ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE
4 - Demonstration/validation	**0603779A - Environmental Quality Technology Dem/Val**

	COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	12880	35030	9331	11694	9623	5125	4927	0	93374
035	NATIONAL DEFENSE CNTR FOR ENVIRO EXCELLENCE-NDCEE	4708	4863	4856	4962	4950	4941	4927	0	38971
04E	ENVIRONMENTAL RESTORATION TECH VALIDATION	0	2608	4264	5427	3317	0	0	0	15616
04F	COMMERCIALIZATION OF TECH TO LOWER DEFENSE COSTS	8172	5559	0	0	0	0	0	0	13731
04J	ENVIRONMENTAL COMPLIANCE TECHNOLOGY VALIDATION	0	0	211	1305	1356	184	0	0	3056
EN1	CASTING EMISSION REDUCTION PROGRAM (CERP)	0	5800	0	0	0	0	0	0	5800
EN2	FORT ORD CLEANUP DEMONSTRATION PROJECT	0	2000	0	0	0	0	0	0	2000
EN3	MANAGING ARMY TECHNOLOGY ENVIRON ENHANCEMENTS	0	1000	0	0	0	0	0	0	1000
EN4	PLASMA ENERGY PYROLYSIS SYSTEM (PEPS)	0	6000	0	0	0	0	0	0	6000
EN5	PORTA BELLA ENVIRONMENTAL CLEANUP	0	2500	0	0	0	0	0	0	2500
EN6	UNEXPLODED ORDNANCE IN SUPPORT OF MILITARY READ	0	3400	0	0	0	0	0	0	3400
EN7	VANADIUM TECHNOLOGY PROGRAM	0	1300	0	0	0	0	0	0	1300

A. Mission Description and Budget Item Justification: There is a broad application potential for environmental quality technology (EQT) to apply to multiple Army weapon systems' applications. Technology must be validated (life-cycle cost and performance data) before potential users will consider exploiting it. This program will include efforts associated with validating the general military utility or cost reduction potential of technology when applied to different types of military equipment or techniques.

It may include evaluations and proof-of-principle demonstrations in field exercises to evaluate upgrades or provide new operational capabilities. The evaluations of technologies will be in as realistic an operating environment as possible to assess their performance or cost reduction potential. EQT demonstration/validation is systemic; i.e., applies to a class of systems (e.g., tanks or aircraft) or to a Department of Army -wide, multiple site/installation problem (e.g., unexploded ordnance detection and discrimination). This program will address, and eventually resource, programs in each of the environmental quality technology pillars (restoration, conservation, compliance, and pollution prevention). Work must be endorsed by potential users and supported by a state-of-the-art assessment (i.e., technology is well-in-hand). Documented evidence must be available to support proposed EQT demonstration/validation projects to validate technology that could satisfy high-priority Army environmental quality RDT&E requirements.

B. Program Change Summary	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002 PB)	13275	7536	9171
Appropriated Value	13397	35136	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reduction	0	-106	0
b. SBIR/STTR	-394	0	0
C. Omnibus or Other Above Threshold Reprogramming	0	0	0
d. Below Threshold Reprogramming	0	0	0
e. Rescissions	-123	0	0
Adjustments to Budget Years Since FY2002 PB	0	0	160
Current Budget Submit (FY 2003 PB)	12880	35030	9331

Change Summary Explanation: Funding: FY 2002 - The following projects were added to this program element by Congress:
- $5,600K for Commercializing Dual Use Technologies (Commercialization of Technology to Lower Defense Costs, Project 04F): The objective of this Congressional add is to facilitate technology transfer by helping small and medium sized enterprises into new Defense and Defense spin-off markets. Appropriate assistance to these firms can result in an increased supply and broader commercial usage of Federal and militarily technologies, thereby lowering Defense procurement costs.

- $5,800K for Casting Emission Reduction Program (CERP), Project EN1: The objective of this Congressional add is to use the National Defense Center for Environmental Excellence (NDCEE) to validate new capabilities to reduce emissions resulting from casting operations associated with DoD materials.
- $2,000K for Fort Ord Cleanup Demonstration Project, Project EN2: The objective of this Congressional add is to support the demonstration and validation of innovative technologies to specifically address the remediation of asbestos and PCBs generated from building removal at Fort Ord, California.
- $1,000K for Managing Army Technology Environmental Enhancement Program, Project EN3: The objective of this Congressional add is to focus work on management oversight of the Army's environmental quality technology program.
- $6,000K for Plasma Energy Pyrolysis System (PEPS), Project EN4: The objective of this Congressional add is to validate the new mobile PEPS unit or move the existing unit to an Army depot for the destruction of hazardous wastes at industrial-scale.
- $2,500K for Porta Bella Environmental Cleanup Technology Demonstration, Project EN5: The objective of this Congressional add is to complete the technology demonstration work at Porta Bella, California.
- $3,400K for Unexploded Ordnance (UXO) in Support of Military Readiness, Project EN6: The objective of this Congressional add is to support validation of identification and discrimination capabilities for buried UXO.
- $1,300K Vanadium Technology Program, Project EN7: The objective of this Congressional add is to begin efforts to validate a capability to extract vanadium for materials found in landfills.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration/validation	**0603779A - Environmental Quality Technology Dem/Val**	**035**

