Technology Innovation News Survey

Entries for October 1-15, 2015

Market/Commercialization Information

EPA REMEDIAL ACQUISITION FRAMEWORK: ENVIRONMENTAL SERVICES AND OPERATIONS
U.S. Environmental Protection Agency, OAM, Region I, Boston, MA.
Federal Business Opportunities, FBO-5100, Solicitation SOL-R1-14-00003, 2015

The Environmental Services and Operations (ESO) contracts constitute one of three contract suites that comprise U.S. EPA's Superfund Remedial Acquisition Framework, along with Design and Engineering Services (SOL-HQ-14-00022) and Remediation Environmental Services (SOL-HQ-14-00023). EPA is providing additional information about the future ESO procurement. Interested businesses are invited to review the draft RFP attached with 13 other PDF files to the notice at FedBizOpps. EPA requests submittal of comments, questions, suggested changes, and other feedback by 5:00 PM ET on December 21, 2015, for consideration in developing the final RFP.
https://www.fbo.gov/spg/EPA/OAM/RegI/SOL-R1-14-00003/listing.html

TECHNICAL ASSISTANCE TO BROWNFIELDS COMMUNITIES
U.S. EPA, Office of Brownfields and Land Revitalization, EPA-OSWER-OBLR-16-02, 2015

EPA has made $11M in grants available through the Technical Assistance to Brownfields Communities (TAB) grant program. EPA anticipates awarding 11 TAB cooperative agreements: one grant providing technical assistance to communities in each of the 10 EPA Regions and the 11th grant covering communities across the entire nation. Grants awarded under the TAB announcement will help communities tackle the challenge of assessing, cleaning up, and preparing brownfield sites for redevelopment, especially in underserved, rural, small, and otherwise distressed communities. Applicants awarded TAB grant funds must provide technical assistance to any communities that request assistance within the applicable geographic area. The maximum value of each grant will be based on the technical assistance provided up to $1M. Submit proposals electronically by 11:59 PM ET on December 21, 2015, through Grants.gov at http://www.grants.gov/web/grants/view-opportunity.html?oppId=279966. EPA held a webinar on November 19, 2015, to provide more information about the grant opportunity, and a copy of the material is archived at http://www2.epa.gov/brownfields/2015-tab-solicitation.

FY16 ENVIRONMENTAL WORKFORCE DEVELOPMENT AND JOB TRAINING (EWDJT) GRANTS
U.S. EPA, Office of Brownfields and Land Revitalization, EPA-OSWER-OBLR-16-01, 2015

EPA seeks proposals from eligible entities, including nonprofit organizations, to deliver environmental workforce development and job training programs that recruit, train, and place local, unemployed, and underemployed residents with the skills needed to secure full-time employment in the environmental field, e.g., solid and hazardous waste remediation, environmental health and safety, integrated pest management, and wastewater-related training. Submit grant proposals by January 14, 2016, via http://www.grants.gov/web/grants/view-opportunity.html?oppId=280040. EPA will provide two informative Adobe Connect webinars for prospective grant applicants on December 2, 2015, at 12:00 PM ET, and on December 10, 2015, at 2:00 PM ET. Join the webinar online at http://epawebconferencing.acms.com/fy16ewdjt/ or attend via conference call at 1-866-299-3188 (access code 202-566-1564). For more information, visit http://www2.epa.gov/brownfields/types-brownfields-grant-funding.

FY 2016 BROWNFIELDS ASSESSMENT, REVOLVING LOAN FUND, AND CLEANUP GRANT GUIDELINES
U.S. EPA, Office of Brownfields and Land Revitalization, 2015

EPA anticipates awarding an estimated 223 grants among three Brownfields grant types. The total funding available under the national competitions for assessment, cleanup, and RLF grants is projected to be about $54.5 million, subject to funds availability.

- **EPA-OSWER-OBLR-15-04:** Brownfields Assessment Grants provide funds to inventory, characterize, assess, and conduct planning (including cleanup planning) and community involvement related to brownfield sites. http://www.grants.gov/web/grants/view-opportunity.html?oppId=279714
- **EPA-OSWER-OBLR-15-05:** Brownfields Revolving Loan Fund Grants provide funding for a grant recipient to capitalize a revolving fund and make loans and provide subgrants for cleanup activities at brownfield sites. http://www.grants.gov/web/grants/view-opportunity.html?oppId=279716
- **EPA-OSWER-OBLR-15-06:** Brownfields Cleanup Grants provide funds to conduct cleanup activities at a specific brownfield site owned by the applicant. http://www.grants.gov/web/grants/view-opportunity.html?oppId=279737

The closing date for applications for all three funding opportunities is December 18, 2015. See http://www2.epa.gov/brownfields/new-request-proposals-fy-2016-brownfields-assessment-revolving-loan-fund-and-cleanup for additional information.

