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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2020 Office of the Secretary Of Defense **Date:** February 2019

<b>Appropriation/Budget Activity</b> 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)	<b>R-1 Program Element (Number/Name)</b> PE 0603716D8Z I Strategic Environmental Research and Development Program (SERDP)
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COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	355.287	63.055	76.340	66.157	-	66.157	67.942	62.654	64.610	65.075	Continuing	Continuing
470: Strategic Environmental Research and Development Program (SERDP)	355.287	63.055	76.340	66.157	-	66.157	67.942	62.654	64.610	65.075	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Congress established the Strategic Environmental Research and Development Program (SERDP) in 1990 (10 U.S.C. Section 2901-2904) to address Department of Defense (DoD) and Department of Energy (DOE) environmental concerns. It is conducted as a DoD program, jointly planned and executed by the DoD, DOE, and the Environmental Protection Agency (EPA), with strong participation by other Federal agencies, industry, and academia. SERDP's objective is to improve DoD mission readiness and environmental performance by providing new scientific knowledge and cost-effective technologies in the areas of Environmental Restoration, Munitions Response, Resource Conservation and Resilience, and Weapons Systems and Platforms. SERDP does this by addressing high priority DoD environmental technology requirements. SERDP enhances military operations, improves military systems' effectiveness, enhances military training/readiness, sustains DoD's training and test ranges and installation infrastructure, and helps ensure the safety and welfare of military personnel and their dependents by eliminating or reducing the generation of pollution and use of hazardous materials and reducing the cost of remedial actions and compliance with environmental laws and regulations. As a secondary benefit, SERDP helps solve significant national and international environmental problems. The keys to a growing list of SERDP technological successes are the ability to respond aggressively and proactively to priority defense environmental needs; the pursuit of world-class technical excellence; and an emphasis on constant technology transfer.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	71.832	76.514	75.088	-	75.088
Current President's Budget	63.055	76.340	66.157	-	66.157
Total Adjustments	-8.777	-0.174	-8.931	-	-8.931
• Congressional General Reductions	-7.000	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.652	-			
• FFRDC	-0.125	-0.174	-	-	-
• Chemical Biological Defense Program	-	-	-2.481	-	-2.481
• Realign for A&S Core Mission	-	-	-6.450	-	-6.450

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**Change Summary Explanation**

Changes in support of Chemical Biological Defense Program as well as other A&S core mission requirements.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Office of the Secretary Of Defense										<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603716D8Z / <i>Strategic Environmental Research and Development Program (SERDP)</i>				<b>Project (Number/Name)</b> 470 / <i>Strategic Environmental Research and Development Program (SERDP)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
470: <i>Strategic Environmental Research and Development Program (SERDP)</i>	355.287	63.055	76.340	66.157	-	66.157	67.942	62.654	64.610	65.075	Continuing	Continuing

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**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Title:</b> Environmental Restoration	12.828	22.624	18.485
<b>Description:</b> Environmental Restoration (ER) reduces DoD's liabilities by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water.			
<b>FY 2019 Plans:</b> New research initiatives will focus on the highest priority DoD requirements to reduce DoD's liabilities by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water. The planned increase will support projects related to the detection, quantification, treatment, and bioavailability of per- and polyfluoroalkyl substances.			
<b>FY 2020 Plans:</b> Continue the research into the detection, quantification, treatment, and bioavailability of PFAS (per- and polyfluoroalkyl substances). New projects will be initiated in "fingerprinting" for PFAS.			
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
Completion of initial projects on PFOS and PFOA contamination on DoD installations.			
<p><b>Title:</b> Munitions Response (MR)</p> <p><b>Description:</b> Munitions Response (MR) develops detection, classification, and remediation technologies for Unexploded Ordnance (UXO) to address the significant DoD liability in the Military Munitions Response Program. Investments are also made to improve active range clearance and to reduce generation of UXO during live fire testing and training operations.</p> <p><b>FY 2019 Plans:</b> New research initiatives will focus on the highest priority DoD requirements in underwater UXO detection and protocols to reduce the costs associated with detecting, remediating, or managing UXO underwater with a focus on low-frequency acoustic imaging as a detection/classification system. Several projects will also be initiated aimed at constructing a physics-based model of munitions penetration on land to aid DoD project managers assess the suitability of competing remediation technologies.</p> <p><b>FY 2020 Plans:</b> Detailed analysis of previously-collected low-frequency acoustic data to maximize value in the detection and identification of unexploded ordnance underwater. Two new projects initiated on the mobility and burial of munitions in muddy sediments (as contrasted to the sandy bottoms previously investigated).</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Minor changes in the funding required for the ongoing acoustic system development projects.</p>	7.435	10.962	9.729
<p><b>Title:</b> Resource Conservation and Resilience (RC)</p> <p><b>Description:</b> Resource Conservation and Resilience (RC) develops the science and technologies required to sustain training and testing ranges.</p> <p><b>FY 2019 Plans:</b> New research initiatives will focus on understanding wildfire initiation and spread to construct models to be used by installation natural resource managers in planning their managed fire programs, understanding the role of a changing environment on the management of threatened and endangered species, and resiliency initiatives for installations in the Arctic.</p> <p><b>FY 2020 Plans:</b> In depth examination of the interplay of fire and threatened and endangered species will be continued. New efforts on the definition of a sustainable installation will be initiated.</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b></p>	25.762	21.925	19.458

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
Several projects on the impacts of climate change on Pacific Island installations and the Southwest US have concluded.			
<p><b>Title:</b> Weapons Systems and Platforms (WP)</p> <p><b>Description:</b> Weapons Systems and Platforms (WP) develops technologies and materials that reduce the waste and emissions associated with the manufacturing, maintenance, and use of DoD weapons systems and platforms to reduce future environmental liabilities and their associated costs and impacts.</p> <p><b>FY 2019 Plans:</b> New research initiatives will focus on jet engine noise measurement and control, additive manufacturing for battlefield applications, sustainable pyrotechnics, and corrosion assessment and prediction applied to DoD weapon systems.</p> <p><b>FY 2020 Plans:</b> Initiation of a suite of projects on alternatives to Aqueous Fire Fighting Foam (AFFF) that do not contain fluorine. The current AFFF formulation is a major contributor to the PFAS contamination of DoD Installations.</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> A suite of projects focused on environmentally benign signal flares have concluded.</p>	17.030	20.829	18.485
<b>Accomplishments/Planned Programs Subtotals</b>	63.055	76.340	66.157

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Performance in this program is monitored at two levels. At the lowest level, each of the more than 160 individual projects is measured against both technical and financial milestones on a quarterly and annual basis. At a program-wide level, progress is measured against DoD's environmental requirements and the development of technologies that address these requirements as well as the transition of these technologies to either to demonstration and validation programs or to direct use in the field.