COST (In Thousands)		FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
035	NATIONAL DEFENSE CNTR FOR ENVIRO EXCELLENCE-NDCEE	4708	4863	4856	4962	4950	4941	4927	0	38971

A. Mission Description and Budget Item Justification: This program is managed by the Army on behalf of the Office of the Assistant Deputy Under Secretary of Defense for Environment (ADUSD-ES). NDCEE is used to demonstrate and export environmentally-acceptable technology to industry; validate new technology prior to exporting that technology to industry; and assist in technology transfer. The NDCEE is a DoD resource for environmental quality management and technology validation. Related programs supported by the NDCEE include the Joint Group on Pollution Prevention (JG-PP).

FY 2001 Accomplishments:

- 2856 - Oversaw and validated environmentally acceptable technologies for potential exploitation at DoD facilities/installations.
  - Support pollution prevention efforts in acquisition (JG-PP).
- 1852 - Validated technologies that improve DoD's industrial pollution prevention and compliance technical capability for coatings, platings, sealants, and for heavy metals reduction/elimination from surface protection processes.
  - Increased capabilities in technical data and modeling using existing capabilities in visualization and 3-D modeling.

Total 4708

FY 2002 Planned Program

- 2880 - Oversee and validate environmentally acceptable technologies for potential exploitation at DoD facilities/installations.
  - Support pollution prevention efforts in acquisition (JG-PP).
- 1983 - Validate technologies that improve DoD's industrial pollution prevention and compliance technical capability for coatings, platings, sealants, and for heavy metals reduction/elimination from surface protection processes.

Total 4863

FY 2003 Planned Program

- 2878 - Oversee and validate environmentally acceptable technologies for potential exploitation at DoD facilities/installations.
  - Support pollution prevention efforts in acquisition (JG-PP).
- 1978 - Continue validation of technologies that improve DoD's industrial pollution prevention, compliance, and restoration technical capability for coatings, platings, sealants, and to reduce/eliminate heavy metals from surface protection processes, and unexploded ordnance remediation.

  - Support weapon system acquisition and sustainment associated with life-cycle environmental management during development, testing, manufacturing, operation, maintenance, and disposal.
  - Support related issues such as energy management, safety and occupational health considerations of weapon systems, and life-cycle cost assessments/analyses.

Total 4856

B. Other Program Funding Summary: Not applicable for this item.

C. Acquisition Strategy: Not applicable for this item.

D. Schedule Profile: Not applicable for this item.

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

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035

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Not applicable for this item			0	0		0		0		0	0	0
Subtotal:			0	0		0		0		0	0	0

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Technical Data	CPFF	Concurrent Technologies Corporation, Johnstown, PA (FY01)	1155	1162	2Q	1148	1Q	1188	1Q	Continue	4653	Continue
Subtotal:			1155	1162		1148		1188		Continue	4653	Continue

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603779A - Environmental Quality Technology Dem/Val

PROJECT
035

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Development Testing	CPFF	Concurrent Technologies Corporation, Johnstown, PA (FY01)	1109	1190	4Q	1983	2Q	1978	2Q	Continue	Continue	Continue
Subtotal:			1109	1190		1983		1978		Continue	Continue	Continue

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Management Support	ALLOT	OASA(I&E)	2500	2356		1732		1690		Continue	8278	Continue
Subtotal:			2500	2356		1732		1690		Continue	8278	Continue
Project Total Cost:			4764	4708		4863		4856		Continue	Continue	Continue

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration/validation	**0603779A - Environmental Quality Technology Dem/Val**	**04E**

COST (In Thousands)		FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
04E	ENVIRONMENTAL RESTORATION TECH VALIDATION	0	2608	4264	5427	3317	0	0	0	15616