INDUSTRY DAY, ENVIRONMENTAL SERVICES, WHITE SANDS MISSILE RANGE
Army Contracting Command, MICC - White Sands Missile Range, NM.
Federal Business Opportunities, FBO-5104, Solicitation W9124Q-16-R-ENVI, 2015

Interested 8(a) firms are invited to attend an industry day for the White Sands Missile Range environmental services 8(a) requirement on December 16-17, 2015, from 9:00 AM-3:30 PM MT at the White Sands Missile Range Professional Development Center auditorium. One-on-one discussion sessions will be held in 30-minute intervals with interested primary 8(a) vendors only and each of the Government's functional area experts. The primary vendor must be accompanied by at least one technical expert (limit two representatives per contractor). Firms planning to attend must register by December 4, 2015. https://www.fbo.gov/notices/55c9fdd7cccd8495115b573cdf8a94c23

DOE OFFICE OF ENVIRONMENTAL MANAGEMENT BUSINESS OPPORTUNITIES FORUM
U.S. Department of Energy, Washington, DC.
Federal Business Opportunities, FBO-5101, Solicitation EM_BUSINESS_FORUM_12-2015

DOE's next Office of Environmental Management Business Opportunity Forum is scheduled for December 15, 2015, from 10 AM-12 PM to discuss the status of ongoing and upcoming procurement opportunities. The event will be held in the large auditorium, ground floor, in the Forrestal Building at 1000 Independence Ave. SW, Washington, DC. There is no charge to attend, but those planning to attend in person or via WebEx must preregister by December 9, 2015.
https://www.fbo.gov/spg/DOE/PAM/HQ/EM_BUSINESS_FORUM_12-2015/listing.html

MULTIPLE ACQUISITION ENVIRONMENTAL REMEDIATION SERVICES (ERS)/LONG-TERM RESPONSE ACTION IDIQ MULTIPLE-AWARD TASK-ORDER CONTRACTS (MATOC)
U.S. Army Corps of Engineers, USACE District, Kansas City, MO.
Federal Business Opportunities, FBO-5100, Solicitation W912DQ-16-R-3000, 2015

This ERS contract will support work assigned to EPA Region 2 customers and customers within the USACE Northwestern Division for hazardous, toxic, and radioactive waste remediation projects. The majority of the work likely will be conducted within EPA Region 2. The solicitation is to be issued on or after December 1, 2015, as a small business IDIQ MATOC and is expected to result in the award of two MATOC pools for ERS with $60M each in shared capacity. Roughly five contractors are expected to receive awards. https://www.fbo.gov/spg/USACOE/DACA41/W912DQ-16-R-3000/listing.html

SLDA FUSRAP REMEDIATION
U.S. Army Corps of Engineers, USACE District, Buffalo, NY.
Federal Business Opportunities, FBO-5069, Solicitation W912P4-15-R-0001, 2015

The U.S. Army Corps of Engineers has a requirement under the Formerly Utilized Sites Remedial Action Program (FUSRAP) to remediate special nuclear material at the Shallow Land Disposal Area located in Armstrong County, Pennsylvania. Remediation will result in the removal and disposal of all material of concern to achieve unrestricted use for the site. A Questions and Answers file concerning the forthcoming unrestricted procurement is posted at FedBizOpps. Release of the RFP is expected around December 3, 2015. https://www.fbo.gov/spg/USA/COE/DACW49/W912P4-15-R-0001/listing.html

COMMERCIALIZING PASSIVE SAMPLING TECHNOLOGY TO ENHANCE THE RISK ANALYSIS PROCESS
UNC Gillings School of Global Public Health, 2015

As part of a Superfund Research Program project, Dr. Damian Shea and his team at North Carolina State University have developed a new passive sampling technology aimed at allowing regulators to gain more accurate estimates of chronic exposure to and the bioavailability of hundreds of chemicals in water. The non-selective passive sampling device (ns-PSD) provides risk assessors with a cost-effective way to gather information related to bioavailability as well as time-weighted averages of contaminant concentrations in surface waters at hazardous waste sites. A start-up company, Statera LLC, manufactures, markets, and distributes this new technology. An initial order of 1,000 ns-PSDs by a Chinese company will be deployed to monitor surface water contamination in the Yunnan Province, China. http://sph.unc.edu/commercializing-passive-sampling-technology-to-enhance-the-risk-analysis-process/

