Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603779A *I Environmental Quality Technology - Dem/Val*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	22.491	76.749	31.720	-	31.720	26.880	22.724	22.312	22.571	0.000	225.447
035: *National Defense Cntr For Enviro Excellence*	-	5.125	6.661	6.204	-	6.204	6.271	6.343	6.411	6.488	0.000	43.503
DH6: *Installation Resilience*	-	-	-	3.013	-	3.013	3.017	2.013	2.015	2.017	0.000	12.075
E21: *Environmental Quality Technology Dem/Val*	-	17.366	70.088	22.503	-	22.503	17.592	14.368	13.886	14.066	0.000	169.869

A. Mission Description and Budget Item Justification

There is broad potential application for environmental quality technology (EQT) to be applied to multiple Army weapon systems and installations. However, technology must be demonstrated and validated (total ownership cost and performance data identified) before potential users will consider exploiting it. This Program Element (PE) includes Projects focused on validating the general military utility or cost reduction potential of technology when applied to different types of infrastructure, military equipment or techniques. It may include validations and proof-of-principle demonstrations in field exercises to evaluate upgrades or provide new operational capabilities. The validation of technologies will be in as realistic an operating environment as possible to assess performance or cost reduction potential. EQT demonstration/ validation is systemic and applicable across Department of Army sites and installation problems (e.g. unexploded ordnance detection and discrimination). This PE supports the Army's top modernization priorities by addressing potential obsolescence of legacy materials and current and emerging impacts on human health and the environment. All work is endorsed by potential users and supported by a state-of-the-art assessment to determine when the technology can transition to the user for implementation.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	22.921	31.249	25.335	-	25.335
Current President's Budget	22.491	76.749	31.720	-	31.720
Total Adjustments	-0.430	45.500	6.385	-	6.385
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	45.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.430	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	6.385	-	6.385

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603779A *I Environmental Quality Technology - Dem/Val*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: E21: *Environmental Quality Technology Dem/Val*		
Congressional Add: *Program Increase - Wire-Arc Additive Manufacturing (DEVCOM)*	5.000	20.000
Congressional Add: *Program Increase - Friction Stir Additive Manufacturing (DEVCOM)*	-	15.000
Congressional Add: *Program increase - Biopolymers for military infrastructure*	3.000	3.000
Congressional Add: *Program increase - Underwater cut and capture*	3.000	7.500
Congressional Add Subtotals for Project: E21	11.000	45.500
Congressional Add Totals for all Projects	11.000	45.500

Change Summary Explanation

Funding increase reflects planned of efforts to support installation resilience.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / *Environmental Quality Technology - Dem/Val*	Project (Number/Name) 035 / *National Defense Cntr For Enviro Excellence*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
035: *National Defense Cntr For Enviro Excellence*	-	5.125	6.661	6.204	-	6.204	6.271	6.343	6.411	6.488	0.000	43.503
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The National Defense Center for Environmental Excellence (NDCEE) was established by Congress in 1990 with a directive to "serve as a national leadership organization to address high priority environmental problems for the Department of Defense (DoD), other government organizations, and the industrial community." In May 2008, the Program was re-designated from the National Defense Center for Environmental Excellence to the National Defense Center for Energy and Environment to ensure that the Center's mission recognizes and addresses the strategic interdependence of energy and environmental technology requirements within an overall sustainability framework in support of our installations, weapons systems and war fighters. This name change also directly supports the DoD's proactive implementation of Executive Order 13423, "Strengthening Federal Environmental, Energy and Transportation Management." The NDCEE Program has evolved into a national resource for demonstrating, validating and transitioning innovative Environmental, Safety & Occupational Health and Energy (ESOHE) technologies. This Program is managed by the Army on behalf of the Assistant Secretary of Defense for Sustainment.

