

Technology Innovation News Survey

Entries for July 16-31, 2019

Market/Commercialization Information

DECOMMISSIONING AND DISPOSAL ACTIVITIES FOR THE SM-1 REACTOR FACILITY, FORT BELVOIR, VA
U.S. Army Corps of Engineers, USACE District, Baltimore, MD
Federal Business Opportunities, Solicitation W912DR18R0021, 2019

The U.S. Army Corps of Engineers - Baltimore District has a requirement for a remediation contractor to support decommissioning and disposal activities for the SM-1 reactor facility located at Fort Belvoir, Virginia, on the western shore of the Potomac River. The work will encompass a broad range of planning, engineering design, construction, demolition, and support activities related to the decommissioning and disposal of the deactivated SM-1 nuclear power plant and reactor facilities. The NAICS code is 562910. A detailed work statement is attached to the FedBizOpps notice. Decommissioning and reporting work must be completed by September 30, 2026. Offers are due by 11:00 AM ET on November 4, 2019. <https://www.fbo.gov/sp/USA/COE/PA/CA31/99/2P1818R0021/listing.html>

MECHANISM FOR TIME-SENSITIVE RESEARCH OPPORTUNITIES IN ENVIRONMENTAL HEALTH SCIENCES
DHHS, National Institutes of Health, Funding Opportunity RFA-ES-19-011, 2019

This funding opportunity is intended to support novel environmental health research in which an unpredictable event or policy change provides a limited window of opportunity to collect human biological samples or environmental exposure data. The primary motivation is to understand the consequences of natural and human-made disasters, emerging environmental public health threats, and policy changes in the U.S. and abroad. A distinguishing feature of an appropriate study is the need for rapid review and funding, substantially shorter than the typical NIH grant review/award cycle, for the research question to be addressed and swiftly implemented. See additional details at <http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-19-011.html>. The closing date for applications is October 3, 2022. <http://www.grants.gov/web/grants/view-notice.html?nplid=31896>

CONTAMINATED SITES, NATURAL DISASTERS, CHANGING ENVIRONMENTAL CONDITIONS & VULNERABLE COMMUNITIES: RESEARCH TO BUILD RESILIENCE
EPA's Science to Achieve Results (STAR) program is asking the scientific community to propose transdisciplinary research with an approach that integrates the following research questions: (1) How may certain natural disasters (e.g., wildfires, severe storms, flooding, hurricanes, tornadoes, volcanic eruptions, earthquakes or tsunamis) or changing environmental conditions (e.g., rising sea levels, higher average temperature or heat index) cause specific chemical contaminants to migrate from certain contaminated or containment sites (e.g., hazardous waste sites, landfills, solid waste or wastewater storage or treatment facilities, industrial sites such as mines or refineries) to nearby communities and pose elevated exposure risks to vulnerable groups, especially the elderly and/or children under the age of five years? (2) What are the major contributing factors or effect modifiers (in addition to the contaminants and natural disasters or changing environmental conditions) that might exacerbate the impacts to these vulnerable groups in impacted communities? (3) How can scientific research results specifically help communities build better resilience against the problems and issues identified above? This RFA is supported by EPA's Sustainable and Healthy Communities Program. Up to 5 awards are anticipated out of an estimated total program funding of \$4M. Closing date for applications is September 17, 2019. <http://www.grants.gov/web/grants/view-notice.html?nplid=31897>. More information: <https://www.epa.gov/research-grants/contaminated-sites-natural-disasters-changing-environmental-conditions-and>

CBFO TECHNICAL ASSISTANCE CONTRACT - REQUEST FOR INFORMATION (RFI)
Department of Energy, EM Consolidated Business Center, Cincinnati, OH
Federal Business Opportunities, Solicitation 89303319NEM000022, 2019

DOE's Office of Environmental Management (EM) is planning a new Technical Assistance Contract to perform support services on behalf of DOE-EM's Carlsbad Field Office (CBFO) in southeastern New Mexico. This RFI/Sources Sought solicits input from interested parties with the specialized capabilities necessary to perform all or part of the requirements. The CBFO requires a contractor to provide expert technical advice and assistance in the following areas: Waste Isolation Pilot Plant (WIPP) waste acceptance; chemical compatibility and acceptable knowledge; audits and assessments; security; program management; WIPP site operations; environmental and regulatory compliance; nuclear and industrial safety; scientific and international programs; transuranic (TRU) waste characterization and certification; TRU waste transportation and packaging; general business operations; information technology; document control; and executive management support. Responses to the details found in the attachment to the FedBizOpps notice will assist DOE with identifying interested and capable sources for developing its acquisition strategy. Capability statements must be submitted via email by 7:30 AM ET on Monday, September 16, 2019. <https://www.fbo.gov/sp/DOE/PCAF/HQ/89303319NEM000022/listing.html>

