale PRBs. The reactive components of the PRBs include cow manure, limestone, and wood chips which were designed to promote microbially mediated sulfate reduction and subsequent metal sulfide precipitation. Cores were collected and processed on site in a glove box for biogeochemical parameters. Ground-water samples were analyzed for field parameters focusing on sulfide concentrations and will be analyzed in the laboratory for relevant microbiological characterization.
(03-R06-001) (A. 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 March 7, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On February 24, 2005, Dr. Ralph Ludwig (GWERD) gave a presentation on zero-valent iron technology at a public meeting concerning the Memphis Defense Depot Site in Memphis, TN. The technology is being proposed to treat a deep chlorinated hydrocarbon ground-water plume and source area. Hydraulic fracturing will be used to install a permeable reactive barrier to treat the ground-water plume while high-pressure, high-velocity zero-valent iron powder injection will be used for the source area treatment. The presentation was given to familiarize the public with zero-valent iron technology and to explain the associated science. Following the presentation, questions were fielded from the audience regarding long-term effectiveness of the zero-valent iron, the potential presence of contaminants at the site not treatable with the remedial technology, and the ultimate fate and environmental impact of zero-valent iron in the subsurface.
(05-R04-003) (R. Ludwig(GWERD)580-436-8603)

Technical Assistance to Region IV: On March 1, 2005, Dr. Eva Davis (GWERD) provided RPM Jim Barksdale with technical review comments on an "Interim Remedial Action Implementation Plan" for the Trichloroethylene Vadose Zone Source Unit at the Savannah River Site-Old Radioactive Waste Burial Ground Site in Aiken, SC. The proposed system is a combination of electrical resistance heating (ERH) with soil vacuum extraction (SVE). A number of general suggestions were offered on issues including the location of the highest TCE soil concentrations, use of the remediation system below the water table, assuring that the system is designed by experienced engineers, and effluent vapor treatment. Specific issues included the installation of electrodes, shutdown criteria, and construction materials.
(02-R04-003) (E. Davis(GWERD)580-436-8548)

Technical Assistance to Region IX: On February 9, 2005, Dr. Eva Davis (GWERD) attended a meeting in the Region 9 Office in San Francisco, CA, to discuss the development of a Request for Proposals for electrical resistance heating (ERH) remediation for the source zone at the Pemaco Maywood Site in Los Angeles, CA. Also attending the meeting were the RPM and others from Region 9 and Headquarters, and the Corps of Engineers and their consultants. Along with ERH remediation, which is proposed for one area of the site, the integration of this technology with plans for the rest of the site were discussed as well as pursuing SITE involvement in performance evaluation. Dr. Davis will serve as the Technical Lead/Project Manager for the SITE evaluation as well as providing additional technical support to the project.
(05-R09-001) (E. Davis(GWERD)580-436-8548)

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 21, 2004 -

TECHNICAL ASSISTANCE

Technical Assistance to Region I: In a continuing technical assistance effort at the Re-Solve Inc. Superfund Site in Dartmouth, MA, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Joseph Lemay with technical review comments on a program summary of the first two years of a three-year bio-filter/phytobed pilot study. The March 15, 2005, response pointed out that the most significant issue raised is doubt that the system can meet site-specific permit limits for PCBs. Other comments related to piezometer results and the facilitated transport of PCBs through the trench systems. -
(01-R01-002) (S. Huling(GWERD)580-436-8610) -

Technical Assistance to Region V: On March 2, 2005, Dr. David Burden (GWERD) and Dr. Daniel Pope (Dynamac) provided RPM Terese Van Donsel with comments on a DNAPL recovery pilot-study work plan, and revisions to the operation and maintenance manual for the Field Brooks Superfund Site in Ashtabula, OH. DNAPL recovery operations have been hampered by poor performance of the system including pumping difficulties associated with silt and crystalline materials in the DNAPLs. Issues discussed include pump selection, recovery wells, monitoring network, and sampling regime. It was suggested that a discussion of the goals of the monitoring program be provided and how collected data will be used to make site-related decisions. -
(04-R05-001) (D. Burden(GWERD)580-436-8606) -

Technical Assistance to Region IX: On March 1, 2005, Steven Acree, Dr. Robert Ford, and Dr. David Jewett (GWERD) provided RPM James Sickles with a review of an "Initial Groundwater Conditions Work Plan" for the Yerington Mine-Anaconda Copper Co. Site in Yerington, NV. In general, the studies described in the proposed plan appeared to be acceptable for the initial phase of investigations to characterize the hydrostratigraphy and ground-water chemistry in an area north of the pump back system. However, it appears that additional phases will be required to fully meet each of the characterization objectives. It was recommended that the results of the "first step" activities be presented and accompanied by a work plan update for the "second step" activities. -
(01-R09-004) (S. Acree 580-436-8609/R. Ford 580-436-8872/D. Jewett 580-436-8560(GWERD)

