Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy											Date: February 2015	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603721N *I Environmental Protection*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	399.840	18.812	13.200	20.711	-	20.711	20.541	19.844	19.932	20.224	Continuing	Continuing
0401: *Shipboard Waste Mgmt*	329.465	7.698	5.612	8.393	-	8.393	8.629	8.723	8.800	8.867	Continuing	Continuing
0817: *Environmental Sustainability Development (NESDI)*	30.520	4.516	3.712	7.026	-	7.026	6.543	6.076	6.159	6.384	Continuing	Continuing
9204: *Marine Mammal Research*	39.855	6.598	3.876	5.292	-	5.292	5.369	5.045	4.973	4.973	Continuing	Continuing

A. Mission Description and Budget Item Justification

Many environmental laws, regulations, and policies impose restrictions on Navy vessels, aircraft, and facilities that interfere with operations and/or increase the cost of operations. The Navy must be able to conduct its national security mission in compliance with applicable environmental requirements in the U.S. and abroad without compromising
performance, safety, or health, while simultaneously minimizing the cost of compliance. This program develops and evaluates processes, hardware, systems, and operational procedures that will allow the Navy to operate in U.S., foreign, and international waters, air, space, and land areas while complying with environmental laws, regulations,
Executive Orders, policies and international agreements. The projects for this program element support the Navy's compliance with the (a) Clean Water Act, (b) Act to Prevent Pollution from Ships, (c) International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), (d) DoD 4715.6 R1, Regulations on Vessels Owned or Operated by the
Department of Defense, (e) OPNAVINST 5090.1C, Environmental and Natural Resources Program Manual,(f) 40 CFR Part 9 and Chapter VII (Uniform National Discharge Standards [UNDS] Phase I Standard), (g) Executive Order (EO) 13148, Greening the Government Through Leadership in Environmental Management, (h) Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, (i) National Invasive Species Act of 1996, (j) 33 CFR 151 Subpart D-Ballast Water Management for Control of Nonindigenous Species in Waters of the United States, (k) Clean Air Act, (l) Federal Insecticide, Fungicide, and Rodenticide Act, (m) Executive Order (EO) 13423 Strengthening Federal Environmental, Energy, and Transportation Management of 24 January, 2007. References (a) through (m) establish Level I environmental protection requirements for Navy shipboard systems, operations, and discharges in the areas of liquid wastes, hazardous materials, solid wastes, and other significant afloat environmental concerns. Project 0401 supports RDT&E efforts that enable Navy ships and submarines to comply with laws, regulations, and policies in six major areas: (1) Liquid Wastes, (2) UNDS Rulemaking, (3) Hazardous Materials and Pollution Prevention, (4) Hull Antifouling Paints, (5) Technical Authority, and (6) Ballast Water Exchange Improvements. Project 0817 supports RDT&E to develop and validate technologies to enable Navy facilities to comply with environmental laws, regulations, and policies in a cost-effective manner. Project 9204 supports RDT&E to develop planning and monitoring tools for minimizing Fleet contacts with and potential harassment (physiological and behavior) of marine animals including threatened and endangered species in response to Federal laws and regulations and public scrutiny.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy					Date: February 2015
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*			R-1 Program Element (Number/Name) PE 0603721N *I Environmental Protection*		
B. Program Change Summary ($ in Millions)	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**
Previous President's Budget	18.850	13.200	22.231	-	22.231
Current President's Budget	18.812	13.200	20.711	-	20.711
Total Adjustments	-0.038	-	-1.520	-	-1.520
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.018	-			
• SBIR/STTR Transfer	-0.020	-			
• Program Adjustments	-	-	-0.962	-	-0.962
• Rate/Misc Adjustments	-	-	-0.558	-	-0.558

Change Summary Explanation

The FY 2016 funding request was reduced by $0.5 million to account for the availability of prior year execution balances.

