

STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM (SERDP) BROAD AGENCY ANNOUNCEMENT FOR ENVIRONMENTAL RESEARCH AND DEVELOPMENT

Reference: Broad Agency Announcement (BAA), February 6, 2020
U.S. Army Corps of Engineers, Humphreys Engineer Center Support Activity

1. INTRODUCTION

The Strategic Environmental Research and Development Program (SERDP) is the Department of Defense's (DoD's) environmental research and development program, planned and executed in partnership with the Department of Energy and the Environmental Protection Agency. SERDP's role is to fund research and development that addresses environmental issues relevant to the management and mission of DoD. SERDP-supported efforts lead to the development and application of innovative environmental technologies or methods that improve the environmental performance of DoD by improving outcomes, managing environmental risks, and/or reducing costs or time required to resolve environmental problems. The development and application of innovative environmental science and technology support the long term sustainability of DoD's installations and ranges, and significantly reduce current and future environmental liabilities. Within its broad areas of interest, the Program focuses on Environmental Restoration, Munitions Response, Resource Conservation and Resiliency, and Weapons Systems and Platforms. SERDP funds research and development programs in basic and applied research as well as advanced technology development.

1.1. General Information for Proposers

SERDP is seeking white papers for environmental research and development projects responding to topic areas defined by this BAA. Topic areas are located in Appendix A of this document. This BAA is for Private Sector Organizations.

Awardees under this BAA will be selected through a multi-stage review process, including a brief white paper and a full proposal. Some proposals may require an oral presentation to the SERDP Scientific Advisory Board (SAB) for final approval. To be eligible for consideration, proposers must submit a white paper. Any white paper submitted shall be in response to only one of the topic areas set forth in this announcement. Proposers may respond to more than one topic area with separate white papers.

After evaluation of white papers, SERDP will contact all proposers and either request or not request each to submit a full proposal. At that time, SERDP will provide detailed instructions for the full proposal format. Full proposals may not be submitted outside the white paper process. Any full proposal that has not been reviewed in the white paper phase will not be evaluated nor considered for award under this BAA. Due to the volume of white papers anticipated, SERDP will not provide debriefs on those that are not requested to submit a full proposal.

Based on an evaluation of the written full proposal, and pending approval by the SAB, SERDP will notify each proposer as to whether the Government Contracting Officer wishes to enter into negotiation for the award of a contract. Proposers are advised that only the Contracting Officer is legally authorized to bind the Government. SERDP reserves the right to recommend for award

any, all, or none of the proposals received. SERDP also reserves the right to recommend a portion of the work proposed in any single proposal for award. There is no commitment by SERDP to make any recommendations for contract awards, nor to be responsible for any money expended by the proposer before contract award is made. It is the sole responsibility of the proposer to make certain the proposal is properly received by SERDP.

The SERDP Office manages the BAA solicitation along with the U.S. Army Corps of Engineers, Humphreys Engineer Center Support Activity (HECSA) Contracting Center in Alexandria, Virginia. For contracting or small business information regarding this BAA solicitation, contact Doug Pohlman at 703-428-6420 or by email at Douglas.E.Pohlman@usace.army.mil or the HECSA Small Business Representative at 703-428-7385 or HECSASmallBusinessProgram@usace.army.mil respectively. General SERDP procedural questions may be referred to the SERDP office at 571-372-6565. For technical information regarding a topic area, contact the individual listed in Appendix A.

1.2. Evaluation Schedule

This BAA is open for approximately one year from the date of release or until it is replaced by a subsequent announcement.

White papers will not be evaluated against each other since they are not submitted in accordance with a common work statement. SERDP's intent is to review white papers as soon as possible after they are submitted; however, white papers may be reviewed periodically for administrative reasons. Proposers will be notified on the decision regarding their white paper as soon as possible following review.

Full proposals will be evaluated as soon as possible after they are submitted. Review of full proposals may require input from external peer reviewers or other technical experts. Proposals may be required to brief the SERDP SAB depending on their size and scope. SAB meetings are typically held four times each fiscal year in October, March, June, and September.