Technical Assistance to Region X: On March 8, 2005, Dr. Randall Ross (GWERD) and Dr. Milovan Beljin (Dynamac) provided RPM Lee Marshall with a critique of the "Groundwater Modeling Technical Memorandum No. 3" which was prepared for the Boomsnub/Airco Superfund Site in Hazel Dell, WA. The comments generally reflect GWERD review comments expressed during a teleconference on February 15, 2005. In general, the results of the current modeling effort agree favorably with those from previous efforts. It was noted that a majority of the particles released during the simulations eventually migrate downward into an underlying aquifer. It was recommended that, if modifications to the model still result in the transport of a majority of particles to the underlying aquifer, it may be necessary to install additional monitoring wells in that zone to evaluate the threat posed by contaminated ground water from the upper aquifer.
(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 March 28, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On March 15, 2005, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Karen Lumino with comments regarding proposed performance standards for the overburden NAPL area of the Solvents Recovery Service of New England Superfund Site in Southington, CT. Issues discussed were the approach to estimating the percentage of contaminant mass removal, conclusions that can be drawn from a breakthrough of chemical oxidants at downgradient monitoring points, likelihood of the need for multiple oxidant injections, definition of remediation goals, and pre- and post-treatment sampling to estimate the VOC mass removed.
(99-R01-004) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region III: On March 23, 2005, Dr. John Wilson (GWERD) provided RPM Robert Sanchez with comments on an enhanced in-situ reductive dechlorination treatability study work plan for Operable Unit 1 at the Spectron Superfund Site in Elkton, MD. A number of issues were discussed including the rapid degradation of methylene chloride in ground water, affect of sampling from monitoring wells on the concentration of contaminants, aerobic co-metabolism of chlorinated VOCs, construction and operation of microcosms, as well as the addition of VOCs to these systems.
(05-R03-001) (J. Wilson(GWERD)580-436-8534)

Technical Assistance to Region IV: During March 16-17, 2005, Dr. Ralph Ludwig (GWERD) participated in a meeting at the Tennessee Department of Environment and Conservation (TDEC) in Memphis, TN, to discuss strategies for addressing Cr(VI) contamination in ground water at the Smalley-Piper Superfund Site in Collierville, TN. A presentation was given on technologies that could potentially be used for addressing the Cr(VI) plume. Also attending the meeting were representatives from the City of Collierville, TDEC, EPA Region 4, Smalley-Piper, and Carrier Company. It was emphasized that proper characterization of the site and Cr(VI) plume was essential in selecting and implementing the appropriate remedial technology.
(05-R04-004) (R. Ludwig(GWERD)580-436-8603)

PUBLIC SERVICE ACTIVITIES

On April 1, 2005, the following individuals served as judges at the 2005 Oklahoma State Science and Engineering Fair at East Central University: Special Award Judges - Dr. Ann Keeley, Dr. Dave Burden, Mr. Tim Canfield, and Dr. Scott Huling (GWERD); and Category Award Judges - Mr. Joe Williams, Dr. Paul Mayer, Dr. Mary Gonsoulin, and Mr. Bart Faulkner (GWERD), Dr. Dan Pope (Dynamac Corp.), and Dr. Dennis Fine (SHAW Environmental).

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Azadpour-Keeley, Ann, A. Lynn Wood, Tony R. Lee, and Susan C. Mravik (GWERD). Autumn 2004. "Microbial Responses to In Situ Chemical Oxidation, Six-Phase Heating, and Steam Injection Remediation Technologies in Ground Water." Remediation. Volume 14, Number 4.
(A. 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 April 11, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: During March 28-31, 2005, Steve Acree and Kyle Jones (GWERD) characterized the hydraulic conductivity of material in the vicinity of a recently installed permeable reactive barrier (PRB) at the Columbia Nitrogen Site in North Charleston, SC. The work was carried out in support of an ongoing evaluation of permeable reactive barrier (PRB) technologies. The tests were performed using both pneumatic slug methods in zones exhibiting high hydraulic conductivity, and conventional physical slugs in areas with moderate to low hydraulic conductivity. These data will be used to assess the flow field near the PRB and estimate the number of pore volumes of ground water that have passed through the wall.
(00-R04-003) (S. Acree(GWERD)580-436-8609)

Technical Assistance to Region III: On April 6, 2005, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Robert Sanchez with technical review comments on an enhanced in-situ reductive dechlorination (IRD) treatability study work plan for the Spectron Superfund Site in Elkton, MD. In general, it was pointed out that bench-scale microcosm tests for examining anaerobic reductive dechlorination of chlorinated VOCs can be difficult and lengthy and results, such as biodegradation rates, are not likely to be directly applicable to field conditions. Specific comments were made relative to saturated soil collection, electron donor amendment microcosms, bioaugmented microcosms, microcosm incubation and performance monitoring, and data evaluation and reporting.
(03-R03-006) (S. Huling(GWERD)580-436-8610)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Huling, Scott G. (GWERD), Patrick K. Jones (GWERD), Wendell P. Ela, M.ASCE (Univ. of AZ), Robert G. Arnold, M.ASCE (Univ. of AZ). "Repeated Reductive and Oxidative Treatments of Granular Activated Carbon." February 2005. Journal of Environmental Engineering© ASCE.

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

Gonsoulin, Mary E., (GWERD), Barbara H. Wilson (Dynamac), and John T. Wilson (GWERD). 2004. "Biodegradation of PCE and TCE in landfill leachate predicted from concentrations of molecular hydrogen: a case study." Bioremediation 15:475-485.

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

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 25, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region IX: On April 8, 2005, Dr. Richard Wilkin (GWERD) provided RPM Kathy Setian with a review of uranium geochemical issues at the Lawrence Livermore National Laboratory Site 300 in Alameda County, CA. Three key questions were addressed including evidence to support or refute a hypothesis that site activities have impacted ground-water geochemistry in such a way as to enhance solubilization and mobilization of naturally occurring uranium, and are there data and methods available to determine background concentrations of uranium in the alluvial and bedrock stratigraphic units. The third issue concerned the possibility that ground-water diversion might impact the redox potential and, therefore, uranium transport and fate. Other comments addressed data gaps, solid-phase association of uranium in the aquifer strata, and the role of dissolved organic matter in transporting uranium,
(05-R09-003) (R. Wilkin (GWERD) 580-436-8874)

