SON Number: ERSON-18-L1 **September 14, 2017**

Strategic Environmental Research and Development Program (SERDP)

FY 2018 STATEMENT OF NEED

Environmental Restoration (ER) Program Area

INNOVATIVE APPROACHES FOR TREATMENT OF WASTE DERIVED FROM PER- AND POLYFLUOROALKYL SUBSTANCE (PFAS) SUBSURFACE INVESTIGATIONS

1. Objective of Proposed Work

The objective of this limited-scope Statement of Need (SON) is to develop innovative approaches for treatment of investigation-derived waste (IDW) from investigations of per- and polyfluoroalkyl substance (PFAS) contamination in the subsurface. This IDW largely consists of excess soil cuttings, purge water from groundwater sampling, and fluid from decontamination of drilling equipment that are contaminated at varying levels with PFASs as well as potentially many other traditional CERCLA and RCRA contaminants. The preference is for destructive technologies that treat the IDW rather than rely on landfilling so as to avoid potential future environmental liability given that disposal requirements for PFASs are evolving.

Limited-scope proposals are sought to test proof of concept; however, proposed research should focus on developing innovative technologies that ultimately have the potential to meet the following requirements:

- Systems that permit unrestricted disposal, discharge, and/or reuse of IDW on-site.
- Mobile or temporary treatment systems that can be deployed easily, minimizing the spatial footprint and mobilization time and effort.
- Cost effective treatment compared to current disposal methods.

Proposals must clearly state which specific PFASs will be included in the analytical testing. Although the emphasis should be on perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), consideration should be given to including other commonly occurring, high priority PFASs (e.g., perfluorononanoic acid [PFNA], and perfluorohexane sulfonate [PFHxS]); at a minimum, the 6 PFASs identified in the USEPA UCMR-3 should be measured. Justification should be provided for which PFASs will be included in the laboratory studies.

2. Expected Benefits of Proposed Work

More cost-effective and efficient technologies for treatment of IDW from PFAS investigations will greatly aid Department of Defense (DoD) Remedial Project Managers (RPMs) in the management of these sites. On-site options compared to off-site disposal and incineration will result in significant cost reductions.

3. Background

Aqueous film forming foam (AFFF) formulations have been used by DoD since the 1970s to suppress fires, and there are hundreds of sites with associated PFAS contamination. The DoD used AFFF mixtures containing significant quantities of PFOS and related perfluoroalkyl sulfonates such as PFHxS until 2002, when production stopped, although the DoD continued to use PFOS-containing AFFF stocks for some time after. Although the DoD's legacy use of AFFF included various fluorotelomer-based formulations, the vast majority of DoD's environmental liability likely results from the use of PFOS-based AFFF. Additional research on PFASs is timely given the USEPA's recent drinking water health advisories for two common PFASs, PFOA and PFOS, as well as the numerous states that are beginning to promulgate drinking water standards.

The DoD has begun performing investigations to determine the extent of PFAS contamination across its portfolio of sites. During the course of these investigations, large quantities of IDW are being (and will continue to be) generated. Current methods dictate landfilling of these wastes, but the DoD has a preference for destructive technologies that treat this IDW in order to minimize potential future environmental liability. However, incineration of all IDW is both costly and poses additional transportation requirements. Thus, alternative innovative technologies that would permit unrestricted disposal, discharge, and/or reuse of IDW on-site are a critical need.

4. Cost and Duration of Proposed Work

Limited-scope proposals for funding up to $200,000 and duration of approximately one year are sought. Such proposals may be eligible for follow-on funding if they result in a successful initial project.

5. Point of Contact

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For proposal submission due dates, instructions, and additional solicitation information, visit the SERDP website.