Contracts are anticipated to be awarded three to six months following final review and approval of each proposal, depending on availability of funding.

2. WHITE PAPER INSTRUCTIONS

2.1. White Paper Length and Format

White papers shall be no longer than two (2) pages, type face not less than 11-point, and margins not less than one inch on all sides. All white papers shall be submitted as a single PDF file containing all sections outlined below.

2.2. White Paper Content

White papers must describe the merits and objectives of the proposer's project in response to the respective topic area. The white paper should concisely describe the following:

1. Proposal Title
2. Lead Principal Investigator
3. Lead Organization

4. Objectives: State the proposed objectives and how the project is responsive to the objectives articulated in the topic area.
5. Approach: Describe the technical approach and methods, preferably structured in hypothesis-driven tasks that clearly identify how the objectives of the proposed project will be addressed. This section should be the primary focus of the white paper.
6. Cost Estimate: The estimated total costs by year. A detailed breakout of costs is not required or desired in the white paper. A detailed cost breakout will be provided in the full proposal, if requested. If selected for funding, proposers will be required to provide a certificate of current cost or pricing data prior to award in accordance with Federal Acquisition Regulation (FAR) 15.403-4(a)(1) if the total contract value is expected to exceed \$2,000,000.00 to the cognizant contracting office.
7. Literature Citations: Provide literature citations for any material cited.

3. SUBMITTAL

White papers are submitted via email to SERDP. No faxed or hard copy white papers will be accepted. White papers should be emailed to the following addresses based on the topic area being addressed:

- Environmental Restoration: ER@noblis.org; andrea.leeson.civ@mail.mil
- Munitions Response: MR@noblis.org; david.bradley2@navy.mil
- Resource Conservation and Resiliency: RC@noblis.org; kurt.t.preston@usace.army.mil
- Weapons Systems and Platforms: WP@noblis.org; robin.a.nissan.civ@mail.mil

Note: A signed cover page is **not required** for white papers.

It is the sole responsibility of the proposer to make certain the proposal is properly received by SERDP. For questions, contact the SERDP Office at 571-372-6565.

4. EVALUATION FACTORS FOR WHITE PAPERS AND FULL PROPOSALS

The following evaluation factors will be the sole basis for reviewing white papers and full proposals submitted in response to this BAA. SERDP relevance is a pass/fail criteria evaluated at the white paper stage only; white papers not passing this gate will not be further evaluated. Among the other evaluation factors for both white papers and full proposals, Technical Merit is more important than Personnel, Cost and Transition Plan.

SERDP Relevance (Pass/Fail)

Proposal reviewers will assess whether the white paper submission (1) responds to the objectives as described in the topic area, and (2) falls within the SERDP mission to support basic and applied research or advanced technology development. SERDP Relevance is a threshold review and if the white paper is determined to be not relevant, no further evaluation of the white paper will be conducted.

Technical Merit

The overall scientific and technical merit of the white paper must be clearly identifiable. The evaluation will consider the proposed approach and its substantiation by calculations, test data, and references. Emphasis will be placed on the proposer's demonstration of a thorough understanding of the environmental issue. The proposer must demonstrate the ability to execute the work by providing a comprehensive, logical, orderly, and concise plan that indicates major tasks, milestones, critical paths, go/no-go decision points and key events leading to the completion of the project in the proposed time frame. In addition, the proposer must show how the technical approach and proposed tasks will address the project objectives. Strong consideration will be given to innovation; however, the degree of risk associated with individual proposals will be weighed against potential benefits. The proposal should clearly articulate how the research will advance the state of the science.

Personnel (Full Proposals Only)

Proposal reviewers will examine and assess the applicable qualifications, capabilities, demonstrated achievements, and proposed time commitment to the project by the proposed principal(s) and other key personnel.

Cost (Full Proposals Only)

Proposal reviewers will consider the reasonableness of the proposed cost, as well as the appropriateness and substantiation of costs for the technical complexity described. Cost sharing or leveraged resources also will be considered.