Technical: Not applicable.
Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy										Date: February 2015		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*				Project (Number/Name) 0401 / *Shipboard Waste Mgmt*			
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
0401: *Shipboard Waste Mgmt*	329.465	7.698	5.612	8.393	-	8.393	8.629	8.723	8.800	8.867	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Navy ships and submarines must routinely operate in U.S., international, and foreign waters, and visit numerous U.S. and foreign ports. No body of water is without environmental restrictions that impact the movements and operations of Navy vessels. Environmental requirements tend to be most restrictive in port and in coastal waters, where the Navy's increasing littoral presence places ships and submarines in discharge-restricted waters for longer periods of time. Growing international cooperation in addressing global environmental concerns is resulting in expanding areas of ocean considered environmentally susceptible, where special prohibitions on ship discharges and operations are imposed. Navy vessels must comply with applicable environmental legal requirements while maintaining continued access to all waters for operations, exercises, training, and port access. The large crews and limited on-board space of Navy ships and submarines severely constrain their ability to hold wastes for return to port for shore side disposal.

The Shipboard Waste Management RDT&E project evaluates and develops shipboard environmental equipment, systems, technologies, processes, and practices to comply with environmental laws, regulations, Executive Orders, international agreements, foreign-country requirements, and DoD and Navy policies. The project focuses on providing engineering criteria, design guidance, and performance specifications for selecting, procuring, installing, integrating, and operating environmental equipment and systems on Navy ships and submarines, and on defining and developing processes, procedures and logistics support requirements. Environmental equipment, systems, processes and practices must meet legal and environmental requirements and be reliable, maintainable and achievable at sea, and impose no or low manning burden. Environmental equipment and systems must meet Navy-unique shipboard requirements (performance, space, weight, shock, vibration, electromagnetic compatibility, manning, automation, etc.), incorporate integrated logistics support, minimize life-cycle cost, and include validated acquisition, design, installation, and operating documentation. Shipboard processes and practices must be feasible and must be compatible with ship and submarine operational, maintenance, manning, habitability, health, and safety requirements. It also addresses afloat environmental issues other than shipboard wastes, e.g., access to environmental data for planning Fleet operations and exercises.

The Shipboard Environmental Protection Branch (SEA 05P5) is the designated Technical Warrant Holder for Environmental Systems & Materials Engineering, with responsibility and accountability for ensuring that ships and submarines are designed and upgraded, and can be operated, in compliance with existing and anticipated environmental requirements while minimizing total ownership cost and manning. This responsibility encompasses legacy platforms and new vessel designs, as well as Fleet operations exercises, and training.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Technical Authority	2.223	1.200	3.087	-	3.087
Articles:	-	-	-	-	-
FY 2014 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Conducted Technology Identification and Assessment Program (TIAP) and analysis of alternatives resulting in the submission of procurement packages for shipboard solid waste management equipment, including a solid waste incinerator and a waste converter. Additionally, submitted procurement packages for a compactor, baler, and densifier to conduct shipboard suitability testing. ***FY 2015 Plans:*** Develop environmental equipment/system requirements documentation, design criteria and guidance, specifications, standards and certification protocols. Perform limited test and evaluation to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities. Conduct laboratory installation of shipboard solid waste management equipment procured in FY14 in preparation for FY16 laboratory testing. Develop test plans for equipment evaluation planned for FY16. ***FY 2016 Base Plans:*** Perform extensive full scale laboratory long term endurance testing of shipboard solid waste management equipment (incinerator, waste converter, compactor, baler, and densifier) evaulating effectiveness and reliability of equipment to facilitate execution of technical authority for ship and submarine environmental capabilities. Develop waste stream management plans for tested equipment in support of the Act to Prevent Pollution from Ships (APPS)which invokes the requirements of MARPOL, Annex V. Continue development of environmental equipment/system requirements documentation, design criteria/ guidance, specification standards, and certification protocols. ***FY 2016 OCO Plans:*** N/A					
Title: Integrated Liquid Wastes	3.135	2.000	2.157	-	2.157
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Issued Notice of Proposed rulemaking for 11 discharge standards. Completed Armed Forces Work Group review of standards for 14 discharge Standards. Integrated data logger into Oil Content Monitor to support Oil Pollution					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Abatement improvements. Performed lab evaluation of Marine Sanitation Device systems for Army forward operating base. ***FY 2015 Plans:*** Will support rulemaking process in development of Uniform National Discharge Standards (UNDS) "Batch Two." Will continue development of Marine Pollution Control Device (MPCD) treatment systems, technologies and procedures, and evaluation of Commercial off the Shelf (COTS) wastewater systems. ***FY 2016 Base Plans:*** Will continue development of MPCD treatment systems, technologies and procedures, and evaluation of COTS wastewater systems. Will initiate implementation of UNDS into the Fleet. ***FY 2016 OCO Plans:*** N/A					
Title: Hazardous and Other Major Ship Wastes	1.307	1.200	1.057	-	1.057
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Conducted shipboard hazardous material substitution and elimination by minimizing hexavalent chromium containing primers and sealants from shipboard systems. Developed the NAVSEA Hazardous Material (HM) Avoidance Engineering Technical Authority Procedure (ETAP). Documented testing procedures and acceptance criteria for Mercury Ion Exchange cartridges and developed an alternate paint mixing and dispensing system. ***FY 2015 Plans:*** Will conduct shipboard hazardous material substitution and elimination process by minimizing chemicals on the NAVSEA HM ETAP from shipboard systems. Will continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Will investigate and develop deep sink usage guidelines for machinery spaces ***FY 2016 Base Plans:*** Will continue shipboard hazardous materials substitution and elimination process. Will continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. ***FY 2016 OCO Plans:*** N/A					
Title: Ballast Water Management	1.033	1.212	2.092	-	2.092
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
FY 2014 Accomplishments: Worked towards determining feasible options for Ballast Water Treatment integration into LHA(R) and LX(R) designs and investigated rapid ballast tank treatment options in addition to survivability, damage control, and stability impacts. ***FY 2015 Plans:*** Will perform ballast water double exchange surveys and procedural product developmental test and evaluation on Expeditionary Warfare ships. Will identify and compare International Maritime Organization requirements for ballast water treatment system type approval, US Coast Guard Ballast Water Treatment (BWT) system type approval process, and testing facility protocols to develop recommendations for NAVSEA system approval requirements. Will update NSTM 593 to incorporate requirements of 5090.1D for shipboard use. ***FY 2016 Base Plans:*** Initiate new efforts to conduct research evaluating ballast water treatment hardware/systems in preparation for anticipated ballast water standards in joint EPA/DoD negotiated Uniform National Discharge Standards (UNDS) Batch 2. These efforts will evaluate the procurement of a ballast water treatment system to determine suitability for shipboard use. In addition building on FY15 efforts, will continue ballast water double exchange surveys and procedural product developmental test and evaluation on Expeditionary Warfare ships in addition to the development of NAVSEA requirements. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	7.698	5.612	8.393	-	8.393