Cleanup News

VOCS REMEDIATION BY THE USE OF TWO PHASE EXTRACTION (TPE) AT A PETROCHEMICAL SITE
Baric, M., E. Campagnaro, S. Carrillo, R. Bettiolo, and C. Guarino.
Chemical Engineering Transactions, Vol 43, 1969-1974, 2015

Operation of a full-scale two-phase extraction remediation system began in February 2014 at a petrochemical site located in northeastern Italy. The main aim of the treatment is simultaneous draw-down of the shallow groundwater and removal of contaminated soil vapor from the vadose zone (at least 2,600 m^3 of treated soil). At the time this paper was written, the system had removed more than 25 kg of VOCs, with treatment ongoing. Although groundwater remediation is not a specific object of the project, continuous pumping has accelerated improvement of saturated zone quality. Attainment of treatment goals is anticipated after ~10 months of system operation. http://www.aidic.it/cet/15/43/329.pdf

APPLICATION OF THE ELECTROKINETIC REMEDIATION (LASAGNA) UNDER AN ACTIVE INDUSTRIAL FACILITY
Athmer, C.
RE3 2014 Conference and Exposition, 35 slides, 2014

Lasagna™ was developed in the 1990s by a consortium of researchers from Monsanto, DuPont, and General Electric with support from EPA and DOE. The technology employs electroosmosis to move pore water and contamination in low-permeable soils through in situ treatment zones. Two Lasagna systems were installed at an active industrial facility in eastern Ohio to effect treatment without interrupting facility operations. Planer electrodes in the form of steel plates were installed in the soil vertically, side by side, with anodes at the outer edge and a cathode row in the center. With the use of modified sheet-piling equipment and standard cement mixing and pumping equipment, the treatment zones—zero-valent iron in kaolin clay slurry—were emplaced vertically, side by side, in rows parallel to the planer electrodes. System installation took place over a 2-month period in two separate areas of the facility: under truck and car parking lots and in front of truck loading docks. Operated from October 2008 to December 2011, the systems met their risk-based cleanup targets under budget.
http://www.terrancorp.com/sites/default/files/Application-of-EK-Remediation-Under-Active-Facility.pdf

WORLD'S LARGEST IN SITU THERMAL DESORPTION PROJECT: CHALLENGES AND SOLUTIONS
Heron, G., K. Parker, S. Fournier, P. Wood, G. Angyal, J. Levesque, and R. Villecca.
Groundwater Monitoring & Remediation, Vol 35 No 3, 89-100, 2015

The redevelopment of a former aerospace manufacturing facility next to a commercial airport required relatively rapid reduction of several chlorinated VOCs in a 3.2-acre source zone. To implement in situ thermal desorption (ISTD) at the facility, the source zone was divided into four quadrants with differing treatment depths and heated simultaneously using a total of 907 thermal conduction heater wells. Placement of a vertical sheet-pile wall around the treatment zone minimized groundwater flow. A pilot test of a novel direct-drive method was conducted for installation of the heater casings. The site was split into four decision units, each with a rigorous soil sampling program triggered by temperature monitoring and mass removal trends. A small area near the center of the site required the installation of four additional heaters before the soil goals were reached after 238 days of heating. Total energy usage for heating and treating the source area was 23 million kWh. An estimated 29,800 lbs of CVOC mass was removed, and all soil goals were met. This paper presents the challenges associated with a project of this scale and describes the solutions that led to successful completion of the ISTD remedy. *Additional information in 22 slides*:
http://www.enviroblend.com/userdata/userfiles/file/RE3%202015/Presentation%20PDFs%20-%2016th/16Sept-202R-11am-Bierschenk-Teterboro-Landing-Brownfields-Presentation-RE3-2015.pdf

COMBINING IN SITU THERMAL WITH BIOTIC AND ABIOTIC REDUCTION FOR DNAPL TREATMENT: PERFORMANCE AND DESIGN CONSIDERATIONS
Macbeth, T.W. and M.J. Truex.
CleanUp 2015 Conference, Melbourne, Australia, 13-16 September 2015. Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, MC42, 2015