The United States (U.S.) Army's broadly encompassing and growing mobile, personal and stationary technological requirements include: infrastructure, alternative and synthetic energy, training lands, emerging contaminates, transportation, systems integration, personnel well-being, and others. Further, to train as we fight, validated ESOHE technologies need to be available and implemented at Army installations. The NDCEE will continue to demonstrate, validate, and transfer these technologies supporting our integrated environment, energy, safety, occupational health and energy objectives to enable mission, readiness, innovation, lethality and modernization to ensure our Soldiers maintain a technological advantage over our adversaries.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Conduct demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs.	4.751	5.116	4.640
Description: NDCEE supports the demonstration and validation of mature (BA4) environment, safety, occupational health, and energy technologies that support the mission requirements. The objective is to invest in innovative technologies that support military mission/readiness, employ a high degree of technical fidelity, have a high potential for transition success, and align with modernization goals.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** 035 / *National Defense Cntr For Enviro Excellence*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding will be provided for projects selected the previous year and still require funds; projects are generally completed within two years. The NDCEE Program Management Office will coordinate the project selection process for potential FY 2023 new project starts. Technologies will be selected by the NDCEE project selection committee and approved by the NDCEE Executive Agent. ***FY 2024 Plans:*** Will fund the NDCEE program management during comprehensive NDCEE lifecycle, including project cultivation and identification, screening, selection, execution, reporting, and technology transfer. Includes contracting office support for contract closeouts, travel to conduct program management oversight, and program coordination and education to DoD stakeholders. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decreased based of annual cost adjustments			
Title: NDCEE Government program management during contract negotiations and during project formulation, execution, and technology transfer. ***Description:*** Funds the NDCEE Government program management during comprehensive NDCEE lifecycle, including project cultivation and identification, screening, selection, execution, and technology transition. ***FY 2023 Plans:*** Will fund the NDCEE program management during comprehensive NDCEE lifecycle, including project cultivation and identification, screening, selection, execution, reporting, and technology transfer. Includes contracting office support for contract closeouts, travel to conduct program management oversight, and program coordination and education to DoD stakeholders. ***FY 2024 Plans:*** Will fund the NDCEE program management during comprehensive NDCEE lifecycle, including project cultivation and identification, screening, selection, execution, reporting, and technology transfer. Includes contracting office support for contract closeouts, travel to conduct program management oversight, and program coordination and education to DoD stakeholders. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased based of annual cost adjustments	0.374	1.308	1.564
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	0.237	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** 035 / *National Defense Cntr For Enviro Excellence*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	5.125	6.661	6.204

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The NDCEE is a national asset focused on DoD applications that include technology transfer to appropriate DoD transition partners. The management strategy for the NDCEE ensures that all projects have a potential multi-service benefit and have a high potential for transition success. At the strategic level, the NDCEE Executive Advisory Board (EAB) is chaired by the DoD NDCEE Lead Agent on behalf of the Assistant Secretary of Defense for Sustainment and is representative of the services and DoD. The EAB and the Program Director are supported by the NDCEE Technical Advisory Group (TAG) to help ensure that NDCEE investments are maximized across DoD and the Services. At the tactical level, the three Focus Groups (environment, safety/occupational health, and energy) cultivate and recommend priority projects to the TAG and Project Selection Committee for funding. Transition Partners ensure that NDCEE's investments are carried forward in the next phases of the Research Development Test and Evaluation process, as identified in each funded project's Technology Transition Agreement.

NDCEE projects enable readiness for the Services under increasingly complex and demanding scenarios. The interdependency of national security with energy supply and costs, water supply and costs, environmental resiliency, and human health and safety are clear and NDCEE projects provide forward-looking solutions to these challenges. Failure to further fund and validate promising technologies that are at the mature or Commercial-off-the-Shelf stage, would result in lost modernization opportunities and validation before they go into a military environment. These initiatives need to be carried forward into an operational/realistic testing environment so that they can support mission readiness and training when ultimately fielded to the Services.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / *Environmental Quality Technology - Dem/Val*	Project (Number/Name) 035 / *National Defense Cntr For Enviro Excellence*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	MIPR	AEC : San Antonio, TX	25.433	0.374	Nov 2022	1.308	Oct 2022	1.564		-		1.564	Continuing	Continuing	Continuing
SBIR/STTR Transfer	TBD	Various : Various	3.000	-		0.237		-		-		-	0.000	3.237	-
		Subtotal	28.433	0.374		1.545		1.564		-		1.564	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Testing and Evaluation	Various	Various : Various	51.223	4.751	Jan 2023	5.116	Oct 2022	4.640	Oct 2022	-		4.640	Continuing	Continuing	Continuing
		Subtotal	51.223	4.751		5.116		4.640		-		4.640	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	79.656	5.125		6.661		6.204		-		6.204	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** 035 / *National Defense Cntr For Enviro Excellence*