Technical Assistance to Region X: On April 19, 2005, Drs. Randall Ross and Richard Wilkin (GWERD), and Dr. Milovan Beljin (Dynamac) provided RPM Lee Marshall with comments on a document titled "Draft Additional Hydrogeologic Investigation Report, Boomsnub/Airco Superfund Site, Hazel Dell, and Washington." In discussing data gaps, it was pointed out that the most important information from the additional hydrologic study is the range of Kd values, particularly in simulating transport of contaminants through the fine sediments. It was suggested that a numerical model offers an opportunity to integrate the existing data, re-evaluate previous assumptions, and to identify data gaps. It was also suggested that the importance of chromium hydroxide precipitation is overstated throughout the report. With respect to MINTQA2 modeling results, the specific assumptions required for the modeling effort and the SEP results must be understood, acknowledged, and spelled out in much greater detail.
(03-R10-001) (R. Ross (GWERD) 580-436-8611)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Azadpour-Keeley, Ann (GWERD). "Microbiological Field Sampling and Instrumentation in Assessment of Soil and Groundwater Pollution." Chapter in Wiley Interscience entitled "Environmental Instrumentation and Analysis Handbook." 2005.
(A. Keeley (GWERD) 580-436-8890)

Ford, Robert (GWERD). 2005. "The Impact of Ground-Water/Surface-Water Interactions on Contaminant Transport with Application to an Arsenic Contaminated Site." Environmental Research Brief. EPA/600/S-05/002.
(R. Ford (GWERD) 580-436-8872)

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 23, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region VII: On May 18, 2005, Dr. David Burden (GWERD) and Dr. Lifeng Guo (Dynamac) provided RPM Ken Rapplean with a review of documents and quarterly reports associated with a pump-and-treat system for the 29th & Mead Superfund Site - Coleman Operable Unit, in Wichita, KS. Based on observed water contaminant concentration and water-level data, it appears that the system is successful in containing the ground-water plume at the southern boundary and off-site to the west of the Evcon facilities on East 37th St. North, and at the southern boundary of the A&E Building on North Mead. However, the system has failed to prevent the plume from migrating off the western boundary of the Evcon facilities on East 37th Street North, and the western boundaries of the A&E Building on North Mead and the RV Products on North St. Francis. Two recommendations were offered to bring the system into compliance including adding or converting a monitoring well into an extraction well and modifying the pumping operation. The modification could include a pulsed pumping schedule and/or a higher pumping rate to mobilize contaminated water located in and around the stagnation zones.
(05-R07-001) (D. Burden(GWERD)580-436-8606)

Technical Assistance to Region IX: In a continuing technical assistance effort at the Yerington Mine Site in Yerington, NV, Steven Acree and Drs. Robert Ford and David Jewett (GWERD) provided RPM James Sickles with a review of a revised work plan for a hydrogeologic framework assessment north of the site. The May 20, 2005, comments stated that, in general, the revisions that have been made adequately address many of the earlier concerns. Suggested modifications concerned the establishment of time line reporting for "first step" activities; adjustments in the location of boreholes to better reflect the evaluation of ambient water chemistry; criteria used to assess stabilization of pumped ground water prior to collection; decontamination of screens, pumps, and tubing before sampling; well construction technology; and sampling protocols.
(01-R09-004) (S. Acree(GWERD)580-436-8609/R.Ford8872/D. Jewett8560)

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 30, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On May 27, 2005, Dr. Ann Keeley (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Luis Negron with review comments on a biotreatability study at the PPG Industries RCRA facility in Guayanilla, Puerto Rico. The review questioned a number of conclusions stated in the report in areas such as the rapid degradation of 1,2-DCA to vinyl chloride, discrepancies in reported VC and DCA concentrations, the manner in which concentration data are reported, explanations of gross differences in concentrations observed in the field, methods and materials, and discussions of the results. Overall, the report was found to be very general and reached conclusions based on limited data. It was suggested that the report be seriously questioned as a source for definitive conclusions and/or information to be applied to the site.
(01RC02-001) (A. Keeley(GWERD)580-436-8890)

Technical Assistance to ASTM: Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) are serving on a workgroup comprised of scientists and engineers from industry, academia, and the private sector that are developing an ASTM standard permanganate oxidant demand test for soil. Currently, there are many different methods being used to conduct soil oxidant demand measurements. The objective of the standard test is to provide a more uniform method for which the test is conducted. Ultimately this will provide a clearer interpretation of oxidant demand results and improve the way in which the results are used to design and deploy in-situ permanganate oxidation in pilot- and full-scale applications. Comments, recommendations, and editorial input on the draft method was provided to Dr. Phil Vella (Carus Chemical), the Workgroup Chairman.
(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 June 13, 2005

TECHNICAL ASSISTANCE

Technical Assistance to Region IX: On June 7, 2005, Steven Acree (GWERD) and Dr. Todd Halihan (Dynamac Consultant) provided RPM David Stensby with comments on the applicability of various geophysical methods for identifying contaminant migration pathways in fractured bedrock at the Alark Hard Chrome Superfund Site in Riverside, CA. The methods discussed included seismic reflection and electrical resistivity imaging. Three proposed work plans included one for resistivity imaging and two for seismic imaging. In addition to addressing variations, strengths, and weaknesses of each proposed technology, an indication of cost comparisons was provided along with alternative approaches and recommendations. (04-R09-003) (S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Huling, Scott G. (GWERD), Patrick K. Jones (GWERD), Wendell P. Ela (Univ. of AZ), and Robert G. Arnold (Univ. of AZ). "Fenton-driven chemical regeneration of MTBE-spent GAC." (2005) Water Research 39:2145-2153. (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 20, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On June 10, 2005, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Joseph Lemay with technical review comments on the "Proposed PCB NPDES Permit Equivalency Limit for the Bio-Filter/Phytobed System" at the Re-Solve Inc. Superfund Site in Dartmouth, MA. The rational put forth in the proposal for a higher Ambient Water Quality Criterion (AWQC) and higher NPDES Permit Equivalency Limit was discussed. Several components of the AWQC equation, including the cancer potency factor, risk specific dose, and the fish intake factor were also discussed. Suggestions were offered in other areas such as the pre-treatment of PCBs before they enter the BFB system, adjustment of the BFB trench design, the possible addition of a third trench to the system for the third and final year of the study, and the numerous homologs of PCBs and their different environmental behaviors and health effects.