US EPA REGION 8 SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM
Environmental Protection Agency, Office of Assessment Solutions, Region VIII, Denver, CO.
Federal Business Opportunities, Solicitation 68HE0819R0014, 2019

U.S. EPA Region 8 anticipates issuing a full and open competition RFP for the Superfund Technical Assessment and Response Team V after August 2019 for emergency response, removal, site assessment, training, data management, and related technical and administrative services. Monitor FedConnect for updates at <https://www.fedconnect.net/FedConnect?dloc=68HE0819R0014&agency=EPA>. The contractor will support response and site assessment activities related to the release or threat of release of oil, petroleum products, hazardous substances, weapons of mass destruction, or pollutants and contaminants that pose an actual or potential threat to human health and welfare or to the environment. Region 8 intends to award one fixed fee IDIQ contract for a one-year base period of performance with six one-year option periods. Work will be ordered through the issuance of task orders. The NAICS code for this procurement is 541620 (Environmental Consulting Services), size standard \$15M. <https://www.fbo.gov/sp/EPA/OAM/8/TMS-G/68HE0819R0014/listing.html>

Cleanup News

TREES CAN DO THE DIRTY WORK OF WASTE CLEANUP
Banegas, D. | USDA Forest Service Blog, 2019

With the Great Lakes Restoration Initiative, the Forest Service works in partnership with cities, counties, and corporations to install phytoremediation sites. The initiative is in its fourth year of annual funding, and altogether, about 20,000 trees have been planted at 16 phytoremediation sites in the Lake Michigan and Lake Superior watersheds. The trees are mostly fast-growing willows and poplars, which are ideal for phytoremediation because they grow quickly and have deep and extensive root systems. <https://www.usda.gov/media/blog/2019/08/30/trees-can-do-dirty-work-waste-cleanup>

STATE SUPERFUND SITE RECLASSIFICATION NOTICE: CLASS 02 TO CLASS 04
New York State Department of Environmental Conservation (NYS DEC), 2 pp, 2019

The Jackson Steel manufacturing plant, located in the Village of Mineola, New York, has been officially downgraded from a Class 02 to a Class 04, meaning the vacant U.S. EPA Superfund site is no longer a significant threat to the public's health or the environment. Manufacturing of roll-form metal shapes was conducted at the facility 1970-1991, where spills of degreasers, including PCE, TCE, and 1,1,1-TCA, at the waste storage area contributed to contamination of the soil and groundwater. The site-wide remedy implemented at Jackson Steel included excavation of contaminated soil, installation, and operation of a soil vapor extraction system and groundwater treatment via in situ chemical oxidation. Any remaining contamination will be addressed under the site management plan, which consists of a vapor intrusion management plan and institutional control implementation and assurance plan. <http://www.dec.ny.gov/data/decfactsheet/130f95reclass.pdf>. See additional details in the EPA site closure report at <https://semspub.epa.gov/work/02/436119.pdf>.

Demonstrations / Feasibility Studies

A RIGOROUS DEMONSTRATION OF PERMEABILITY ENHANCEMENT TECHNOLOGY FOR IN SITU REMEDIATION OF LOW PERMEABILITY MEDIA
Sorenson, K., D. Nguyen, R. Wymore, and N. Smith.
ESTCP Project ER-201430, 651 pp, 2019

A hybrid pneumatic permeability enhancement technology was pilot tested to facilitate amendment delivery and distribution at 3 sites with low-permeability lithologies: Marine Corps Base-Camp Pendleton (MCB-CP), Lake City Army Ammunition Plant (LCAAP) Site 17D, and the Grand Forks Air Force Base (GFAFB) site TU594. The overall objective was to compare the performance and cost benefits of hydraulic and hybrid pneumatic permeability enhancement for in situ treatment at low-permeability sites. Advanced geophysics monitoring tools evaluated the vertical and horizontal extent of amendment distribution, and measurements were validated by conventional soil confirmation and groundwater performance monitoring. The technology achieved 99-100% of the target injection within the treatment areas at MCB-CP and GFAFB, and 70% at LCAAP despite challenging subsurface conditions. A cost comparison exercise indicated that permeability enhancement techniques can be more or significantly more competitive than conventional injection techniques. <https://www.serdp-estcp.org/content/download/49513/472045/file/ER-201430%20Final%20Report.pdf>