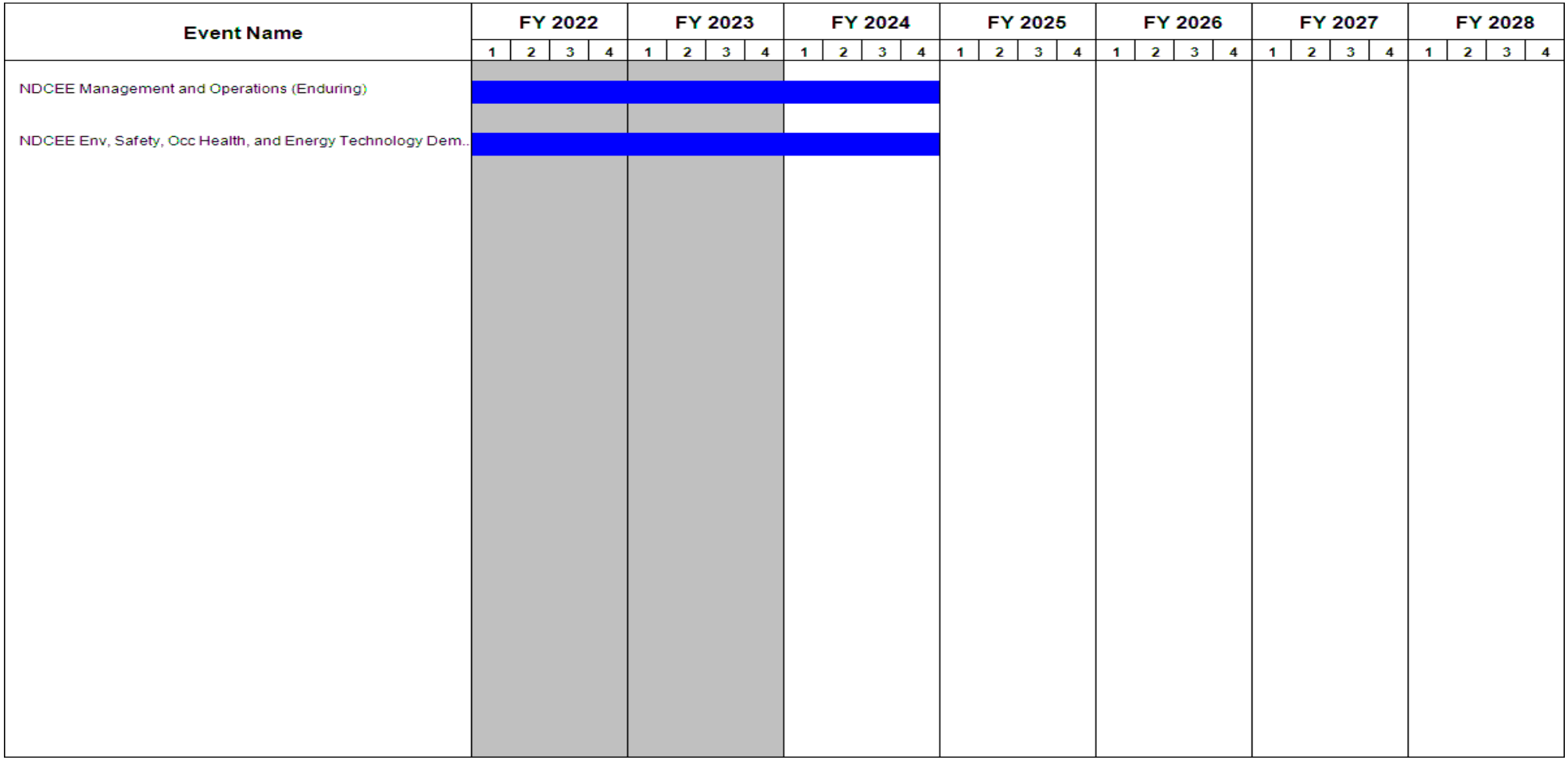

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** 035 / *National Defense Cntr For Enviro Excellence*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NDCEE Management and Operations (Enduring)	1	2019	4	2024
NDCEE Env, Safety, Occ Health, and Energy Technology Dem/Val (Enduring)	1	2019	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / *Environmental Quality Technology - Dem/Val*	Project (Number/Name) DH6 / *Installation Resilience*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
DH6: *Installation Resilience*	-	-	-	3.013	-	3.013	3.017	2.013	2.015	2.017	0.000	12.075
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Installation Resilience is a new start within the Environmental Quality Technology - Dem/Val program in FY 2024.

In Fiscal Year (FY) 2024, this Project is a New Start.

A. Mission Description and Budget Item Justification

This Project demonstrates and validates technologies to advance resiliency across Army installations, improving operations management, increasing efficient energy practices, and enhancing Army infrastructure. This Project demonstrates systems and tools which aim to better inform installation manager decisions on operational planning, management of facilities, and associated infrastructure components. This research will integrate developing technologies to provide the Army with new capabilities, decreased cost, and enhanced operations for resilient installations. This effort will streamline operations of critical infrastructure components and optimize developing systems to support Army objectives and provide actionable information to the user community.