(01-R01-002) (S. Huling(GWERD)580-436-8610)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Lien, Hsing-Lung (Univ. of Kaohsiung, Taiwan) and Richard T. Wilkin (GWERD). High-Level Arsenite Removal from Groundwater by Zero-Valent Iron." (2005) Chemosphere 59:377-386.

(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 27, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On June 16, 2005, Steven Acree (GWERD) and Drs. Bruce Pivetz and Milovan Beljin (Dynamac) provided RPM Ken Feely with review comments on information concerning site conditions and existing corrective action systems at the Southern Wood Piedmont Company RCRA Site in Chattanooga, TN. Issues discussed in detail included an evaluation of the effectiveness of the ground-water corrective action system with an emphasis on the potential to remediate ground water in a reasonable time frame, recommendations for improvement to increase the effectiveness of the current system and techniques or technologies to enhance DNAPL recovery, evaluation of the current monitoring system, and adequacy of the site characterization.
(05RC04-001) (S. Acree(GWERD)580-436-8609)

Technical Assistance to Region VI: In an ongoing technical assistance effort at Altus AFB in Altus, OK, Steven Acree (GWERD) provided RPM Sue Westbrook with review comments on a biowall performance monitoring work plan. The plan proposes borehole geophysical characterization and the installation of "intermediate" monitoring wells downgradient of the biowall. In the June 21, 2005 response, suggestions were offered with respect to the monitoring schedule, details required to properly conduct pumping tests, monitoring well construction, and techniques to improve the results of packer testing.
(04-R06-002) (S. Acree(GWERD)580-436-8609)

Technical Assistance to Region VIII: On June 17, 2005, Steven Acree (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Gwen Hooten with a technical review of proposed baseline ground-water sampling in conjunction with an MNA monitoring program at the Ogden Rail Yard Site in Ogden, UT. Due to the availability of limited information, only the proposed well locations and sampling parameters were reviewed in any detail. In addition to suggesting a list of NA inorganic parameters for inclusion in proposed baseline monitoring, additional monitoring locations were identified. It was also suggested that wells in or near areas of LNAPL or DNAPL accumulation should not be sampled as a part of the baseline program due to the potential that such ground-water data would not reflect true dissolved contaminant concentrations.
(05-R08-001) (S. Acree(GWERD)580-435-8609)

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 11, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On June 27, 2005, Dr. Scott Huling (GWERD) provided RPM Joseph Lemay with review comments on a progress report for the Wells G&H/Olympia (subsite) Superfund Site in Woburn, MA. A number of issues were discussed including the location of DNAPLs at the site and the roll of lithologic features in their accumulation, enhanced DNAPL recovery prior to the implementation of an in-situ chemical oxidation (ISCO) work plan, construction and location of additional DNAPL recovery wells, and the scheduling of ISCO activities when no additional DNAPLs are located. The incompatibility of TCE and PVC (deterioration) was also discussed with respect to replacement over short operation periods. The use of a contaminant contour map was discussed as a guide for oxidant injections.
(05-R01-002) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region I: In a continuing technical assistance effort at the Savage Municipal Well Superfund Site in Milford, NH, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Dick Goehlert with technical comments with regard to in-situ chemical oxidation pilot testing. In the June 30, 2005 response, issues discussed in detail included the design of injection wells, oxidant mass and injection scheme, and location of injection well screens. Also provided was a technical review of the ground-water remediation annual report which focused on two methods used to calculate the mass of VOC destroyed by MnO_4^- oxidation. -
(03-R01-004) (S. Huling(GWERD)580-436-8610) -

Technical Assistance to Region II: On June 30, 2005, Dr. Ralph Ludwig (GWERD) provided RPM Julio Vazquez with comments on a document entitled “Ash Landfill Biowall Pilot Study Work Plan, Seneca Army Depot Activity, Romulus, NY,” dated May 2005. It was suggested that the work plan was well prepared and technically sound. It was also pointed out, however, that biowall technology employing mulch to promote reductive dehalogenation of compounds such as TCE is relatively new with a limited track record. Items of discussion included the treatment longevity of the biowall, performance monitoring, and TCE degradation by-products and the need for their successful treatment as well. -
(05-R02-001) (R. Ludwig(GWERD)580-436-8603) -

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 25, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On July 20, 2005, Dr. Ann Keeley (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Linda Dietz with review comments on the "Accelerated In Situ Bioremediation Pilot Test" for the Malvern TCE Superfund Site in Malvern, PA. The focus of the review was whether in-situ bioremediation should be considered as a replacement of the ROD remedy (pump and treat) or as an enhancement. In general, the results provided in the report indicate that in-situ bioremediation using electron donor addition and bioaugmentation has the potential to more aggressively and rapidly reduce the concentration and mass of the contaminants than would ground-water extraction. As such, in-situ bioremediation could be considered as a replacement for the ROD remedy. However, given some remaining questions about the extent of reductive dechlorination, it was recommended that ground-water extraction and treatment be retained as a contingency remedy should field monitoring indicate that in-situ bioremediation is not sufficiently effective.
(05-R03-002) (A. Keeley(GWERD)580-436-8890)