EFFECTIVENESS OF COLLOIDAL ACTIVATED CARBON AS AN IN SITU TREATMENT TO MITIGATE PFAS
Wilson, S., K. Thoreson, and P. Lyman. | The PFAS Management, Mitigation, and Remediation Conference, 19-20 June, Westerville, Ohio, 2019, abstract only

The Michigan Department of Military and Veteran Affairs (DMVA) has been remediating chlorinated solvents in groundwater from historical operations at the Grayling Army Airfield facility since the 1990s. In 2016, the DMVA found PFAS commingled with a PCE plume that was migrating toward the property boundary. The DMVA pilot tested an in situ reactive barrier application of colloidal activated carbon, selected because of the expected rapid reductions of PFAS by removal from the dissolved water phase. PFAS concentrations were reduced from >80 ng/L to 5 µg/L. See project slides by P. Lyman and R. Moore: <https://static1.squarespace.com/static/5842726192a4d32351143/5d02977d0c6830001234671/560450820339/ADG-Regenesis-MVA-trial.pdf>. Also see https://www.michigan.gov/nfas-response/0,9338,7-965-86511_89704_84187_---,00.html

FIELD DEMONSTRATION OF SOLAR-POWERED ELECTROCOAGULATION WATER TREATMENT SYSTEM FOR PURIFYING GROUNDWATER CONTAMINATED BY BOTH TOTAL COLIFORMS AND ARSENIC
Oh, C., S. Pak, Y.-S. Han, N.T.H. Ha, M. Hong, and S. Ji.
Environmental Technology [Published online 19 June prior to print]

An electrocoagulation reactor water treatment system using Fe electrodes and a filtration tank was designed to treat complex coliform and As-contaminated groundwater near the Red River in Vietnam. The water treatment system reduced 10.3 CFU/mL of total coliform and 376 µg/L of As(III) in the groundwater to 0 CFU/mL and 6.68 µg/L, respectively. Total coliforms were attenuated by Fe(II) infiltration or emulsed during Fe precipitate formation. Of the total As, 43% formed As(III) complexation with the Fe precipitates and the other 57% was oxidized to As(V), and then adsorbed to Fe precipitates. The Fe precipitates that contained coliforms and As were separated from the discharge water in the filtration tank. The system required 49 W of power to operate, or 423 kWh/year, to continuously purify 0.5 t water/day. This requirement was powered by a 380-750 W solar panel, without external energy supply.

HEXAVALENT CHROMIUM TREATMENT TECHNOLOGIES
Korak, J., A. Kennedy, and M. Arias-Paica.
U.S. Department of the Interior, Bureau of Reclamation, Research and Development Office, Final Report ST-2018-9085-01, 105 pp, 2018

The Bureau of Reclamation partnered with two water districts, one in California and one in Oklahoma, to improve treatment process efficiency and reduce the cost for Cr(VI) removal in groundwater used as drinking water, with a treatment goal of 10 µg/L. In California, a pilot-scale strong-base ion exchange (SBA) process was installed at one of the system points of entry. Columns with SBA resin were loaded until exhausted for Cr and then were returned to the Bureau for regeneration and waste minimization process development. A pilot-scale study of stannous chloride reduction-coagulation-filtration was conducted at two wells in California and one well in Oklahoma. All results from this project were published in peer-reviewed journals, and each of the three chapters is a stand-alone study and a reprint of the published article https://www.usbr.gov/research/projects/download_product.cfm?id=2746.

PFAS SUMMARY
Horsham Water & Sewer Authority, April 2019

Since July 2014, the Horsham Water and Sewer Authority (HWSA) has been responding to the discovery of PFOS and PFOA in local groundwater, sourced from the nearby Naval Air Station Joint Reserve Base Willow Grove. In June 2016, HWSA shut down a total of 5 wells exceeding the May 2016 EPA health standard of 70 ng/L and set a goal of reducing PFOA and PFOS to non-detect (ND) level in all drinking water supplied. HWSA began installing granular activated carbon (GAC) filters to remediate and return the 5 impacted wells to service. A pilot test evaluated the effectiveness of a newly developed PFAS-selective ion exchange resin placed downstream of the GAC filters on 3 well as a polishing step to obtain ND levels. After several months of operation, the GAC filters were bypassed and the resin continued to operate until the concentration of PFAS rose above the detection level. Upon full transition to a long-term plan by fall 2019, the public water supply will be sourced by 10 wells with PFAS removal filters installed, purchased water from a supplier with a PFAS removal filter installed, and purchased water from a second supplier that has PFAS at or around non-detect levels. <https://www.horshamwater.com/nfas-summary>. More information <https://www.wateronline.com/doc/polishing-pfas-to-non-detect-levels-using-pfas-selective-resin-0001>, and <https://www.wateronline.com/doc/pilot-study-ion-exchange-and-gac-to-reduce-pfas-to-non-detect-0001>.