Transition Plan (Full Proposals Only)

The transition plan of the proposed research product(s) should demonstrate a clear understanding of how the project's results will transition to implementation either directly through future demonstrations or through future development, and show a linkage between the work proposed and the needs of ultimate end user of the results. Coordination between the proposer and targeted end user community is of value for late-stage development projects.

APPENDIX A: SERDP TOPIC AREAS

ENVIRONMENTAL RESTORATION

SERDP's Environmental Restoration Program Area focuses on cleaning and managing contaminated lands on current and former military installations. It supports the development and demonstration of innovative technologies to characterize, remediate, and scientifically manage contaminants in soil; sediments; and ground, surface and waste water.

To provide strategic guidance for future research, SERDP and ESTCP periodically hold workshops to identify and prioritize research needs on specific topics. Proposers are strongly encouraged to refer to the Summary Reports listed below.

- [Summary Report](#) from the July 2018 SERDP and ESTCP *Workshop on Management of DoD's Chlorinated Solvents in Groundwater Sites*
- [Summary Report](#) from the May 2017 SERDP and ESTCP *Workshop on Research and Demonstration Needs for Management of AFFF-Impacted Sites*
- [Summary Report](#) from the August 2016 SERDP and ESTCP *Workshop on Research and Demonstration Needs for Long Term Management of Contaminated Sediments*

Data needs identified during these workshops are relevant to several of the specific areas of interest listed below. For those proposing projects addressing PFAS issues, review the [SERDP and ESTCP memo](#) for additional requirements. Current and anticipated areas of focus include:

Characterization and Monitoring

Improved understanding of or development of methodologies or technologies for the assessment or long-term monitoring of chemical contamination or biogeochemical indicators in soils, sediments, and water.

Reduction in Cost to Complete

Improved understanding of the processes that impact the DoD's Cost to Complete for contaminated groundwater or aquatic sediments. Also of interest is the development of innovative tools, methodologies or technologies that can reduce the Cost to Complete for these matrices by improving performance assessment or optimizing treatment. Sites contaminated with per- and polyfluoroalkyl substances (PFAS) and/or chlorinated solvents, munitions constituents, PCBs, and PAHs are of most concern, but other contaminants may be of interest.

Reduce Source Loading of Munitions Constituents

Improved understanding of processes associated with the management of munitions constituents on DoD testing and training ranges throughout the lifecycle of their use. Development of innovative tools, methodologies or technologies that can reduce source loading of munitions constituents during routine DoD operations and demilitarization activities is also of interest. Proposers are encouraged to refer to the [Summary Report](#) from the July 2015 SERDP and ESTCP *Workshop on Research and Demonstration Needs for Management of Munitions Constituents*.

Stormwater Treatment

Development of innovative tools, methodologies or technologies for management and treatment of stormwater runoff from DoD facilities. Consideration should be given to incorporation into existing Best Management Practices and to meeting National Pollution Discharge Elimination System (NPDES) permit requirements.

Wastewater Treatment

Development of innovative, energy efficient, low maintenance systems for decentralized treatment or recycling of wastewater on fixed installations. Systems that are capable of operating in an energy neutral configuration, that produce power or materials that can easily be converted into power, and/or that are capable of generating water for potable or nonpotable re-use are of interest.

Risk Assessment

Improved understanding of processes that impact assessment and prediction of human and ecological risk from contaminants of concern including but not limited to PFAS, chlorinated solvents, munitions constituents, PCBs, and PAHs. Specific areas of concern include fate and transport of contaminants, exposure pathways to humans and ecological receptors, contaminant effects on ecological receptors and tools and methods to assess environmental impacts.