Technical Assistance to Region VI: On July 5, 2005, Steven Acree (GWERD) provided RPM Sue Westbrook with a technical review of a "Final IM Biowall Intermediate Monitoring Well Work Plan" for Altus AFB in Altus, OK. In general, the work plan adequately addressed concerns expressed in earlier review comments. However, changes were suggested with respect to proposed pump test procedures, water level monitoring, long-term water level trends, and data recording.
(04-R06-002) (S. Acree(GWERD)580-436-8609)

Technical Assistance to the Engineering Forum: On July 21, 2005, Dr. Ann Keeley (GWERD) provided Engineering Forum member Jon Bornholm with review comments on "2nd Revised Draft - Engineering Issue: In Situ and Ex Situ Biodegradation Technologies for Remediation of Contaminated Sites." Suggestions were offered with respect to transferring data gained from bench-scale to field-scale remedial designs, materials used in constructing bioactive permeable reactive barriers, and parameters used in demonstrating that biodegradation processes are taking place. It was also suggested that Wiley-Interscience's recent release, "Wiley's Remediation Technologies Handbook," be included in the issue paper's list of references.
(Misc.) (A. Keeley(GWERD)580-436-8890)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Wilkin, Richard T., Chunming Su, Robert G. Ford, and Cynthia J. Paul (GWERD). "Chromium-Removal Processes During Groundwater Remediation by a Zerovalent Iron Permeable Reactive Barrier." (2005) Environmental Science and Technology, v. 39, no.12, p. 4599-4605.
(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 August 15, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region VIII: During July 11-22, 2005, Dr. Rick Wilkin, Steve Acree, Dr. Randall Ross, Tony Lee, and Brad Scroggins (GWERD), and Pat Clark (NRMRL-Cinn.) installed ground-water monitoring wells and sampled existing monitoring wells in the vicinity of the new pilot-scale permeable reactive barrier (PRB) at the Asarco-East Helena Superfund Site in Helena, MT. In addition, a ground-water velocity probe was installed to monitor natural flow within the PRB and any changes in velocity through time. The project, designed to evaluate zero-valent iron PRB technology for in-situ treatment of arsenic, is a joint effort of EPA Region 8, Asarco, and GWERD.
(01-R08-002) (R. Wilkin(GWERD)580-436-8874)

Technical Assistance to Region VIII: On August 5, 2005, Steven Acree (GWERD), and Drs. Bruce Pivetz and Daniel Pope (Dynamac) provided RPM Gwen Hooten with a review of tables and figures describing the proposed monitoring well network for two contaminated ground-water plumes at the Ogden Rail Yard Site in Ogden, UT. The proposed number and location of wells appear appropriate for the northern plume, however, monitoring for the southern plume appears uncertain due to a property transfer. It was noted that the parameters for monitoring are not apparent and it was recommended that they be clearly identified. It was also suggested that sampling at areas of ground-water discharge be considered during the development of the monitoring program.
(05-R08-001) (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 Dr. Bruce Pivetz (Dynamac) provided RPM Dante Rodriguez with comments concerning an evaluation of remedial alternatives for ground-water contamination source areas. In addition to general comments, detailed suggestions were offered with respect to: institutional controls, intrinsic biodegradation and long-term monitoring; electric resistance heating (ERH); in-situ chemical oxidation (ISCO); and hydraulic extraction. It was suggested that, although significant uncertainty exists in projections of the effectiveness of aggressive contaminant removal technologies, they may be more effective than reflected in the report in spite of the high degree of geologic heterogeneity at the site. The August 5, 2005, response also suggested that potential benefits of partial removal are difficult to quantify, but may be more significant than discussions in the report indicate.
(94-R09-006) (S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Huling, Scott G. and Patrick K. Jones (GWERD) and Wendell P. Ela and Robert G. Arnold (Univ. of AZ). "Fenton-Driven Chemical Regeneration of MTBE-Spent GAC." (2005) Water Research 39:2145-2153.

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

Silva, R.G. (Oak Ridge Inst. for Sci. and Edu.) and E.E. Jorgensen, S.M. Holub, and M.E. Gonsoulin (GWERD). "Relationships Between Culturable Soil Microbial Populations and Gross Nitrogen Transformation Processes in a Clay Loam Soil Across Ecosystems." (2005) Nutrient Cycling in Agroecosystems 71:259-270.

(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 22, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region I: In a continuing technical assistance effort at the Savage Well Superfund Site in Milford, NH, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Dick Goehlert with technical review comments in his memo to individuals involved with the site's in-situ chemical oxidation project. The August 10, 2005, response addressed a number of issues including the written description of monitoring locations, need for additional wells, directing the oxidant into targeted zones, and the use of a bromide tracer for providing transport information.
(03-R01-004) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region IV: On August 8, 2005, Steven Acree and Dr. Eva Davis (GWERD), and Drs. Bruce Pivetz and Milovan Beljin (Dynamac) provided RPM Ken Feely with a technical review of remediation and monitoring systems at the Southern Wood Piedmont Company RCRA facility in Spartanburg, SC. The review focused on an evaluation of the effectiveness of ground-water corrective actions, recommendations to increase the effectiveness of current systems, techniques to enhance DNAPL recovery, and an evaluation of the current monitoring program. It was suggested that the current source removal efforts will be sufficient to reduce contaminant levels in ground water within a reasonable time frame. In addition, the monitoring program does not appear to be designed to provide information necessary to readily evaluate performance with respect to specific remedial objectives.
(05RC04-001) (S. Acree(GWERD)580-436-8609)

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 Drs. Mingyu Wang and Noman Ahsanuzzaman (Shaw Env.) provided RPM Jeff Dhont with comments on the response to a GWERD review of a "Draft Initial Calibration and Data Gap Analysis Report." The August 5, 2005, comments stated that the responses are acceptable and suggested that the clarifications discussed be noted in a final report.
(95-R09-015) (S. Acree(GWERD)580-436-8609)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Sanders, J.A., M.K. Lee, A. Uddin, and S. Mohammad (Auburn Univ.), Richard T. Wilkin (GWERD), Mostafa Fayek (Oak Ridge Natl. Lab.), and Nic E. Korte (Grand Junction, CO). "Natural Arsenic Contamination of Holocene Alluvial Aquifers by Linked Tectonic, Weathering, and Microbial Processes." (2005) Geochemistry, Geophysics, Geosystems (G^3), v. 6, no. 4, p. 1-7.

