OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2008

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDTE, Defense Wide BA 03	**0603716D8Z - Strategic Environmental Research and Development Program (SERDP)**

COST ($ in Millions)		FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
P470	Strategic Environmental Research and Development Program (SERDP)	62.156	69.071	69.038	70.438	71.388	72.338	73.358

A. Mission Description and Budget Item Justification: (U) 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 by providing new knowledge, cost-effective technologies, and demonstrations in the areas of Environmental Restoration, Munitions Management, Sustainable Infrastructure , and Weapons Systems and Platforms. SERDP does this by (1) addressing high priority, mission- relevant, defense environmental technology needs necessary to enhance military operations, improve military systems` effectiveness, enhance military training/readiness, sustain DoDs training and testing range infrastructure, and help ensure the safety and welfare of military personnel and their dependents; and (2) eliminating or reducing the generation of pollution and use of hazardous materials to reduce operational and life-cycle costs, as well as reducing the cost of necessary remedial actions and compliance with 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 to these priority defense needs; the pursuit of universal, world-class technical excellence; emphasis on constant technology transfer to field use; and sound fiscal management.

B. Program Change Summary	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2008)	63.682	68.874	69.173
Current BES/President's Budget (FY 2009)	62.156	69.071	69.038
Total Adjustments	-1.526	0.197	-0.135
Congressional Program Reductions		-0.603	
Congressional Rescissions			
Congressional Increases		0.800	
Reprogrammings			
SBIR/STTR Transfer	-0.945		
Other	-0.581		-0.135

C. Other Program Funding Summary Not applicable for this item.

D. Acquisition Strategy Not applicable for this item.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
08	DoD Environmental Requirements					

Comment: 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.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2008

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDTE, Defense Wide BA 03	**0603716D8Z - Strategic Environmental Research and Development Program (SERDP)**	**P470**

	COST ($ in Millions)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
P470	Strategic Environmental Research and Development Program (SERDP)	62.156	69.071	69.038	70.438	71.388	72.338	73.358

A. Mission Description and Budget Item Justification: (U) 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 by providing new knowledge, cost-effective technologies, and demonstrations in the areas of Environmental Restoration, Munitions Management, Sustainable Infrastructure , and Weapons Systems and Platforms. SERDP does this by (1) addressing high priority, mission- relevant, defense environmental technology needs necessary to enhance military operations, improve military systems` effectiveness, enhance military training/readiness, sustain DoDs training and testing range infrastructure, and help ensure the safety and welfare of military personnel and their dependents; and (2) eliminating or reducing the generation of pollution and use of hazardous materials to reduce operational and life-cycle costs, as well as reducing the cost of necessary remedial actions and compliance with 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 to these priority defense needs; the pursuit of universal, world-class technical excellence; emphasis on constant technology transfer to field use; and sound fiscal management.

B. Accomplishments/Planned Program:

Accomplishments/Planned Program Title:	FY 2007	FY 2008	FY 2009
Munitions Management (MM):	13.360	15.152	15.910

(U) FY 2007 Accomplishments: Munitions Management (MM):
Investment in munitions management yielded advanced technology to address the most difficult and persistent issues facing our military testing and training lands, ranging from advanced signal processing approaches for improved detection and discrimination to next generation sensors to unexploded ordnance (UXO) filler material identification methods to underwater characterization technologies. Investigators continued to use the two standardized test sites for the demonstration and evaluation of UXO technologies and continued efforts to improve sensor designs and improving detection and discrimination methods. New efforts were initiated in the following areas: technologies to eliminate or mitigate future UXO munitions contamination; advanced electromagnetic and magnetic sensor development; advanced technologies for detection, discrimination, and remediation of munitions and explosives of concern (MEC); and wide area assessment for UXO management on active ranges

(U) FY 2008 Plans: Munitions Management: New initiatives will continue to focus on wide area assessment technologies, advanced sensors, signal processing, supporting technologies and protocols. Notably is the development of more capable sensors and systems for the detection and discrimination of underwater munitions. In addition, projects will be funded in the following areas: advanced discrimination of military munitions exploiting data from the ESTCP discrimination pilot study; improved technologies for wide area assessment of potential munitions response sites; and advanced technologies for detection, discrimination and remediation of military munitions. Continuing efforts include a project to develop model-based, robust methods for UXO discrimination from

time and frequency domain Electromagnetic Induction.