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

RDT&E Contracts are Competitive Procurements.

E. Performance Metrics

Quarterly Program Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 0401 / *Shipboard Waste Mgmt*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development	Various	Misc. Contracts : Not Specified	19.149	-		-		-		-		-	-	19.149	Continuing
Primary Hardware Development	C/CPFF	Oceaneering : Not Specified	1.000	-		-		-		-		-	-	1.000	Continuing
Systems Engineering	C/CPFF	John J. McMullen & Son : Not Specified	4.487	-		-		-		-		-	-	4.487	Continuing
		Subtotal	24.636	-		-		-		-		-	-	24.636	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	WR	SPAWAR : Charleston, SC	10.838	-		-		-		-		-	-	10.838	Continuing
		Subtotal	10.838	-		-		-		-		-	-	10.838	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	MIPR	US Army Corps of Engineers : Norfolk, VA	0.687	-		-		-		-		-	-	0.687	-
Developmental Test & Evaluation	C/CPFF	NSWCCD, Bethesda, MD : Bethesda, MD	187.562	7.333	Nov 2013	5.392	Nov 2014	8.145	Nov 2015	-		8.145	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWCIHD : Indian Head, MD	1.086	-		-		-		-		-	-	1.086	-
Developmental Test & Evaluation	WR	NRL,Wash,DC : Wash,DC	30.661	0.215	Mar 2014	0.220	Nov 2014	0.248	Nov 2015	-		0.248	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	SPAWARSYSCEN : SD,CA	12.178	0.130	Mar 2014	-		-		-		-	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 0401 / *Shipboard Waste Mgmt*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Misc. Govt Labs : TBD	22.975	-		-		-		-		-	-	22.975	-
Developmental Test & Evaluation	C/CPFF	SAIC : San Diego, CA	15.570	-		-		-		-		-	-	15.570	-
Developmental Test & Evaluation	C/CPFF	Misc. Contracts : TBD	13.103	-		-		-		-		-	-	13.103	-
Process Control Engineering	C/CPFF	M. Rosenblatt & Sons : Arlington, VA	6.547	-		-		-		-		-	-	6.547	Continuing
Developmental Test & Evaluation	C/CPFF	ONR : Arlington, VA	0.400	-		-		-		-		-	-	0.400	Continuing
Developmental Test & Evaluation	WR	Naval Postgraduate School : Monterey, CA	1.800	-		-		-		-		-	-	1.800	Continuing
Process Control Engineering	MIPR	EPA, Hdqtrs : Washington, DC	0.840	-		-		-		-		-	-	0.840	Continuing
		Subtotal	293.409	7.678		5.612		8.393		-		8.393	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	NAVSEA HQ : Washington, DC	0.355	0.020	Nov 2013	-		-		-		-	Continuing	Continuing	Continuing
SBIR Assessment	TBD	Not Specified : Not Specified	0.227	-		-		-		-		-	-	0.227	Continuing
		Subtotal	0.582	0.020		-		-		-		-	-	-	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	329.465	7.698		5.612		8.393		-		8.393	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