The cited work is consistent with the Army Installations Strategy and the Army Climate Strategy.

Work in this Project is performed by the United States Army Engineer Research and Development Center.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Installation Composting for Land Resilience	-	-	3.013
Description: This effort will evaluate current compost operations for Best Management Practices and demonstrate efficacy for Army installations to operate compost systems to reduce Army cost associated with disposal of solid waste, enabling installations to have a set of tools and procedures unique to their environment. ***FY 2024 Plans:*** Will validate best management practices from current on-post compost operations and create standard operating procedures for other installations to follow; will begin validation of degradation of two compostable materials. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase reflects planned initiation of this effort in FY24.			
Accomplishments/Planned Programs Subtotals	-	-	3.013

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** DH6 / *Installation Resilience*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** DH6 / *Installation Resilience*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Installation Composting for Land Resilience	MIPR	Varies : Varies	-	-		-		3.013		-		3.013	0.000	3.013	-
		Subtotal	-	-		-		3.013		-		3.013	0.000	3.013	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		-		3.013		-		3.013	0.000	3.013	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** DH6 / *Installation Resilience*

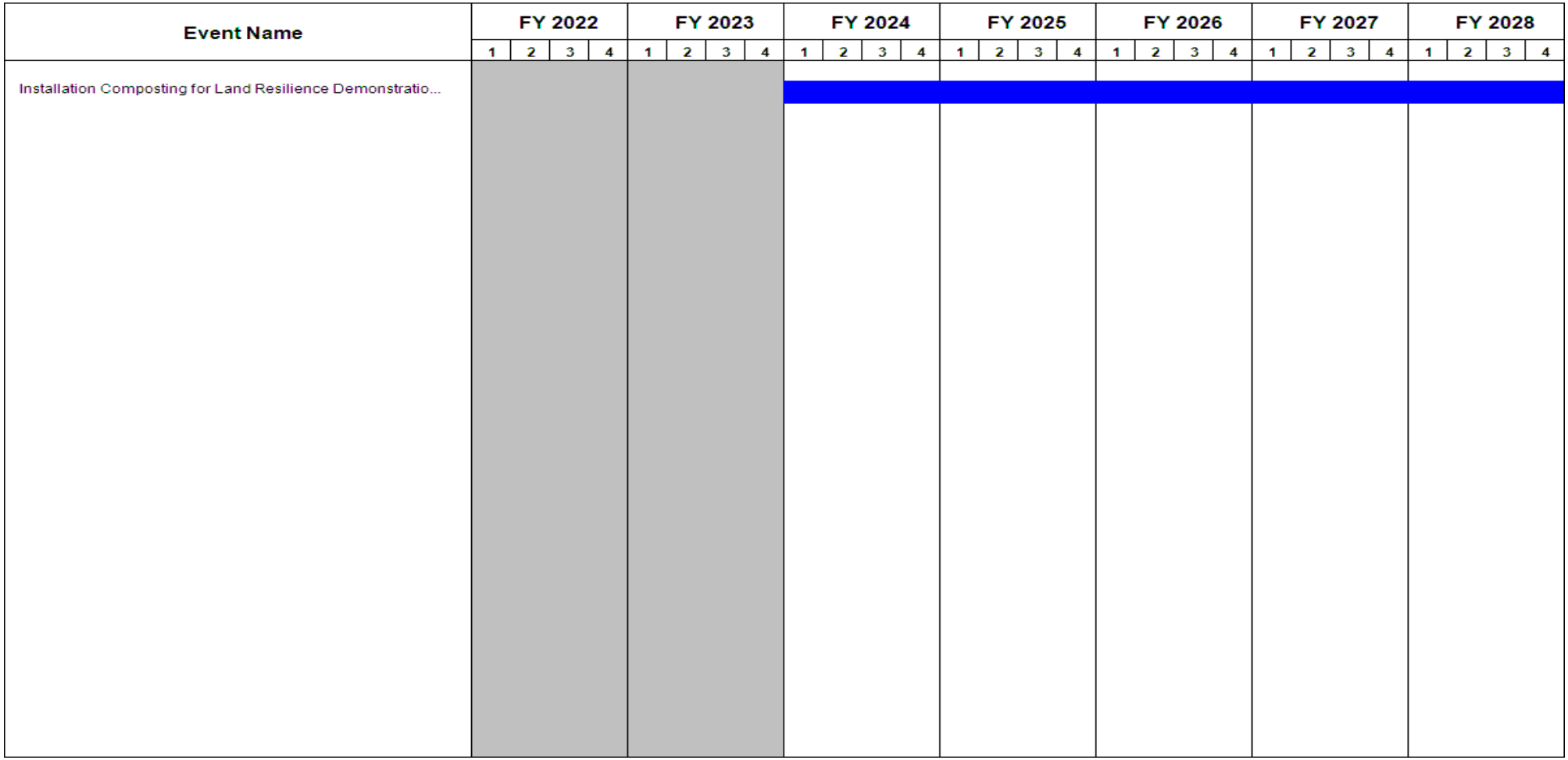

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** DH6 / *Installation Resilience*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Installation Composting for Land Resilience Demonstration and Validation	1	2024	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / *Environmental Quality Technology - Dem/Val*	Project (Number/Name) E21 / *Environmental Quality Technology Dem/Val*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
E21: *Environmental Quality Technology Dem/Val*	-	17.366	70.088	22.503	-	22.503	17.592	14.368	13.886	14.066	0.000	169.869
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports Advanced Component Development and Prototypes of innovative environmental quality technologies that modernize materials and processes required for current and future operational sustainment and warfighter training capabilities. The Project showcases technologies that increase life safety, reduce Soldier and worker human health risks, enhance readiness and enable mission capabilities of the current and future force with a focus on eliminating the high priority issues associated with global warming, hexavalent chromium, cadmium and airborne lead through material substitution. The Project expedites technology transition from the laboratory to operational use by demonstrating modern materials and processes to fulfill or surpass the performance requirements outlined in Material Specifications, Depot Maintenance Work Requirements, Technical Manuals, Drawings and other technical data. Forward-looking materials and processes demonstrated under this project support the Cross Functional Teams and the Army's top modernization priorities by addressing potential obsolescence of legacy materials and current and emerging impacts on human health and the environment. Modernized materials and processes have the additional benefit of reducing the impacts due to climate change, future regulatory compliance and cleanup requirements while simultaneously increasing performance and standardization across the Army, resulting in significantly reduced life cycle costs incurred by acquisition, industrial base and installation end users.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Environmental quality technology demonstration and validation: Toxic Metal Reduction in Surface Finishing of Army Weapon Systems (DEVCOM)	2.286	2.453	1.445