Point of Contact

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MUNITIONS RESPONSE

SERDP's Munitions Response program area supports the development of innovative technologies that can characterize, remediate, and scientifically manage sites affected by military munitions with a focus on munitions in the underwater environment. Many sites affected by munitions have depths less than 5 meters although water depths down to 35 meters are of concern. Aquatic environments include ponds, lakes, rivers, estuaries, and coastal or open ocean areas. Munitions of interest range from small projectiles and mortars to large bombs. Current and anticipated areas of research focus include:

Wide Area and/or Detailed Survey Techniques

Technologies to enable cost-effective survey of large (kilometer-scale) areas to identify concentrations of munitions and areas free of munitions. Sensor modalities addressing this aspect of the problem must provide high areal coverage rates but may be successful with only modest probabilities of detection and classification. In areas found likely to be contaminated, subsequent detailed data collection may be required to define the nature and extent of munitions contamination. In this regime, individual items must be detected with high probability and sufficient location accuracy that they may be unambiguously identified for retrieval or continued monitoring.

Cost-Effective Recovery and Disposal Methods

Improved methods are needed to cost-effectively and safely recover munitions from the underwater environment. Current practices employing divers for manual retrieval of targets are typically dangerous and expensive. Proposals should focus on recovery in the shallow water environment, where munitions are likely to be encountered by the public (to depths routinely accessed by recreational divers), and should address explosive safety issues. Cost-effective, safe, and environmentally acceptable remediation techniques are also needed for underwater items that cannot be moved due to explosive safety concerns and where blow-in-place operations underwater can significantly impact marine life.

Development of Standardized Underwater UXO Demonstration Sites

Well-documented test beds are needed to demonstrate the effectiveness of a variety of acoustic, magnetic, EMI, and optical systems that have been developed to detect and classify UXO in the underwater environment. A workshop held at the 2018 SERDP and ESTCP Symposium provides guidelines, requirements, timelines, and responsibilities for the development, management, and use of those test beds ([Workshop Report: Underwater UXO Standardized Test Beds](#)). Proposals are welcome for the development and management of multiple test bed sites. These proposals should include historical and real-time environmental measurements and characterization of the proposed sites; development of methods for placement, positioning, and recovery of targets of interest; an approach to obtain assessments needed to obtain all environmental permits required for the demonstrations; and plans to provide logistics, facilities, plans, and other needed support to accommodate multiple system demonstrations.

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RESOURCE CONSERVATION AND RESILIENCY

SERDP's Resource Conservation and Resiliency (RC) program area supports research that improves DoD mission readiness and environmental performance by providing new scientific knowledge and the demonstration of advanced technology. To accomplish these objectives, RC addresses high priority DoD environmental technology requirements that enhance military operations, improve military training and readiness, support the sustainment of DoD's training and test ranges, improve installation built and natural infrastructure, and better ensure the safety and welfare of military personnel and their dependents. Analytic research efforts in the research areas outlined below may include the formation of research working groups to identify knowledge gaps, develop research strategies, and explore research solutions.

Natural Resources

Natural resource research efforts focus on ecological systems, aquatic and marine resources, and terrestrial ecology and species management. These efforts research, analyze, and demonstrate advanced tools, technologies, and methodologies for the management of ecological systems integral to DoD installations and capabilities to ensure the continued availability of realistic training and testing conditions while preserving the long-term viability of installation and regional biological diversity and associated ecological processes. Ecological systems of emphasis are forested ecosystems, arid land ecosystems, ecosystems associated with the Pacific Islands and interior Alaska, and coastal and estuarine ecosystems. Living marine resources ecology and management efforts research, analyze, and demonstrate advanced tools, technologies, and methodologies to monitor and minimize the impacts of military operations on marine, aquatic, and terrestrial natural resources. Species ecology and management efforts research, analyze, and demonstrate advanced tools, technologies, and methodologies for the active management of invasive, listed, and at-risk species. Species management research may include threatened, endangered, at-risk, invasive, and other categories of species and ecologies of interest to the DoD.

Emissions

Emissions research efforts focus on the tools, technologies, and methodologies for the active management of dust, fire, and other emissions from training, testing, and other DoD activities to include both wild fires and prescribed burns. These research efforts seek to ensure the continued availability and sustainability of training and test ranges. Research that advances the accuracy of emissions productions and transport of emissions in the near field are of particular interest. Advanced technology demonstrations can include any elements from the emissions production process from fuel characterization, combustion, emissions factor estimation, and transport.