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

Wilson, John T., Philip M. Kaiser, and Cherri Adair (GWERD). "Monitored Natural Attenuation of MTBE as a Risk Management Option at Leaking Underground Storage Tank Sites." (2005) EPA Report. EPA/600/R-04/179. National Risk Management Research Laboratory, Cincinnati, Ohio.

(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 August 29, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region I: On August 24, 2005, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Dick Goehlert with comments on a memorandum he wrote to individuals involved in the OK Tool Subsite of the Savage Well Superfund Site in Milford, NH. The comments focused on the injection of permanganate. Questions discussed included other sites with $KMnO_4$ applications and the possibility of clogging caused by MnO_2(s). If permeability reduction is due to the accumulation of MnO_2(s) or other inorganic precipitated species (Fe), suggestions were offered for permeability remediation through dissolution of the mineral. It was recommended that tests be conducted to assess the source of the permeability reduction and remedy to the problem.
(03-R01-004) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region II: On August 25, 2005, Dr. Ann Keeley (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Luis Negron with technical review comments on a report entitled "Natural Attenuation Evaluation - PPG Discontinued Operations Site," Guayanilla, PR. The report presented a significantly more complete evaluation of natural attenuation processes than presented in a previous report and, in general, addresses most previous concerns about the inadequacy of the natural attenuation analysis. Uncertainties remained concerning fate and transport mechanisms in the lower layers of the aquifer and the effectiveness of natural attenuation in reducing ground-water contamination at these locations. It was suggested that additional data be obtained in the deeper zones to address remaining uncertainties in the extent of contamination and attenuation processes. Other comments concerned dissolved phase contamination, concentration trends, abiotic degradation, and a modeling effort for vinyl chloride transport to the bay.
(01RC02-001) (A. Keeley(GWERD)580-436-8890)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Su, Chunming and Ralph D. Ludwig (GWERD). "Treatment of Hexavalent Chromium in a Chromite Ore Processing Waste Using a Mixed Reductant Solution of Ferrous Sulfate and Sodium Dithionite." (2005). Environmental Science & Technology, V. 39, N.16, 6208-6216.
(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 September 5, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region II: During August 16-17, 2005, Dr. John Wilson (GWERD) traveled to Cherry Hill, NJ, to attend a briefing presented to regulatory staff of the State of New Jersey and EPA Region 2, on plans to inject air into cell 9 of the closed L&D Landfill in Mount Holly, NJ. The activity is intended to effect in-situ bioremediation of organic contaminants that are currently escaping the cell and contaminating ground water. A site visit was also conducted during the trip. On August 30, 2005, review comments on a remedial action work plan were provided. -
(05-R02-002) (J. Wilson(GWERD)580-436-8534) -

Technical Assistance to Region III: On August 29, 2005, Dr. Ann Keeley (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Linda Dietz with a critique of comments by a U.S. EPA oversite contractor on an accelerated bioremediation pilot test report for the Malvern TCE Superfund Site in Malvern, PA, as well as a site consultant's response to those comments. Issues discussed included the effectiveness of the inoculation of bacteria and electron donor injection in the degradation of chlorinated ethenes, microcosm verification study, connections between wells, velocity calculations, impact or evidence of mole fractionation, and the importance of obtaining an additional year of data. It was suggested that the in-situ bioremediation treatment alternative has the potential to reduce contaminant mass and concentration; however, there should be a contingency to revert to pump-and-treat remediation if necessary. -
(05-R03-002) (A. Keeley(GWERD)580-436-8890) -

Technical Assistance to Region V: On May 24, 2005, Dr. Mary Gonsoulin (GWERD) and Dr. Daniel Pope (Dynamac) attended a meeting in Moraine, OH, to discuss the status of Corrective Measures Proposal, Corrective Measures Implementation, and In-Situ Ground Water Bioremediation System at the General Motors Cluster Sites. On August 30, 2005, GWERD provided Environmental Scientist Mirtha Capiro with a critique of the meeting along with technical comments on selected aspects. Some of the issues discussed are the site-wide data base, points of compliance at the downgradient plume boundary, need for additional monitoring wells, and capture zone for the upper aquifer. -
(05RC05-001) (M. Gonsoulin(GWERD)580-436-8616) -

Technical Assistance to Region IX: On August 30, 2005, Steven Acree and Dr. David Jewett (GWERD) visited the Yerington Mine Site in Yerington, NV, to observe an ongoing investigation of the hydrogeologic framework north of the mine site and its relationship to pertinent site features. A tour was also provided of previous mining operations and associated waste areas at the site. Others in attendance included representatives from EPA Region 9, Bureau of Land Management, and consultants.
(01-R09-004) (S. Acree(GWERD)580-436-8609/D. Jewett(GWERD)580-436-8560) -