Enhanced in situ biotic and abiotic reduction (ISR) and thermal treatment can be combined effectively. Low-energy heating is used to raise in situ temperatures moderately (i.e., to target 40-60°C instead of 100°C), which increases chemical dissolution and desorption rates to groundwater as well as contaminant availability and kinetic degradation rates. The combined effect can increase treatment rates by a factor of 8 to 20. The low-energy heating/ISR system has a 50-75% lower capital equipment and operating cost compared to standard thermal by eliminating vapor and steam recovery and aboveground treatment. Two case studies exemplify the design elements and performance of the combined technologies: (1) low-energy electrical resistance heating (i.e., 30-45°C) with in situ bioremediation and zero-valent iron reduction to accelerate treatment of DNAPL in Ft. Lewis, Washington, and (2) a multi-technology remedial strategy implemented at Hunters Point Naval Shipyard in San Francisco to treat groundwater affected by a mix of chlorinated benzene, ethene, and ethane DNAPL. http://www.cleanup2015.com.au/pdf/500/0563.pdf

EPA FINALIZES CLEANUP PLAN FOR PESTICIDES STORAGE FACILITY IN MANATI, P.R.
U.S. EPA News Release 15-076, 1 Oct 2015

EPA has finalized a plan to address contaminated soil at a 2-acre former pesticide facility located in the municipality of Manati, Puerto Rico. Soil and groundwater at the Pesticide Warehouse III Superfund Site are contaminated with pesticides (e.g., aldrin, dieldrin, toxaphene) and dioxins. In 2003, a fire at the site destroyed a former main warehouse and ruined a building next to it. A drainage ditch 5 ft deep and 275 ft long collects storm water from the western portion of the site and empties into a natural on-site depression, which contaminates the groundwater. EPA will excavate ~8,800 cubic yd3 of the most heavily contaminated soil for ex situ treatment using thermal desorption on site. After treatment, the soil will be disposed of at approved facilities. Areas of deeper soil contamination (>10 ft) will be covered and revegetated to reduce the chance of exposure. A study to address the groundwater is ongoing. The Record of Decision for contaminated soil (OU-1) is available at http://semspub.epa.gov/src/document/02/322866.

Demonstrations / Feasibility Studies

DEMONSTRATION OF A FRACTURED ROCK GEOPHYSICAL TOOLBOX (FRGT) FOR CHARACTERIZATION AND MONITORING OF DNAPL BIODEGRADATION IN FRACTURED ROCK AQUIFERS
Slater, L., F. Day-Lewis, J. Robinson, and T. Johnson.
ESTCP Project ER-201118, 166 pp, 2015

The performance objectives of this demonstration focused on evaluating (1) fracture network characterization using a fractured rock geophysics toolbox (FRGT); (2) autonomous monitoring of amendment delivery and subsequent contaminant biodegradation using geophysical technologies that sense beyond the borehole; (3) application of an "informed" inversion strategy to improve the geophysical imaging of fractured rock settings relative to what can currently be achieved with off-the-shelf functionality; and (4) identification and monitoring of geophysical attributes as "soft" measures of progress of DNAPL biodegradation in fractured rock. Specific performance objectives were largely met, although the physical characteristics of the primary demonstration site (the Naval Air Warfare Center in West Trenton, New Jersey) limited the performance of some FRGT methods. The primary benefit of the FRGT is the ability to provide information on variations in physical properties and the fate of amendment injections into fractured rock beyond the vicinity of local borehole observations. https://www.estcp.com/content/download/36210/346201/file/ER-201118-ER.pdf

COMBINED ENHANCED ANAEROBIC BIOREMEDIATION/IN SITU CHEMICAL REDUCTION TREATABILITY STUDY, TRAFFIC ISLAND AREA, INSTALLATION RESTORATION SITE 28, FORMER NAVAL AIR STATION MOFFETT FIELD, CALIFORNIA: FINAL WORK

PLAN
Base Realignment and Closure, Program Management Office, West Naval Facilities Engineering Command, 601 pp, 2015

This work plan describes the technical approach and activities required to perform a treatability study of enhanced anaerobic bioremediation combined with in situ chemical reduction for remediating chlorinated ethenes (PCE, TCE, and daughter products) in the A-Aquifer zone and the B2-Aquifer zone at the Traffic Island Area of Installation Restoration Site 28. The site currently is in the remedy optimization phase, and a groundwater extraction and treatment system has been operating at Site 28 since November 1998. The study is being performed to evaluate the usefulness of the combined technologies as a source control/treatment measure in the B2-Aquifer, where contaminants are not addressed by the current groundwater treatment system.http://navydocs.nugu.org/Site28FinalFABISCRTSWorkPlan20150630.pdf