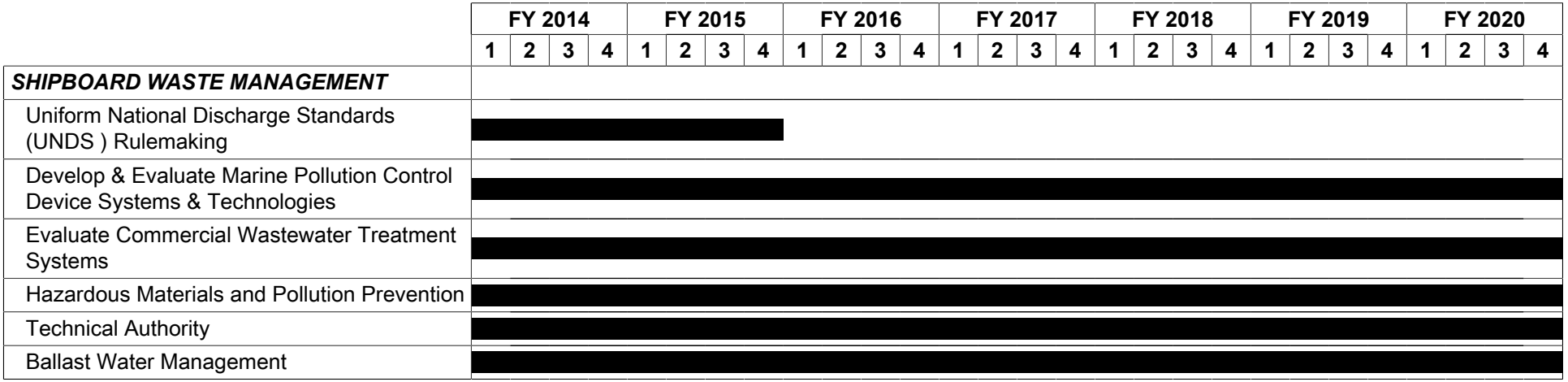

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SHIPBOARD WASTE MANAGEMENT				
Uniform National Discharge Standards (UNDS) Rulemaking	1	2014	4	2015
Develop & Evaluate Marine Pollution Control Device Systems & Technologies	1	2014	4	2020
Evaluate Commercial Wastewater Treatment Systems	1	2014	4	2020
Hazardous Materials and Pollution Prevention	1	2014	4	2020
Technical Authority	1	2014	4	2020
Ballast Water Management	1	2014	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 0817 / *Environmental Sustainability Development (NESDI)*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
0817: *Environmental Sustainability Development (NESDI)*	30.520	4.516	3.712	7.026	-	7.026	6.543	6.076	6.159	6.384	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Inherent to the realization of the vision outlined in Sea Power 21 are certain environmental consequences that will, to a lesser or greater degree, be an impact on the Navy's ability to fully achieve the strategy outlined in the Navy Capability Pillars (NCP) SEA SHIELD, SEA STRIKE, SEA BASING and FORCEnet and the supporting initiatives of SEA WARRIOR, SEA TRIAL and SEA ENTERPRISE. Readiness and training are primary considerations for determining whether any fighting force is at its peak proficiency. The ability to train our forces in a realistic environment is paramount. Today's reality requires training and operating within environmental constraints (national and international laws and agreements), and searching for alternatives to comply with and alleviate those constraints. Moreover, as we develop new systems and technologies in support of Sea Power 21, the Navy must anticipate potential environmental regulations which, while not currently an issue, could in the future adversely impact our ability to protect and sustain our forces at home and abroad.