Description: Increase operational readiness and reduce Soldier and worker human health risks by reducing or eliminating the use of cancer-causing hexavalent chromium, cadmium and associated toxic materials used in surface finishing processes for the current and future force. These Safer Alternatives for Readiness (SAFR) technologies will be used to provide superior corrosion and wear protection for components used on Future Vertical Lift and Next Generation Combat Vehicles and enable increased performance/extended barrel life for Long Range Precision Fire systems.			
FY 2023 Plans: Demonstrate mixed mating of zinc-nickel and cadmium plated electrical connectors; conduct testing to enable modernization of surface finishing and electroplating processes to support next generation clean manufacturing technologies.			
FY 2024 Plans: Will demonstrate hybrid/wire arc additive manufacturing processes for manufacturing of large parts; will demonstrate hexavalent chromium-free post treatment sealers for zinc, zinc nickel, and aluminum anodize.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *Environmental Quality Technology Dem/Val*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY24 decrease reflects planned lifecycle for this effort.			
Title: Environmental quality technology demonstration and validation: Airborne Lead Reduction from Army Weapon Systems (DEVCOM) ***Description:*** Sustain Soldier training readiness, maintain/restore training capability at ranges closed due to dangerous levels of lead exposure and increase life safety and protection of human health on Army installations by reducing or eliminating the use of toxic lead compounds - which are known to cause damage to central nervous, cardiovascular and immune systems with long-term effects for children, as well as potential developmental impacts, including IQ loss, behavioral issues and hearing loss - in rocket and missile propellants and primary explosives (primers/detonators/initiators) for the current and future force. These Safer Alternatives for Readiness (SAFR) will provide a domestic, readily available source for lead-free primary explosives used in all Long Range Precision Fires and Soldier Lethality systems. ***FY 2023 Plans:*** Demonstrate a lead-free primer in medium caliber ammunition; support pilot production, static and ground flight test for lead-free extruded rocket motor. ***FY 2024 Plans:*** Will demonstrate alternatives to lead thiocyanate and antimony sulfide in primers; will support automated pilot scale production of lead-free primer/detonator formulations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease reflects planned lifecycle for this effort.	2.326	3.965	2.591
Title: Environmental quality technology demonstration and validation: Low Global Warming Potential (LGWP) Alternatives to Ozone Depleting Substances (ODS) (DEVCOM) ***Description:*** Evaluate low GWP ODS alternatives being developed by industry to assess their toxicity and flammability hazards and verify their acceptability in military unique refrigeration and fire suppression applications. These Safer Alternatives for Readiness (SAFR) technologies will support all Future Vertical Lift and Next Generation Combat Vehicle systems. ***FY 2023 Plans:*** Demonstrate alternative, low/no GWP refrigerant agents with high potential to meet safety and performance requirements for next generation mobile air conditioning systems. ***FY 2024 Plans:***	0.221	0.264	0.156