Research

EVALUATION OF PERCHLORATE SOURCES IN THE RIALTO-COLTON AND CHINO CALIFORNIA SUBBASINS USING CHLORINE AND OXYGEN ISOTOPE RATIO ANALYSIS
Hatzinger, P.B., J.K. Boehlke, J. Izbicki, N. Teague, and N.C. Sturchio.
ESTCP Project ER-200942, 89 pp, 2015

Researchers evaluated the use of isotopic data to distinguish sources of perchlorate in groundwater in a specific region of the Rialto-Colton and Chino, California, groundwater subbasins. This region has two groundwater perchlorate plumes emanating from known military/industrial source areas, plus a larger area of measurable perchlorate outside the plumes. Isotope data indicate the presence of synthetic, Atacama (presumably from historical application of nitrate fertilizer in the region), and indigenous natural perchlorate in the study area. https://www.estcp.com/content/download/35669/341920/file/ER-200942-FR.pdf

REMEDY PERFORMANCE MONITORING AT CONTAMINATED SEDIMENT SITES USING PROFILING SOLID PHASE MICROEXTRACTION (SPME) POLYDIMETHYLSILOXANE (PDMS) FIBERS
Thomas, C., D. Lampert, and D. Reible.
Environmental Science: Processes & Impacts, Vol 16 No 3, 445-452, 2014

Researchers evaluated passive sampling using polydimethylsiloxane (PDMS) profilers as a tool for assessing the performance of in situ sediment remedies at three locations: Chattanooga Creek (Chattanooga, Tennessee), Eagle Harbor (Bainbridge Island, Washington), and Hunter's Point (San Francisco). Two different approaches were employed to evaluate kinetics of uptake onto the sorbent fibers. The remedy at the first two locations was capping over PAH-contaminated sediments, where passive sampling was employed to measure intermixing during cap placement, contamination migration into the cap post-placement, and recontamination over time. At Hunter's Point, the assessment was part of an in situ treatment demonstration of activated carbon mixed into PCB-contaminated sediments. Reductions in porewater concentrations in treated versus untreated sediments were compared to measurements of bioaccumulation of PCBs in *Neanthes arenaceodentata*. Results at these contaminated sediment sites illustrate the utility of the passive sampling approach. *See details of the study in C. Thomas's Ph.D. dissertation at* https://repositories.lib.utexas.edu/handle/2152/28342.

NOVEL PROBE FOR IN SITU MEASUREMENT OF FREELY DISSOLVED AQUEOUS CONCENTRATION PROFILES OF HYDROPHOBIC ORGANIC CONTAMINANTS AT THE SEDIMENT-WATER INTERFACE
Lin, D., E. Eek, A. Oen, Y.-M. Cho, G. Cornelissen, J. Tommerdahl, and R.G. Luthy.
Environmental Science & Technology Letters, Vol 2 No 11, 320-324, 2015

A novel pore-water probe equipped with polyethylene passive samplers was used to measure the freely dissolved aqueous concentration profiles and diffusive flux profiles of DDT metabolites from 30 cm above to 30 cm below the sediment surface at 2.5 cm resolution intervals in a DDT-contaminated lake. The probe was designed for easy deployment in deep water to provide reliable indications of penetration depths and minimize disturbance to water movement in the overlying water. The measured aqueous concentration profile allowed identification of the peak in DDT concentration buried 15 cm below the sediment surface as a source for both upward and downward contaminant flux as well as calculation of the diffusive flux of freely dissolved DDT and DDT metabolites throughout the measured depths and across the sediment-water interface. The maximal upward flux of 4,4'-DDD (the major DDT metabolite) was 3.9 ng/m ^{2}/day, which would represent a

NATURAL URANIUM CONTAMINATION IN MAJOR U.S. AQUIFERS LINKED TO NITRATE
Nolan, J. and K.A. Weber.
Environmental Science & Technology Letters, Vol 2 No 8, 215-220, 2015