This program identifies pervasive Navy shore side environmental requirements and develops and validates information, new processes, and technologies that address requirements that pose significant impact on Naval shore activities in complying with environmental laws, regulations, orders, and policies. The goal of the program is to maximize opportunities for significant cost savings while minimizing personnel liabilities, operational costs, and regulatory oversight and preserving or enhancing the ability of Naval shore activities to accomplish their required missions and functions in support of the Navy's transformational strategy.

EEC-2 MAXIMIZE TRAINING AND TESTING RANGE REQUIREMENTS WITHIN ENVIRONMENTAL CONSTRAINTS: This capability addresses environmental impacts and restrictions at Navy land and sea ranges, including munitions testing and manufacturing, to ensure Navy ranges are available to conduct required training and testing operations for the Fleet. Investments in EEC-2 provide validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test ranges to maximize the availability and utilization of the ranges. The results support operational readiness by providing the tools and technologies necessary for sustaining and managing Navy land and sea ranges related to unexploded ordnance (UXO) and munitions, encroachment, air quality, airborne noise, water quality, and wetlands. Capabilities gained include the ability to assess and determine the risks from underwater UXO, the evaluation and prioritization of ordnance contaminated sites for evaluation in environmental programs, and the implementation of range specific best management practices by evaluating and modeling available process, procedures, and technologies.

EEC-3 PLATFORM MAINTENANCE AND REPAIR WITH MINIMAL ENVIRONMENTAL FOOTPRINT: This capability focuses on minimizing or eliminating environmental impact related to Navy and Marine Corps weapon system repair and maintenance operations. Investments in EEC-3 provide valid knowledge, models, processes, and technologies to minimize regulated emissions, discharges and hazardous material usage during the repair and maintenance of ships, submarines, and surface/ sub-surface vehicles and aircraft and air vehicles. The program supports Fleet operational readiness and Navy acquisition communities by investing in information to understand emerging environmental requirements and to develop innovative processes and technologies that result in savings while reducing the fleet environmental

constraints related to platform maintenance. Capabilities and benefits gained include, but are not limited to, the reduction in the usage of heavy metals used in metal finishing (chromium and cadmium), reduced hazardous air pollutant (HAP) emissions, and the development of best management practices and tools to minimize the use of hazardous materials and the generation of hazardous wastes associated with maintaining and repairing ships, submarines and aircraft and unmanned vehicles. Results of program investments will be leveraged across weapon system and platform acquisition to ensure continued reduction in lifecycle costs and long-term environmental compliance burdens to the Fleet.

EEC-4. SUPPORT SHORE READINESS WITHIN ENVIRONMENTAL CONSTRAINTS: Naval shore establishment requires the capability to operate and maintain facilities and provide waterfront and airfield services to the fleet while complying with applicable environmental regulations and minimizing environmental impacts and costs. The program invests in knowledge and innovative processes and technologies that minimize infrastructure and operational costs, regulated emissions, while minimizing discharges and hazardous material usage from ship (waterfront) and aviation operations. Capabilities and benefits gained under EEC-4 include reduced costs associated with wastewater treatment, elimination/reduction in the use of HAPs, ozone depleting substances (ODSs), and volatile organic compounds (VOCs), and the associated reporting requirements, reduced hazardous waste and disposal costs, and improved storm water management.