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *Environmental Quality Technology Dem/Val*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Will demonstrate secondary loop system to safely incorporate HFO-1234yf as an alternative low GWP refrigerant into mobile air conditioning units away from crew-occupied spaces; will demonstrate alternative, low/no GWP refrigerants for use in next generation refrigeration units for Multi-Temperature Refrigerated Container Systems (MTRCS). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease reflects planned lifecycle for this effort.			
Title: SBIR/STTR Transfer (DEVCOM) ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.897	-
Title: Environmental quality technology demonstration and validation: Environmental Toolkit for Expeditionary Operations (USACE) ***Description:*** Conduct pilot-scale demonstration and validation studies to determine the effectiveness of basic technologies/ methods developed for rapidly collecting environmental data in the field for the purposes of reducing impact of environmental requirements on installations. Demonstrate the ability of ETEO software to communicate easily with new, commercially available sensors through simple device driver (with minimal or no development). Assess available chemical databases on the new sensor for their ability to detect and quantify environmental contaminants. Demonstrate the operational ETEO software and sensors at designated locations.	0.539	-	-
Title: Decontamination Effluent Treatment System (DETS) Demonstration/Validation (USACE) ***Description:*** Demonstrate and validate the Decontamination Effluent Treatment System (DETS), an optimized scalable system for the treatment of Chemical, Biological, Radioactive, & Nuclear (CBRN) decontamination wastewater, while exploring enhancements to improve performance.	0.594	-	-
Title: Engineered Technologies for Risk Mitigation and Management of Perfluorooctane Sulfonate and Perfluorooctanoic Acid (PFOS/PFOA) on Army Installations (USACE) ***Description:*** Demonstrate and validate technologies such as 3D printed composite structures and advanced materials for remediation and monitoring of PFAS, novel methods for PFAS destruction, rapid risk -based classification and characterization computational models, and monitoring and extraction technologies including PFAS sensors.	0.400	3.323	2.607

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *Environmental Quality Technology Dem/Val*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: Will validate PFAS Effluent Treatment System (PETS) to decontaminate existing PFAS contaminated fire suppression infrastructure and begin demonstration of capabilities such as Thermal Desorption, Soil Washing (Multiple Technologies) to effectively remove PFOS/PFOA contamination in a variety of matrices. Will Demonstrate PFOS/PFOA removal technologies across a variety of matrices comparing removal efficiency, cost balance, regulatory guidelines and limits of detection. ***FY 2024 Plans:*** Will down select and validate emerging technologies demonstrated in prior year to be efficient and scalable for removal of PFOS/PFOA contamination, technologies may include Thermal Desorption, Soil Washing (Multiple Technologies). Validation of selected PFOS/PFOA removal technologies across a variety of matrices comparing removal efficiency, cost balance, regulatory guidelines and limits of detection. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease funding change reflects the planned lifecycle for this effort to enable validation of multiple technologies (3-4) down selected from prior year demonstration.			
Title: Carbon Sequestration Toolkit for DoD Lands (USACE) ***Description:*** Demonstrate and validate a comprehensive secure web-based toolkit for maximized carbon storage and management across the DOD landscape. ***FY 2023 Plans:*** Will demonstrate visualization model for carbon sequestration potential across DoD installation lands using spatial data, high-resolution data inputs, and terrain and soil analytics. ***FY 2024 Plans:*** Will evaluate model accuracy and precision by incorporating higher temporal and spatial resolution imagery and improved terrain and soil analytics. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease funding change reflects the planned lifecycle for this effort to incorporate spatial resolution imagery and improved soil analytics.	-	5.166	3.106
Title: Standards for Additive Construction: Requirements, Assessment and Documentation (USACE) ***Description:*** Validate unified facility criteria and standards for additive construction of DoD infrastructure to meet structural, serviceability and resiliency requirements and evaluate the additive construction technology and materials for carbon reduction impacts.	-	2.320	5.632