A. Mission Description and Budget Item Justification: Unexploded Ordnance (UXO) Identification and Discrimination. The Army reported in the 1996 UXO Report to Congress that 72 installations have identified 531,167 acres of land known to be contaminated with UXO and 940,438 acres of suspected contamination. In addition, formerly used defense sites, many of which may no longer be under military ownership, may also have buried UXO. Current technologies are very expensive and often cannot accurately discriminate between UXO and exploded ordnance/scrap metal masses in historical and active ranges, impact areas, landfills, underground storage locations, and open burning and open detonation sites. Technologies must be developed that are non-intrusive, accurately identify UXO from scrap and shrapnel, and identify the orientation, configuration, and type of UXO. The development of identification/discrimination technologies is critical to increasing the safety to remove UXO, design appropriate removal operations, and decrease removal costs. The purpose is to demonstrate and validate a UXO detection, discrimination, and identification system that minimizes residual risk and significantly reduces remediation costs. The activities funded under this project implement the 1996 UXO Report to Congress and the 1998 Defense Science Board requirements to improve UXO discrimination capabilities by reducing false alarm rates tenfold while achieving greater than 90% probability of detection of a wide range of UXO in a variety of environmental and geologic conditions. The system will consist of arrays of sensors specifically designed to provide reliable signatures of buried UXO and advanced sensor fusion/signal analysis technologies that will allow robust discrimination and identification of buried UXO in the presence of man-made and natural clutter. This demonstration/validation program will be performed in stages, with prototype systems that incorporate the more mature technologies [magnetometry and multi-channel electro-magnetic induction (EMI)] being evaluated during the first year. Starting in FY 2003, ground penetrating radar (GPR) and chemical and seismic/acoustic sensors will be integrated into the system as they mature.

FY 2001 Accomplishments:

- Program not funded in FY 2001.

FY 2002 Planned Program

- 1500 - Begin validation of prototype system that integrates advanced magnetometry and EMI sensors with fusion/analysis algorithms to improve buried UXO detection, discrimination, and identification at well-characterized controlled sites.
- 1108 - Begin live site demonstration and validation of prototype UXO multisensor and analysis system.

Total 2608

FY 2003 Planned Program

- 1000 - Complete controlled and live site demonstration and validation of prototype UXO multisensor and analysis system.
- 1000 - Integrate advanced sensors in prototype UXO multisensor and analysis system.
- 1164 - Begin validation of prototype system that integrates advanced sensors with fusion/analysis algorithms to improve buried UXO detection, discrimination, and identification at well-characterized controlled sites.
- 1100 - Begin live site demonstration and validation of enhanced prototype UXO multisensor and analysis system.

Total 4264

B. Other Program Funding Summary: Not applicable for this item.

C. Acquisition Strategy: Not applicable for this item.

D. Schedule Profile: Not applicable for this item.

ARMY RDT&E COST ANALYSIS(R-3)

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BUDGET ACTIVITY
4 - Demonstration/validation

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PROJECT
04E

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Validate developed or commercially available technologies to descriminate and identify buried UXO.	BAA and CPFF	TBD	0	0		500		650		1500	2650	0
b . In-House Development - Integration of sensors, hardware/software, & navigation system into prototype	In-house	Army Environmental Center (AEC), Aberdeen Proving Ground, MD	0	0		750	1Q	984	1Q	2118	3852	0
Subtotal:			0	0		1250		1634		3618	6502	0

Remarks: Performing activity and location to be determined through input by the Environmental Quality Technology (EQT) UXO Identification and Discrimination Coordinating Committee. Army Environmental Center will consider input from the coordinating committee and determine the appropriate executing organization and location depending on the product to be demonstrated.

ARMY RDT&E COST ANALYSIS(R-3)

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BUDGET ACTIVITY
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04E

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Contractor(s) support at test site(s) to facilitate the validation of technologies,	BAA and CPFF	TBD	0	0		250		500		1000	1750	0
b . In-House Development - Preparation of Test Sites	In-House	AEC	0	0		370	1Q	680	1Q	1021	2071	0
Subtotal:			0	0		620		1180		2021	3821	0

Remarks: Performing activity and location to be determined through input by the Environmental Quality Technology (EQT) UXO Identification and Discrimination Coordinating Committee. Army Environmental Center will consider input from the coordinating committee and determine the appropriate executing organization and location depending on the product to be demonstrated.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Test & evaluate the effectiveness of potential technologies to discriminate & identify buried UXO.	BAA and CPFF	TBD	0	0		277		540		1500	2317	0
b . In-House Development - Planning and Execution	In-House	AEC	0	0		261	1Q	510	1Q	620	1391	0

ARMY RDT&E COST ANALYSIS(R-3)

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BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603779A - Environmental Quality Technology Dem/Val

PROJECT
04E

III. Test and Evaluation (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		538		1050		2120	3708	0

Remarks: Performing activity and location to be determined through input by the Environmental Quality Technology (EQT) UXO Identification and Discrimination Coordinating Committee. Army Environmental Center will consider input from the coordinating committee and determine the appropriate executing organization and location depending on the product to be demonstrated.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . In-house Management (ERDC)	MIPR	Engineer Research and Development Center (ERDC), Vicksburg, MS	0	0		100		200		650	950	0
b . In-House Management (AEC)	In-House	AEC	0	0		100		200		335	635	0
Subtotal:			0	0		200		400		985	1585	0

Remarks: Performing activity and location to be determined through input by the Environmental Quality Technology (EQT) UXO Identification and Discrimination Coordinating Committee. Army Environmental Center will consider input from the coordinating committee and determine the appropriate executing organization and location depending on the product to be demonstrated.

Project Total Cost:			0	0		2608		4264		8744	15616	0