EEC-5. COST-EFFECTIVE MANAGEMENT OF ENVIRONMENTAL REGULATORY REQUIREMENTS: The environmental compliance regulations require base managers to permit, monitor and report on many processes associated with weapon system and platform operations. Naval shore environmental managers require the capability to efficiently and cost effectively manage these compliance requirements. Under EEC-5, the program invests in improved data collection, methods, and models to assess environmental impacts and ecological risk assessments of Naval Operations on harbors, U.S. waterways, and surrounding communities. Benefits include gaining standardized technical environmental management improvements/techniques related to source control, assessment, and monitoring. EEC-5 also provides validated knowledge, models, processes and technologies to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Maximize Training & Testing Requirements Within Environmental Constraints	0.764	0.590	1.240	-	1.240
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continued providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test ranges to maximize the availability and utilization of the ranges. Completed risk assessment associated with military expendable material used in underwater ranges. Technology integration of process to determine background perchlorate sources at Navy ranges ongoing. Continued two-year post survey for cable pull field study to determine long term effects and site recovery of a cable removal in the near-shore environment. Continued demonstration of passive samplers for assessing environmentally realistic concentrations of munitions constituents at underwater unexploded ordnance sites and the detection and classification of munitions and explosives of concern in shallow highly dynamic underwater					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
environments. Completed demonstration of transportable field melter for recycling of bombing range MPPEH, and innovative cutting process to vent full scale non-explosive practice munitions. ***FY 2015 Plans:*** FY15 funding will be used to continue providing validated knowledge, models, and processes to mitigate environmental impacts restrictions, and costs of Navy training and test ranges to maximize the availability and utilization of the ranges. ***FY 2016 Base Plans:*** FY16 funding will be applied to the backlog of: - Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs of Navy training and test ranges to maximize the availability and utilization of the ranges. - Start new tasks for multi-spectral weapon impact detection system and underwater low environmental impact munitions breaching technology to better characterize environmental impacts of munitions on training ranges and munitions response sites. ***FY 2016 OCO Plans:*** N/A					
Title: Platform Maintenance and Repair With Minimal Environmental Footprint	0.860	0.725	1.613	-	1.613
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continued all aviation sustainment related projects related to chrome alternatives and cadmium reductions. Continued projects that address the elimination of overspray in shipbuilding and facilities maintenance operations. Completed cyanide waste reduction of electroplating and stripping process, low-VOC and HAP wipe solvent and paint thinner DEM/VAL and a study on replacements for Cadmium electrical connectors. Continue portable treatment for ship material removal processes, and demonstration of advanced non-chromate primers and coatings. ***FY 2015 Plans:*** FY15 funding will be used to: - Continue aviation sustainment projects related to chrome alternatives and cadmium reductions, continue the elimination of overspray in shipbuilding and facilities maintenance operations.					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Start investigation of improved epi-seal materials for use in general purpose bombs, and trivalent chromium conversion coating enhanced coloration of aluminum substrates. ***FY 2016 Base Plans:*** FY16 funding will be applied to the substantial backlog to: - Continue all aviation sustainment projects related to chrome alternatives and cadmium reductions, continue the elimination of overspray in shipbuilding and facilities maintenance operations and continue projects on trivalent chromium conversion coating-enhanced coloration of aluminum substrates. - Start new tasks for the projects mobile pier facility waste water treatment system and advanced nonchromate primers and coatings. - Initiate cadmium and chromium elimination and aqueous cleaning projects. ***FY 2016 OCO Plans:*** N/A					
Title: Support Shore Readiness within Environmental Constraints	1.169	0.995	1.793	-	1.793
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continued providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. Continued to address surface cleaning of dry dock floors, oil boom biofouling control, and dry dock sediment management. ***FY 2015 Plans:*** FY15 funds will be used to continue providing systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. Continue oil boom fouling control. ***FY 2016 Base Plans:*** - Continue providing systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. Continue oil boom fouling control. - Start dry dock sediment management, treatment of ship heavy metal contaminated oily waste and the evaluation of compliance options for NPDES permits for cooling water intake structures. ***FY 2016 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
Title: Cost-Effective Management of Environmental Regulatory Requirements	1.723	1.402	2.380	-	2.380
Articles:	-	-	-	-	-

FY 2014 Accomplishments:
Continue providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Continued projects on emissions capture technology for oxy-fuel hull cutting operations. Completed projects on aerobic bioaugmentation for remediation of RDX-contaminated groundwater.

FY 2015 Plans:
FY15 funds will be used to:
- continue providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments.
- Continue projects on emissions capture technology for oxy-fuel hull cutting operations. Start low impact development (LID) demonstration/validation and enterprise hazardous waste application, and pier side in situ discharge monitoring for CHT contaminants.