Technical Assistance to Region IX: On August 23, 2005, Steven Acree and Dr. Randall Ross (GWERD) and Dr. Milovan Beljin (Dynamac) met with Region 9 representatives and consultants in San Francisco, CA, to discuss possible re-design options for the ground-water remediation system and techniques for effectively representing the complex flow system at George Air Force Base in Victorville, CA. In addition, possible alternatives for verifying remedial system performance with respect to remedial objectives at Norton Air Force Base in San Bernardino, CA, were also discussed. -
(05-R09-004)George AFB (S. Acree(GWERD)580-436-8609) -
(05-R09-005)Norton AFB (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 September 26, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On September 16, 2005, Dr. Scott Huling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Hiliary Thornton with technical review comments on the "Final Report, Treatability Study: Standard Chlorine of Delaware Site, New Castle County, Delaware." The report provides the results of a laboratory treatability study of the chemical oxidation of chlorobenzenes using Fenton's reagent, persulfate, and permanganate. The overall conclusions of the report appear to be valid and useful in that the potential effectiveness of Fenton's reagent and persulfate was indicated. However, there are instances in the report and appendices where there are discrepancies or inconsistencies in the data. It was suggested that these may not adversely affect the general or broad conclusions of the report, but the data and information should be carefully scrutinized if used quantitatively in planning the pilot-scale study.
(03-R03-004) (S. Huling(GWERD)580-436-8610)

Technical Assistance to Region V: On September 9, 2005, Dr. Mary Gonsoulin (GWERD) and Dr. Bruce Pivetz (Dynamac) provided Environmental Scientists Mirtha Capiro with an evaluation of the capture zone of a ground-water extraction system at the General Motors Cluster RCRA Sites in Moraine, OH. A number of issues were discussed including data required for a better understanding of the downgradient contaminant plume boundary, the effectiveness of a proposal to address these data gaps, and potential scenarios for the behavior of VOC contaminants in any portion of the plume that is not being captured.
(05RC05-001) (M. Gonsoulin(GWERD)580-436-8616)

Technical Assistance to Region IX: On September 22, 2005, Steven Acree (GWERD) and Dr. Mingyu Wang, Dr. Noman Ahsanuzzaman, and Rob Earle (Shaw Env.) provided RPM Greg Lovato with comments on a model output report for the Carson Ground-Water Contamination RCRA Site in Carson, CA. In general, the model was developed using a comprehensive modeling process with assistance of the automated parameter estimation package PEST. In addition to a "traditional" sensitivity analysis, a predictive error analysis and dual calibration that focused on the sensitivity of model predictions to uncertainty in model parameters are presented in the report. This model was implemented as a tool in investigating the possible pathways of plume migration. However, due to the complexity of site conditions, limited data available for model calibration, and other simplifications during the model development, there is significant uncertainty in the prediction results.
(04RC09-001) (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 10, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region I: Field sampling and monitoring well installations were carried out during the period of September 11-16, 2005, at the Fort Devens Superfund Site in Devens, MA. This collaborative research project includes the efforts of Dr. Kirk Scheckel, Dr. Thabet Tolaymat, Dr. Aaron Williams, and Pat Clark (NRMRL), Dr. Robert Ford, Steven Acree, and Brad Scroggins (GWERD), and RPM Ginny Lombardo and Bill Brandon (EPA Region 1). The primary focus of the project will be to investigate the migration of arsenic from suspected source areas into the Red Cove Study Area of Plow Shop Pond adjacent to Shepley's Hill Landfill. Three goals will be addressed as part of this investigation: 1) identification of the mobile form of arsenic in ground-water/landfill leachate, 2) identification of the process(es) controlling arsenic uptake onto Red Cove Study Area sediments and soils, and 3) evaluation of the stability and bioavailability of arsenic associated with these sediments. This information will be used as a basis for identifying the effectiveness of natural attenuation within the Red Cove Study Area to mitigate the downgradient migration of arsenic, and for evaluation of a potential remedial alternative(s).
(05-R01-001) (R. Ford(GWERD)580-436-8872)

Technical Assistance to Region IV: On October 3, 2005, Dr. Ann Keeley (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Galo Jackson with comments on a document titled "Xylene Investigation Report" prepared for the Helena Chemical Company Superfund Site in Tampa, FL. The comments focused on whether the geochemical environment is sufficiently hostile to make bioremediation unfeasible, the effort and cost to alter the environment, and the identification of technologies for the remediation of ground water contaminated with xylene and other BTEX constituents. Although the report was limited in scope, comments were offered with respect to the possible presence and problems associated with NAPLs; correlation of xylene concentrations with pH, ORP, conductivity, and temperature; possible degradation processes; and the behavior of different isomers of xylene. Suggestions were offered as how to better characterize the site with respect to the potential for bioremediation, NAPL removal, and possible remedial alternatives.
(05-R04-005) (A. 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 October 31, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region III: On October 14, 2005, Dr. John Wilson (GWERD) provided RPM Katherine Lose with review comments on two reports pertaining to in-situ aerobic-based remedial technologies at the Fike/Artel Superfund Site in Nitro, WV. Concerns were expressed about the interpretation presented for some of the results such as bromide tracer studies. Problems were also cited with the monitoring well configurations, particularly with respect to screens locations. Comments were offered with respect to attempts to biodegrade the major contaminants of concern and the delivery of oxygen and nutrients to ground water containing the contaminants. A case history and results of a similar treatability study conducted by GWERD at another location were provided.

(05-R03-003) (J. Wilson(GWERD)580-436-8534)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Wilson, John T., Cherri Adair, and Philip M. Kaiser (GWERD), and Ravi Kolhatkar (BP Exploration and Production Technology). 2005. "Anaerobic Biodegradation of MTBE at a Gasoline Spill Site." Ground Water Monitoring & Remediation, v. 25, no. 3, p. 103-115.

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

Wilson, John T., Randall R. Ross, and Steven Acree (GWERD). 2005. "Using Direct-Push Tools to Map Hydrostratigraphy and Predict MTBE Plume Diving." Ground Water Monitoring & Remediation, v. 25, no. 3, p. 93-102.