Groundwater geochemical data collected from two major U.S. aquifers, High Plains and Central Valley, revealed that naturally occurring groundwater uranium (U) exceeds the U.S. EPA maximum contaminant level (MCL = 30 µg/L) across 22,375 km^2 where 1.9 million people live. Analysis of geochemical parameters showed a moderately strong correlation between U and nitrate, a common groundwater contaminant, as well as alkalinity and calcium. Nitrate is recognized to alter U solubility by oxidative dissolution of reduced U(IV) minerals. About 78% of areas where U concentrations were interpolated above the MCL correlated to the presence of nitrate, particularly in shallow groundwater. Results suggest that nitrate, a primary contaminant, should be considered as a factor leading to secondary groundwater U contamination. http://pubs.acs.org/doi/ipdf/10.1021/acs.estlett.5b00174

DISCOVERY AND IMPLICATIONS OF C_2 AND C_3 PERFLUOROALKYL SULFONATES IN AQUEOUS FILM-FORMING FOAMS AND GROUNDWATER
Barzen-Hanson, K.A. and J.A. Field.
Environmental Science & Technology Letters, Vol 2 No 4, 95-99, 2015

Historically, 3M aqueous film-forming foams (AFFFs) were released at U.S. military and civilian sites to extinguish hydrocarbon-based fuel fires. Although only C_4-C_{10} homologues of the perfluoroalkyl sulfonic acids (PFSAs) are documented in 3M AFFFs, two ultra-short-chain PFSAs—perfluoroethanesulfonate (PFEtS) and perfluoropropanesulfonate (PFPrS)—were discovered by liquid chromatography (LC) quadrupole time-of-flight mass spectrometry and quantified by LC tandem mass spectrometry in five 3M AFFFs and in one groundwater sample from each of 11 U.S. military bases. The high water solubility, mobility, and detection frequency of the ultra-short-chain PFSAs suggest that AFFF-related groundwater contaminant plumes may be larger than previously believed and challenge their removal by conventional activated carbon. http://pubs.acs.org/doi/ipdf/10.1021/acs.estlett.5b00049

COMPARISON OF SOURCE ZONE NATURAL ATTENUATION RATES AT CRUDE OIL AND ETHANOL-BLENDED FUEL RELEASE SITES
Sihota, N.J. and K.U. Mayer.
Bioremediation Journal, Vol 19 No 3, 218-230, 2015

Researchers investigated differences in source zone natural attenuation (SZNA) rates at two crude oil and two denatured fuel-grade ethanol (DFE) spill sites using on-site measurements of surficial gas effluxes. CH_4 effluxes were below detection at the crude oil sites, whereas CH_4 effluxes were detected at both DFE sites. Similarly, SZNA rates among sites affected by the same contaminant were comparable, whereas order of magnitude differences existed between sites affected by crude oil or DFE. At DFE sites, results also revealed source zone expansion in relation to the initial mass in place, suggesting that extended spatial monitoring may be required to characterize risk potential. Overall, key differences between crude oil and DFE release sites demonstrated the importance of site-specific interactions between hydrogeology and contaminant composition for mediating gas emissions and SZNA rates and for modulating gas transport regimes under field conditions. *Additional information on this study is available in N.J. Sihota's Ph.D. thesis at* https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0166025

DEVELOPMENT OF A SCALABLE PROCESS CONTROL SYSTEM FOR CHEMICAL SOIL WASHING TO REMOVE URANYL OXIDE
McCown, J.P., R.J. Unz, C.A. Waggoner, J.H. Ballard, S.L. Larson, and P. Arienti.
ERDC/EL TR-15-4, 59 pp, 2015

U.S. Army Engineer Research and Development Center (ERDC) researchers have developed a soil washing system to leach depleted uranium (DU) oxides from soil, and the Institute for Clean Energy Technology (ICET) at Mississippi State University has developed an effective survey system to locate areas of DU contamination for removal and disposal. ICET, which has a history of developing control systems for sophisticated test beds, has combined its experience in developing control systems for DU detection methods to develop a process control system for the ERDC soil leaching system for extracting DU from contaminated range soil. The ICET system control and data acquisition (SCADA) system has been demonstrated to control pumps and valves, maintain leaching solution chemistry to user-defined setpoints, and detect environmental levels of DU oxides in leachate. The SCADA system will assist the ERDC Environmental Laboratory in transitioning the development of the soil washing system from pilot to full scale. http://el.erdc.usace.army.mil/elpubs/pdf/trel15-4.pdf