FY 2016 Base Plans:
FY16 funding will be applied to:
- Continue providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments.
- Start new tasks for sustainable remediation of low pH aquifers and aquifers with a continuing contaminant source using proton reduction technology, aerobic bio-augmentation for remediation of RDX contaminated groundwater, reduce the cost of compliance with coastal contamination and contaminated sediment and demonstration of improved method for quantifying algae biomass to meet nutrient numeric endpoint permit compliance.
- Initiate projects for coral reef assessment technology, vapor intrusion prevention and improved treatment of contaminated stormwater.

FY 2016 OCO Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
Accomplishments/Planned Programs Subtotals	4.516	3.712	7.026	-	7.026

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This project is categorized as Non-ACAT (Non Acquisition). The project delivers a broad spectrum of products that require a variety of acquisition processes to implement. Equipment products for naval stations and other mission funded activities are often procured directly through the base operating budget. Equipment products for Shipyards and other Navy Working Capital Fund (NWCF) activities costing over $250K are procured through their Capital Investment Program (CIP). For both types of activities, equipment products costing less than $250K, and process changes not requiring the purchase of new equipment such as consumable material or product substitutions, are funded through the activity's operating budgets. Occasionally there is a technology that must be implemented as a specialized facility. These are acquired through the Military Construction (MCON) Program. All these acquisition processes are pursued using a common strategy that satisfies the needs of all the critical stakeholders: 1) Fleet end user; 2) Funding sponsor for the Navy end user; 3) Other stakeholders with cognizance over the Navy process or operation being changed, 4) Cognizant environmental federal, state, and local regulators; and 5) The private or government organization that will produce the product.

E. Performance Metrics

Quarterly Budget Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EEC 2	Various	EXWC : PT HUENEME, CA	4.087	0.613	Oct 2013	0.490	Oct 2014	0.765	Feb 2016	-		0.765	Continuing	Continuing	Continuing
EEC 2	Various	SSC : SAN DIEGO, CA	4.700	0.425	Mar 2014	0.100	Oct 2014	0.475	Jul 2016	-		0.475	Continuing	Continuing	Continuing
EEC 3	Various	NAWC : PATUXENT RIVER, MD	1.321	0.260	Mar 2014	0.100	Oct 2014	0.295	Aug 2016	-		0.295	Continuing	Continuing	Continuing
EEC 3	Various	NSWC : BETHESDA, MD	3.034	0.300	Feb 2014	0.100	Oct 2014	0.185	Feb 2016	-		0.185	Continuing	Continuing	Continuing
EEC 3b	Various	EXWC : PT HUENEME, CA	0.990	0.267	May 2014	-		0.050	Jul 2016	-		0.050	Continuing	Continuing	Continuing
EEC 4	Various	EXWC : PT HUENEME, CA	5.694	0.537	Jun 2014	0.400	Dec 2014	0.715	Oct 2015	-		0.715	Continuing	Continuing	Continuing
EEC 4	Various	NSWC : BETHESDA, MD	2.290	0.418	Oct 2013	0.500	Dec 2014	0.690	Mar 2016	-		0.690	Continuing	Continuing	Continuing
EEC 4a	Various	SSC : SAN DIEGO, CA	2.541	0.409	Apr 2014	0.100	Dec 2014	0.269	Apr 2016	-		0.269	Continuing	Continuing	Continuing
EEC 5	Various	EXWC : PT HUENEME, CA	1.929	0.100	Jun 2014	0.450	Nov 2014	1.079	Jul 2016	-		1.079	Continuing	Continuing	Continuing
EEC 5	Various	SSC : SAN DIEGO, CA	0.705	-		0.425	Nov 2014	0.331	Oct 2015	-		0.331	Continuing	Continuing	Continuing
EEC 5	Various	NAWC : PATUXENT RIVER, MD	0.842	0.200	Jun 2014	-		0.175	Aug 2016	-		0.175	Continuing	Continuing	Continuing
EEC 5	Various	NSWC : BETHESDA, MD	0.607	0.326	Feb 2014	0.322	Feb 2015	0.730	Oct 2015	-		0.730	Continuing	Continuing	Continuing
EEC 5	Various	NAWCWD : CHINA LAKE, CA	0.707	0.287	Feb 2014	0.075	Nov 2014	0.095	Feb 2016	-		0.095	Continuing	Continuing	Continuing
EEC 5	Various	NAWC : LAKE HURST, NJ	0.442	0.174	Feb 2014	0.050	Nov 2014	0.089	Jul 2016	-		0.089	Continuing	Continuing	Continuing
EEC 3	Various	FRC - SE : JACKSONVILLE, FL	0.270	0.200	Oct 2013	0.400	Oct 2014	0.550	Oct 2015	-		0.550	Continuing	Continuing	Continuing
EEC 3	Various	FRC - SW : San Diego, CA	0.000	-		-		0.383	Mar 2016	-		0.383	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EEC 3	Various	FRC - CE : Cherry Point, NC	0.145	-		0.100	Nov 2014	0.075	Mar 2016	-		0.075	Continuing	Continuing	Continuing
EEC 3	Various	NSWC : San Diego, CA	0.216	-		0.100	Oct 2014	0.075	Feb 2016	-		0.075	Continuing	Continuing	Continuing
		Subtotal	30.520	4.516		3.712		7.026		-		7.026	-	-	-

