1. **Objective of Proposed Work**

The objective of this Statement of Need (SON) is to improve our management of stormwater, both through an improved understanding of the impact of stormwater to sediment recontamination and recovery as well as through improved stormwater control to prevent recontamination. Specific objectives include:

- Improved understanding of the source and rate of change in chemical concentrations on remediated sediment surfaces and approaches to quantify such changes.
- Improved understanding of the relationships between stormwater-associated sediment load, dissolved-phase contaminant concentrations, contaminant-induced benthic impairment, and sediment recontamination or recovery.
- Development of innovative stormwater control and treatment technologies that improve stormwater management, prevent sediment recontamination, and add to the existing water supply.
- Development of watershed modeling of new stormwater control processes that focus on sediment-related contaminants to provide information on the efficiency needed and the number of systems deployed to prevent sediment recontamination and increase stormwater harvesting.

The focus of this SON is the impact of stormwater to aquatic sediments, either marine, estuarine, brackish, or freshwater. Contaminants of concern include the predominant contaminants at Department of Defense (DoD) sites, such as PAHs, PCBs and metals, but also emerging contaminants of concern such as per- and polyfluorinated alkyl substances (PFASs). Proposers should clearly state the contaminants that will be addressed by their proposed research. Proposers should clearly delineate how new approaches differ and improve upon current practices.

Research proposals can involve laboratory-, bench-, and field-scale studies, as well as computer modeling to support such efforts; however, all proposals must demonstrate how the proposed research will ultimately be used to improve management of stormwater and its impact on sediment sites. Proposers may address one or multiple objectives listed above.
SERDP co-sponsored a Workshop on Research and Development Needs for Long-Term Management of Contaminated Sediments in August 2016 that identified high priority research topics in this area. A more detailed description of these issues can be found in the workshop report. We strongly encourage proposers to review the workshop report for additional detail.

2. **Expected Benefits of Proposed Work**

Research should lead to improved management of stormwater and its impact on sediment sites undergoing remediation. The resulting tools and understanding should improve the ability to implement effective remedial strategies at DoD sites.

3. **Background**

Aquatic sediments are often the ultimate repository of discharged contaminants. According to an estimate by the U.S. Environmental Protection Agency (U.S. EPA), approximately 10% or 1.2 billion cubic yards of the sediment underlying the country’s surface water is sufficiently contaminated with toxic pollutants to pose potential risks to fish and to humans and wildlife that eat fish (U.S. EPA, 1998). Contaminated sediments can pose a threat to human health when pollutants in sediments accumulate in edible aquatic organisms (U.S. EPA 1998 and references therein).

Quantification of the source and rate of change in remediated sediment surface chemical concentrations remains a critical priority research need. Uncertainties still exist in defining and quantifying connections between stormwater-associated sediment load, dissolved-phase contaminant concentrations, and contaminant-induced benthic impairment. Tools or approaches that improve the understanding of the incoming particulate load, chemical concentrations in those loads, rates of sediment accumulation, and potential impacts to benthic organisms at the contaminated surface would facilitate both remedy decision-making and setting long term monitoring (LTM) objectives.

New and innovative approaches that improve stormwater control processes are needed to minimize sediment recontamination. In-storm hydraulic management that could selectively promote or limit transport of specific chemical contaminants of concern in stormwater are of interest. Stormwater control processes are typically based on standard specifications and designs. Termed “best management practices (BMPs),” these designs are intended primarily to be protective of water quality, but are not well-validated in terms of hydraulic performance, management of particulate-bound contaminants, long term performance, or specifically with respect to sediment contamination. To this end, it is often unclear whether the adopted BMPs are effective at managing water and sediment quality.

Benefits of this work would include linking improved control practices to reduced infrastructure and cost for sediment quality protection compared to current practice. By preventing the contamination of stormwater or treating stormwater, the loading of contaminants to sediments can be more effectively managed. Such a designed system that may also offer the potential to manage stormwater as a resource by harvesting, treating, and repurposing the water for reuse, aquifer recharge, or ecological restoration.
4. **Cost and Duration of Proposed Work**

The cost and time to meet the requirements of this SON are at the discretion of the proposer. Two options are available:

**Standard Proposals:** These proposals describe a complete research effort. The proposer should incorporate the appropriate time, schedule, and cost requirements to accomplish the scope of work proposed. SERDP projects normally run from two to five years in length and vary considerably in cost consistent with the scope of the effort. It is expected that most proposals will fall into this category.

**Limited Scope Proposals:** Proposers with innovative approaches to the SON that entail high technical risk or have minimal supporting data may submit a Limited Scope Proposal for funding up to $200,000 and approximately one year in duration. Such proposals may be eligible for follow-on funding if they result in a successful initial project. The objective of these proposals should be to acquire the data necessary to demonstrate proof-of-concept or reduction of risk that will lead to development of a future Standard Proposal. Proposers should submit Limited Scope Proposals in accordance with the SERDP Core Solicitation instructions and deadlines.

5. **Point of Contact**

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For Core proposal submission due dates, instructions, and additional solicitation information, visit the [SERDP website](#).