MODULES FOR MODELING FIRING RANGE BEST MANAGEMENT PRACTICES WITHIN TREECS™
Dortch, M.S. and J.A. Gerald.
ERDC/EL TR-15-7, 46 pp, 2015

The Training Range Environmental Evaluation and Characterization System (TREECS) is a modeling program developed for Army firing and training ranges. TREECS contains varying levels of capability to forecast the fate and risk of munitions constituents (MC), such as metals and high explosives, located within firing and training ranges and transported to surface water and groundwater. The program can be used to assess best management practices (BMPs) for military ranges to avoid, reduce, and remediate MC concentrations in receiving waters. New modules for simulating the effectiveness of BMPs have been developed for future incorporation into TREECS. This report documents the final mathematical formulations, model implementation protocols, and input requirements of the new modules.http://el.erdc.usace.army.mil/elpubs/pdf/trel15-7.pdf

General News

BIOGEOCHEMICAL TRANSFORMATION HANDBOOK
Darlington, R. and H. Rectanus.
TR-NAVFAC EXWC-EV-1601, 41 pp, 2015

In situ biogeochemical transformation (ISBGT) is the transformation of contaminants by highly reduced iron minerals formed by microbial activity. ISBGT processes result in the degradation of contaminants through combined biological, mineral, and chemical pathways. This handbook provides a resource for evaluating, selecting, and implementing the technology. The handbook presents the fundamentals of ISBGT in a question and answer format; explores the mechanisms that contribute to ISBGT processes; discusses contaminants that can be degraded by ISBGT; identifies key considerations for enhancing, monitoring, and evaluating ISGBT processes; and emphasizes the importance of site characterization in recognizing and accounting for the contributions of ISBGT to natural attenuation.
http://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er_pdfs/b/navfacexwc-ev-tr-1601-biogeochem-hbk-2015.pdf

SUSTAINABLE SEDIMENT REMEDIATION
Bullard, A., R. Wensink, and S. Moore.
TR-NAVFAC EXWC-EV-1515, 55 pp, 2015

Most green and sustainable remediation (GSR) evaluations to date have been focused on terrestrial sites with soil or groundwater contamination issues. Sediment sites also are an important issue for the Navy, but existing optimization/GSR guidance is not aimed specifically at contaminated sediment issues. In providing a connection between guidance specific to sediment sites and existing Navy optimization/GSR guidance, this paper introduces a new version of SiteWise™ that has been developed to integrate sediment-specific remedial activities.
http://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er_pdfs/s/navfacexwc-ev-tr-1515-sustainable-sed-wp-2015.pdf

DREDGING AND DREDGED MATERIAL MANAGEMENT: ENGINEERING AND DESIGN
U.S. Army Corps of Engineers. EM 1110-2-5025, 920 pp, 2015

This Engineer Manual presents a comprehensive summary of dredging equipment and dredged material placement techniques with considerations in the selection and use of various types of dredging equipment and techniques for placement. The text describes (1) short-and long-term fates of dredged material in the open-water environment and methods for quantifying each type of material; (2) contaminant pathways from open-water placement; (3) management and control methods for open-water placement; and (4) considerations for open-water site operation, monitoring, and management. Detailed guidance is given for diked placement of dredged material in confined disposal facilities. Chapter 5 outlines various opportunities for the beneficial use of dredged material and provides many case studies. http://www.publications.usace.army.mil/LinkClick.aspx?fileticket=xQceJENLUJI%3d&tabid=164398&portalid=76&mid=43544

ADSORPTION DESIGN GUIDE
U.S. Army Corps of Engineers Engineering and Construction Bulletin.
Design Guide (DG) 1110-1-2, 102 pp, 2014

Adsorption occurs when atoms, ions, or molecules from a substance adhere to a surface of the adsorbent material. This update of the 2001 *Adsorption Design Guide* provides instructions for the basic design of liquid and vapor-phase adsorption processes for the removal of organic contaminants from liquid- and vapor-phase streams. The guide covers the principles and theory of adsorption, liquid- and vapor-phase carbon adsorption, carbon regeneration, and non-carbon adsorption.
https://www.wbdg.org/ccb/ARMYCOE/COEECB/ech_2014_21.pdf

The Technology Innovation News Survey welcomes your comments and suggestions, as well as information about errors for correction. Please contact Michael Adam of the U.S. EPA Office of Superfund Remediation and Technology Innovation at adam.michael@epa.gov or (703) 603-9915 with any comments, suggestions, or corrections.

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