(U) FY 2009 Plans: Munitions Management:
Research initiatives will focus on advancements in underwater UXO detection and discrimination, wide area assessment technologies, advanced sensors, signal processing, supporting technologies and protocols to reduce the costs associated with detecting UXO. New start initiatives will center on cost effective remediation technologies.

Accomplishments/Planned Program Title:	FY 2007	FY 2008	FY 2009
Environmental Restoration:	19.761	19.973	19.369

(U) FY 2007 Accomplishments: Environmental Restoration:
In FY 2007 SERDP-funded research continued to address two major contaminants of concern at DoD facilities: munitions constituents (explosives, propellants and pyrotechnics) found on ranges; and chlorinated solvents (TCE, PCE) found at over half of DoD remediation sites. Significant progress was made in the munitions constituents on ranges and chlorinated solvents areas. Projects were funded with the following objectives: 1) investigate cost-effective in-situ remediation strategies for sediments; 2) improved understanding of the delivery and distribution of remedial materials in the subsurface; 3) develop technologies to assessment the impact of processes on fate and transport of contaminants in sediments; 4) develop new technologies for containment and/or treatment of energetic materials on ranges. The Congressional appropriation included $1,300,000 for at Central Michigan University Research Corporation on Perchlorate Remediation using New Nanoscale Dendritic Polymer Technology.

(U) FY 2008 Plans: Environmental Restoration:
SERDP will improve scientific understanding and develop innovative cost effective methods for the bioremediation of munitions constituents, specifically energetics and nitroaromatic compounds. Additional initiatives will continue work in the areas of source-zone treatment of dense non-aqueous phase liquids, and the phytoremediation of energetic contaminants. Future initiatives that will be funded to ensure the continued use and sustainability of our training ranges include exposure assessments of the fate and transport of energetic materials, and screening level and modeling tools. The knowledge of the potential sources, the movement of residual energetic materials and/or their breakdown products, and the assessment of environmental exposure will assist in total assessment of potential environmental impacts stemming from the use of test and training ranges.

(U) FY 2009 Plans: Environmental Restoration: New initiatives will focus on the remediation of energetics and other contaminants found on testing/training ranges, management of contaminated sediments, and the identification and characterization of new emerging contaminants.

Accomplishments/Planned Program Title:	FY 2007	FY 2008	FY 2009
Sustainable Infrastructure:	16.560	17.907	17.293

(U) FY 2007 Accomplishments: Sustainable Infrastructure:
Sustaining use of military ranges requires SERDP to continue efforts on developing cost effective quantification of impact of military operations on Threatened and Endangered Species and marine mammals, and cost effective control of invasive species on ranges. A highlight of this year's program is the first controlled exposure of marine mammals to underwater sound to determine what, if any, impact military sound sources may have on whales. In FY2007 SERDP continued efforts to: develop methods to identify and control the spread of non-native invasive species (NIS) that may be inadvertently transported by DoD vehicles and/or personnel; determine the fundamental relationships that define migratory land bird habitat and routing; and to understand how these elements can lead to improved monitoring strategies; develop models for biogeochemical cycles that can assist land managers in determining appropriate land uses and land management approaches for

ecosystems; and develop new remote sensing technologies to detect high priority threatened and endangered species (TES) and their habitat(s) on DoD lands. Continued efforts to understand and manage invasive plant species that negatively affect training activities; predicting marine mammal population densities; and developing remote sensing technologies to identify threatened/endangered species habitats to meet requirements of the Endangered Species Act and Migratory Bird Treaty Act. New initiatives included the establishment of the Defense Coastal and Estuarine Research Program at Marine Corps Base Camp LeJeune, developing new techniques for selecting the most effective acquisition of land as buffers for active ranges, understanding the mechanisms of forest decline on installations in the Southeastern US and the impact on habitat, and developing new methods for establishing scientifically defensible population recovery goals for threatened and endangered species.