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *Environmental Quality Technology Dem/Val*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: Will validate specifications and requirements for additive construction by conducting materials and structural testing with focus on meeting strength, serviceability and durability requirements. ***FY 2024 Plans:*** Will test and evaluate Additive Construction methodologies and guidance for climate zones by characterizing material and fossil fuel usage, life-cycle assessments, and embodied energy/GHG emissions. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 funding increase reflects the planned lifecycle for this effort for evaluating Additive Construction methodologies.			
Title: Mitigation of GHG Emissions for DOD Construction Materials and Infrastructure (USACE) ***Description:*** Demonstrate and validate sustainable and cost-effective DoD construction materials with 50% reduction in greenhouse gas emissions. ***FY 2023 Plans:*** Will evaluate drivers for embodied energy and provide action plans for criteria changes with positive quantifiable impacts on MILCON embodied energy. ***FY 2024 Plans:*** Will initiate and develop innovative partnerships to transfer industry technology on reduced life-cycle embodied energy, carbon capture, and carbon sequestration to meet the needs of DoD applications. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease funding change reflects the planned lifecycle for this effort to validate sustainable and cost-effective DoD construction materials.	-	6.200	5.436
Title: Expeditionary Island Power (DEMO) ***Description:*** This effort demonstrates advanced operational energy storage technology that is interoperable with current and future Army, Joint and partner energy generation systems that support installations and contingency locations, streamlines the energy infrastructure, increases renewable energy, reduces fuel and logistics demand, and optimizes operational energy storage. ***FY 2024 Plans:*** Will demonstrate a secondary distribution center with microgrid at Ft Leonard Wood with the Army Prime Power School. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	-	1.530

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Initiate efforts for evaluating power efficiencies and reduction GHG emissions.			
Accomplishments/Planned Programs Subtotals	6.366	24.588	22.503

	FY 2022	FY 2023
Congressional Add: Program Increase - Wire-Arc Additive Manufacturing (DEVCOM) ***FY 2022 Accomplishments:*** Congressional Interest Item ***FY 2023 Plans:*** Congressional Interest Item	5.000	20.000
Congressional Add: Program Increase - Friction Stir Additive Manufacturing (DEVCOM) ***FY 2023 Plans:*** Congressional Interest Item	-	15.000
Congressional Add: Program increase - Biopolymers for military infrastructure ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for soil strengthening technologies in uncontrolled environments. ***FY 2023 Plans:*** Congressional Interest Item funding for soil strengthening technologies in uncontrolled environments.	3.000	3.000
Congressional Add: Program increase - Underwater cut and capture ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for high-pressure waterjet cut and capture technology. ***FY 2023 Plans:*** Congressional Interest Item funding for high-pressure waterjet cut and capture technology.	3.000	7.500
Congressional Adds Subtotals	11.000	45.500

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• 06I: *Environmental Quality Technology Support*	0.428	0.491	0.307	-	0.307	-	-	-	-	0.000	1.226

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *Environmental Quality Technology Dem/Val*

D. Acquisition Strategy

The project ultimately transitions successfully demonstrated environmental quality technologies to Army acquisition, industrial base and installation end users. All technology efforts address environmental requirements identified by the Army acquisition, industrial base and installation user communities. Efforts approved by senior Army environmental leadership receive Advanced Component Development and Prototype funding to fully demonstrate and validate the technology for transition to end users for follow on implementation.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *Environmental Quality Technology Dem/Val*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Conduct Demonstrations	MIPR	Varies : Varies	62.361	6.366	Oct 2021	24.588	Oct 2022	22.503	Oct 2023	-		22.503	Continuing	Continuing	Continuing
Program Increase - Wire Arc Additive Manufacturing (DEVCOM)	TBD	TBD : TBD	-	11.000	Apr 2022	20.000	Feb 2023	-		-		-	0.000	31.000	-
Program Increase - Friction Stir Additive Manufacturing (CEVCOM)	TBD	TBD : TBD	-	-		15.000	Feb 2023	-		-		-	0.000	15.000	-
Program increase - Underwater cut and capture	TBD	TBD : TBD	-	-		7.500		-		-		-	0.000	7.500	-
Program increase - Biopolymers for military infrastructure	TBD	TBD : TBD	-	-		3.000		-		-		-	0.000	3.000	-
		Subtotal	62.361	17.366		70.088		22.503		-		22.503	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	62.361	17.366		70.088		22.503		-		22.503	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *Environmental Quality Technology Dem/Val*