Resiliency: Built and Natural Infrastructure

Resiliency research focuses on research efforts that analyze, develop, and demonstrate advanced tools, technologies, and methodologies for the continuum of infrastructure, both natural and built required by the DoD for the maintenance of capabilities, training, and testing of new systems. Particular focus is given to research that examines natural and built systems challenged by a non-stationary environment, the identification and accurate prediction of regime shifts, and the identification of response. Forensic analysis of recent or historical regime shifts impacting natural and built systems is also of interest in so far as such analysis may be of value in the development of forecasting methods. In addition to regime shift, risk to natural and built infrastructure is also of interest, especially compound threats and the relationship between risk of compounding events and resilience.

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WEAPONS SYSTEMS AND PLATFORMS

SERDP's Weapons Systems and Platforms program area supports the development of innovative technologies and materials that can address the current and future environmental and worker safety liabilities associated with the design, construction, maintenance, demilitarization repair and operations of Department of Defense weapons systems and platforms. Several areas of interest are described in the sections below.

Manufacturing and Maintenance

Technologies to enable cost-effective development of environmentally benign materials with applications to the production and repair of military unique platforms are of interest. Targeted processes and materials include paints, primers and other organic coating systems, surface treatments to include passivation and plating, low global warming and non-flammable refrigerants, flame retardants, alternatives to perfluoroalkyl substances in aqueous film forming foams, and alternative solvents or technologies for vapor degreasing.

We are interested in processes that eliminate or reduce the generation or use of hazardous or toxic materials. Inspection or analysis techniques that would reduce the requirement for maintenance or overhaul are also desired. In addition, technologies for detection and monitoring of hazardous materials used in industrial processes or technologies to control the release of these materials into the environment are of interest.

Additional information may be found on our website describing our [ASETSDefense](#) (Advanced Surface Engineering Technologies for a Sustainable Defense) workshops and data base. We have also developed [strategy and implementation documents](#) and these are also available on our website.

Energetic Materials and Formulations

The development of alternative materials or fabrication methods for application to military propellants, explosives, and pyrotechnics are required. Current processes utilize hazardous solvents, generate significant quantities of acid or metal wastes and can contaminate our testing and training ranges when used as intended. Alternative materials or methods should provide reductions in hazardous emissions during synthesis, formulation, operations or demilitarization. Improved synthesis methods that eliminate solvents or reduce hazardous waste and generate a material that can be compared to commercial energetic materials should be explored. Novel formulations methods that reduce or eliminate hazardous solvents or that produce less hazardous wastes are of interest. Formulations that do not produce hazardous or toxic emissions when combusted or detonated are needed. Methods to measure and analyze emissions are required. And finally, methods to demilitarize or to design for demilitarization would be of significant interest.

Additional information on our current and past efforts in the area of [energetic materials](#) is available on our website.

Waste and Emissions Reduction

There are several additional waste and emissions streams related to Department of Defense activities and we are interested in the development of technologies that can reduce these emissions. One category deals with the unique requirements for shipboard water treatment. Analytical methods towards understanding bilge and black or grey water treatment on ships remains an area

of interest. In addition, novel treatment methods would also be of interest.

Forward operating bases (FOBs) are a unique military environment. Some FOBs are intended to be maintained for weeks or months and some for years. They must be sustained and provided with all requirements to include food, potable water, and energy. The wastes from FOBs are an important consideration. Food and other wastes should not be open burned and incinerators are not always available. We would be interested in novel ideas or methods to reduce the emissions from FOB operations that could provide clean water or energy.

Additional information on our prior efforts in [waste and emissions reduction](#) can be found on our website.

Firefighting

Development of alternative fluorine free formulations or application technologies to aqueous film forming foams (AFFF) which have the potential to meet current MIL-PRF 24385 F performance requirements.

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