(U) FY 2008 Plans: Sustainable Infrastructure:
SERDP will continue and initiate new efforts to address persistent issues that severely impact installation readiness and their ability to support force training and testing. SERDP will expand the long-term research efforts at the Defense Coastal and Estuarine Research Program at Camp LeJeune into full scale operation. Research topics include an assessment of the stressors on military lands caused by future larger/centralized force structures, development of new technologies to reduce and/or treat solid waste and develop technologies to safely and effectively dispose of composite materials that come about as a result of manufacturing and repair processes at military depots. New research efforts will begin in the following areas: scalable power grids that facilitate the use of renewable energy technologies; innovative technologies for electricity production from waste heat for deployed forces; managing and restoring the dry forest ecological system in the Pacific islands; impacts of military activities and invasive species on pacific island freshwater and near-shore marine ecosystems; characterization of air emissions from prescribed burning; and innovative approaches for non-destructive sensing and analysis of the integrity of historic buildings and structures

(U) FY 2009 Plans: Sustainable Infrastructure:
Continue efforts to assess stressors on military lands caused by future force structures; developing scientific, defensible threatened and endangered species population goals for installations and surrounding areas; and develop tools to manage biodiversity fragmentation caused by encroachment around military installations. Research initiatives will continue to focus on the sustainability of our training ranges including screening level tools and detailed range management models that minimize impacts to the environment while maximizing training capabilities as well as assessing the impacts of potential sea level rise on military infrastructure.

Accomplishments/Planned Program Title:	FY 2007	FY 2008	FY 2009
Weapons Systems and Platforms:	12.475	16.039	16.466

(U) FY 2007 Accomplishments: Weapons Systems and Platforms:
Continuing efforts focused on eliminating hazardous _red water_ from explosives (TNT) manufacturing, cadmium plating on high-strength steels, and solvents containing Class II ozone depleting substances. SERDP continued work on development of a chromium and VOC free paint systems for platforms, reduction of packaging waste for military items, and environmentally benign synthesis of energetic materials and their precursors. New start efforts were initiated in combustion science to reduce PM emissions for military platforms; environmentally benign approaches for the repair of composites for military applications; biosynthesis of energetic compounds; and advanced military aircraft noise reduction

(U) FY 2008 Plans: Weapons Systems and Platforms:
The Weapons Systems and Platforms program will focus on new efforts will begin in the following areas: Environmentally Benign, High-Strength Fasteners for Weapons Systems; Scientific Understanding of Non-Chromated Corrosion Inhibitors Function; Environmentally Benign Pyrotechnics Assemblies; Self-Remediating Munitions; and Understanding Volatile Particle Emissions from Military Aircraft.

(U) FY 2009 Plans: Weapons Systems and Platforms:

The Weapons Systems and Platforms program will continue to focus on development of _green_ energetics, munitions and weapons systems components as well as innovative life-cycle-based coating systems for military aircraft and land based platforms that eliminates volatile organic compounds, heavy metal constituents, and associated hazardous air pollutants. New initiatives will reduce or eliminate compounds on the Toxic Release Inventory top ten list.

C. Other Program Funding Summary Not applicable for this item.

D. Acquisition Strategy Not applicable for this item.

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs/Centers				
	Army Corps of Engineers	Washington, DC	Funds are provided for U.S. Army staff support to the SERDP Executive Director, Scientific Advisory Board and the SERDP Council; the U.S. Army, U.S. Navy, the U.S. Environmental Protection Agency, the U.S. Department of Energy, the U.S. Department of Agriculture (USDA), and the National Institute of Standards and Technology (NIST) for approved FY 2006 SERDP projects in Munitions Management, Environmental Restoration, Sustainable Infrastructure, and Weapons Systems and Platforms.	Oct 04