Research

A GIS SOLUTION TO EVALUATING REMEDIAL ALTERNATIVES IN SEDIMENT REMEDIATION AND RECOVERY
Delwiche, L.M. | 2018 Salish Sea Ecosystem Conference, 4-6 April, Seattle, Washington, 16 slides, 2018

A GIS-based sediment remediation/recovery model was designed using ESRI ArcGIS Model Builder that incorporates the SEDCAM sediment attenuation model and analytical results derived from field samples to produce various cleanup scenarios. These scenarios were then further evaluated as remedial alternatives. On a chemical-by-chemical basis, the model determined active remediation footprints required to meet sediment cleanup levels at the end of a defined natural recovery period. Post-remediation natural recovery was incorporated through site-specific parameters such as sedimentation rate, watershed loading chemical concentrations, and the depth of the biologically active zone. The model can also be used to test the site-specific sensitivity to model inputs. Such information can potentially identify data gaps required for the accurate prediction of future sediment conditions. <https://cedar.wvu.edu/ri/wjwcontent.cfm?article=24808&context=secc>.

PASSIVE SAMPLING OF PFAS: TECHNOLOGY DEVELOPMENT AND APPLICATIONS TO SITE AND RISK ASSESSMENT
Kaltenberg, E., K. Dasu, F. Pala, S. Marconetto, B. McDonald, and A. Dindal.
2019 Real Property Institute of Canada (RPIC) Federal Contaminated Sites Regional Workshop, 4-5 June, Halifax, Nova Scotia, 20 slides, 2019

This study aimed to develop passive samplers to detect PFAS in the field. Preliminary tests identified a suitable medium, which was then run through a series of adsorption experiments for 15 PFAS analytes. Equilibrium was achieved in http://pic-bic.ca/images/2019_FCSRW/presentations/Passive_Sampling_of_PFA%20Technology_Development_and_Applications_to_Site_and_Risk_Management.pdf. Longer abstract available by clicking on Stream 4a at http://pic-bic.ca/images/2019_federal_contaminated_sites-fcs-regional-workshop/2019-pic-fcs-regional-workshop-natl-abstracts/2019-pic-fcs-regional-workshop-stream-4a-innovation-research-and-development

INNOVATIVE TREATMENT OF WOOD WASTE IMPACTED SEDIMENTS USING REACTIVE AMENDMENTS AND DGT PASSIVE POREWATER SULPHIDE TESTING TECHNIQUES
Berlin, D., D. Vlassopoulos, M. Kanematsu, J. Dunay, E. Malczyk, and T. Wang.
2019 Real Property Institute of Canada (RPIC) Federal Contaminated Sites Regional Workshop, 4-5 June, Halifax, Nova Scotia. 20 slides, 2019

Public Services and Procurement Canada is conducting risk management studies on sediments within Equilmatt Harbour that contain wood waste deposits from historical activities. Innovative passive porewater samplers using a diffusive-gradient-in-thin-films (DGT) method were deployed for 30 min-24 hrs to quickly and accurately measure porewater sulfide concentrations. Measured concentrations ranged from 200 mg/L. An innovative bench-scale testing program was conducted to assess the effectiveness of sand cover mixed with a range of treatment amendments to reduce bioavailable porewater sulfide concentrations in sediments containing wood wastes. Treatment amendments included mineral-based materials such as iron oxides, manganese oxides, and iron carbonates. Vertical profiles of redox zonation and porewater sulfide were measured with DGTs in the amended cover and underlying wood waste sediments to assess the effectiveness of the reactive amendments. A result of the study is a design of an in situ field pilot study. http://pic-bic.ca/images/2019_FCSRW/presentations/Innovative_Treatment_of_Wood_Waste_Impacted_Sediments_Using_Reactive_Amendments_and_DGT_Passive_Porewater_Sulphide_Testing_Techniques.pdf. Longer abstract available by clicking on Stream 6d at http://pic-bic.ca/images/2019_FCSRW/presentations/Innovative_Treatment_of_Wood_Waste_Impacted_Sediments_Using_Reactive_Amendments_and_DGT_Passive_Porewater_Sulphide_Testing_Techniques.pdf

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