(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 November 28, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region II: On November 18, 2005, Dr. Ralph Ludwig (GWERD) provided RPM Julio Vasquez with a review of preliminary first-round ground-water sampling results for a system of three mulch-based biowalls at the Ash Landfill, Seneca Army Depot, Romulus, NY. The biowall system is designed to biologically treat TCE and its by-products through reductive dehalogenation reactions. The first round results were found to be too preliminary and inconclusive with regard to system performance although indicator parameters such as EH, alkalinity, sulfate and nitrate concentrations within the biowalls, relative to up-gradient locations, suggested reducing conditions had been established. Vinyl chloride data was not presented and it was suggested that this data be included in future presentations.
(05-R02-001) (R. Ludwig(GWERD)580-436-8603)

Technical Assistance to Region IV: In a continuing technical assistance effort at the Hollingsworth Solderless Terminal Site in Ft. Lauderdale, FL, Dr. Scott Hulling (GWERD) and Dr. Bruce Pivetz (Dynamac) provided RPM Galo Jackson with review comments on a report describing the operation and results of an in-situ enhanced bioremediation pilot test. Potassium lactate was injected to provide a substrate for microorganisms to create an environment suitable for reductive chlorination. In the November 22, 2005, response, it was noted that concentrations of chlorinated compounds increased in many of the monitoring wells by one to four orders of magnitude, possibly due to the mobilization of previously undetected contamination by the recirculation system. The persistence or degradation of DCE and VC was not clear since only one set of post-injection analytical results was in the report. In addition, some observed geochemical changes during the lactate injection and recirculation system operation were unexpected, specifically, increases in DO and ORP.
(03-R04-004) (S. Huling(GWERD)580-436-8610)

SCIENTIFIC AND TECHNICAL PUBLICATIONS

Su, Chunming and Richard T. Wilkin (GWERD). "Arsenate and Arsenite Sorption on and Arsenite Oxidation by Iron (II, III) Hydroxycarbonate Green Rust." 2005. American Chemical Society Symposium Series 915: 25-40.

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

Groffman, Peter M. and Ann M. Dorsey (Inst. of Ecosystems Studies), and Paul M. Mayer (GWERD). "N Processing Within Geomorphic Structures in Urban Streams." 2005. Journal of the North American Benthological Society. 24(3):613-625.

(P. Mayer(GWERD)580-436-8647)

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 5, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: On November 28, 2005, Dr. Mary Gonsoulin (GWERD) and Dr. Daniel Pope (Dynamac) provided RPM Gena Townsend with comments on a "Review of Draft Pilot Study Report Site 78, Operable Unit 1, Marine Corps Base, Camp Lejeune, North Carolina." The site had been divided into two areas. One test used an oxygen release compound to treat vinyl chloride and the other used a hydrogen release compound to treat TCE. Although an interpretation of the results showed a decrease in contamination for both areas, the goals for reduction were not met. Detailed recommendations were offered in a number of areas including the parameters used in the study, injection and distribution of reagents, the possibility of injecting microorganisms, and the potential presence of NAPLs.
(05-R04-006) (M. Gonsoulin(GWERD)580-436-8616)

Technical Assistance to Region IV: On September 6, 2005, Dr. Chunming Su (GWERD) provided RPM Jim Barksdale with comments on the "D-Area Sulfate Reduction Study Comprehensive Final Report (U)" for the Savannah River Site in Aiken, SC. The review comments focused on the effectiveness of organic carbon sources (sodium lactate, soybean oil, and a hydrogen release compound) as well as a limestone trench. Two specific questions in the request for assistance related to the impact of the treatment on microbes necessary for MNA, and the dependence of MNA on dispersion and dilution rather than microbial activity. It was stated, however, that without further studies to collect more data, it would not be possible to definitely answer either question based on the studies presented in the report.
(06-R04-001) (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 December 12, 2005 -

TECHNICAL ASSISTANCE

Technical Assistance to Region IV: During November 1-4, 2005, Steven Acree and Dr. Randall Ross (GWERD) traveled to the Columbia Nitrogen Site in North Charleston, SC, to complete a hydrogeologic characterization in support of an on-going evaluation of a permeable reactive barrier (PRB). Additional site characterization studies include pneumatic slug tests in the aquifer surrounding the pilot-scale PRB and an investigation of tidal influences on ground-water flow. The studies were designed to provide data for a more detailed evaluation of ground-water flow rates through the PRB. The results of the evaluation will be used to support interpretations of PRB performance conducted under an ongoing RARE project with USEPA Region 4.
(00-R04-003) (S. Acree(GWERD)580-436-8609)

Technical Assistance to Region VI: At the request of RPM Rich Mayer, Steven Acree, Dr. Robert Ford, and Dr. Randall Ross (GWERD) made a presentation to the Northern New Mexico Citizen's Advisory Board in Santa Fe, NM, on December 1, 2005. The discussion focused on findings of an ongoing review of the possible impacts of previous well drilling practices on data obtained from wells at the Los Alamos National Laboratory (LANL). Among other findings, the review noted that many of the hydrogeologic characterization wells at the LANL currently do not provide representative data for a variety of contaminants due to the impacts of residual bentonite and organic polymer additives used during drilling.
(05RC06-001) (S. Acree(GWERD)580-436-8609)

Technical Assistance to Region IX: On November 17, 2005, Steven Acree (GWERD) attended a meeting at a USEPA field office in Los Angeles, CA, to discuss a site characterization and monitoring network design at the Carson Ground Water Contamination Site in Carson, CA. Also attending the meeting were representatives from the State of California, Los Angeles Regional Water Quality Control Board, Water Replenishment District, and USEPA Region 9. Among the items discussed were available site data and recommendations for the installation of monitoring wells in an area contaminated with fuel oxygenate compounds.
(04RC09-001) (S. Acree(GWERD)580-436-8609)