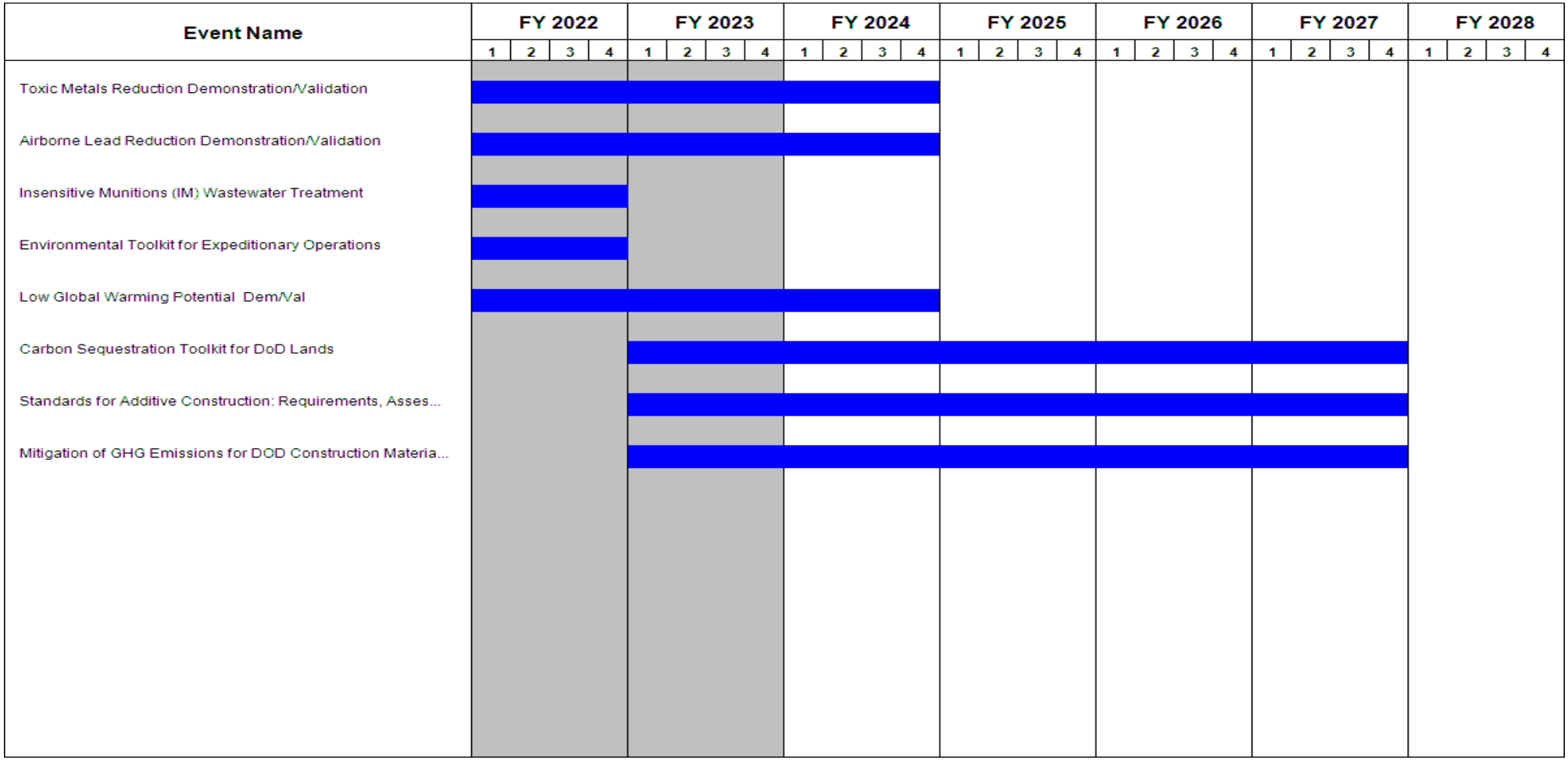

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *Environmental Quality Technology Dem/Val*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Toxic Metals Reduction Demonstration/Validation	1	2015	4	2024
Airborne Lead Reduction Demonstration/Validation	1	2015	4	2024
Insensitive Munitions (IM) Wastewater Treatment	1	2019	4	2022
Fate and Risk Evaluation System for Contaminants	1	2020	4	2021
Environmental Toolkit for Expeditionary Operations	1	2020	4	2022
Low Global Warming Potential Dem/Val	1	2019	4	2024
Carbon Sequestration Toolkit for DoD Lands	1	2023	4	2027
Standards for Additive Construction: Requirements, Assessment and Documentation	1	2023	4	2027
Mitigation of GHG Emissions for DOD Construction Materials and Infrastructure	1	2023	4	2027