Remarks

Performing Activities: Naval Surface Warfare Center, Carderock Division (NSWC/CD); Engineering and Expeditionary Warfare Center (EXWC), Port Hueneme, CA; Naval Surface Warfare Center, Indian Head Division (NSWC/IH); Space and Warfare Systems Center, San Diego (SSC/SD); Naval Air Warfare Center Aircraft Division Patuxent River (NAWCAD/PAX); Naval Air Warfare Center (NAWCWD/China Lake); Naval Air Warfare Center Aircraft Division Lakehurst (NAWCAD/Lakehurst); Fleet Readiness Center Southeast, Jacksonville FL (FRC-SE); Fleet Readiness Center Southwest, San Diego (FRC-SW), Fleet Readiness Center East, Cherry Point (FRC-CE). Total Prior Years Cost: Subtotal does not include performing activities from prior years that are no longer performing activities. Award Dates: About 55% of the project is executed via contracts awarded by the performing activities.

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	30.520	4.516		3.712		7.026		-		7.026	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

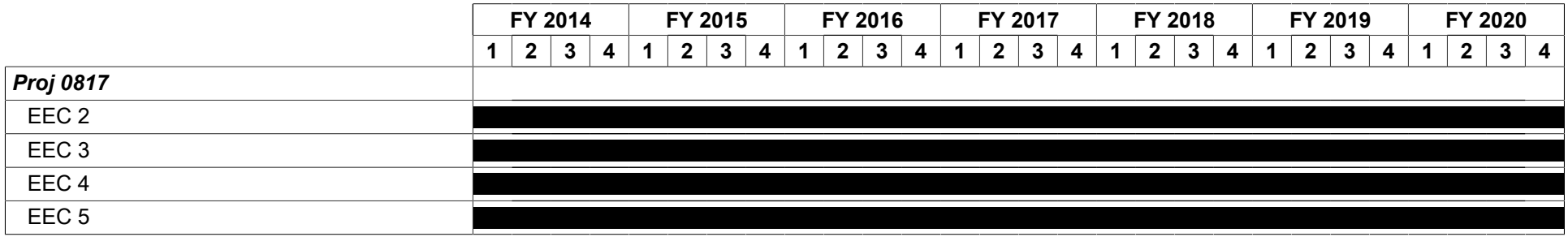

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0817				
EEC 2	1	2014	4	2020
EEC 3	1	2014	4	2020
EEC 4	1	2014	4	2020
EEC 5	1	2014	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy									Date: February 2015			
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*				Project (Number/Name) 9204 / *Marine Mammal Research*			
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
9204: *Marine Mammal Research*	39.855	6.598	3.876	5.292	-	5.292	5.369	5.045	4.973	4.973	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Navy has been and will continue to be subject to litigation with regard to the potential injuring, killing or biologically significant disturbance of marine animals by the use of intense underwater sound. Since Fleet operation and training areas coincide with known or probable habitats, migration routes, or breeding areas of marine mammals and other protected marine species, the possibility exists that such incidents are likely to continue in the future. The increasing public interest and pressure has resulted in escalating Fleet costs. For example, Fleet and SYSCOM development activities have been interrupted; modified, or altogether cancelled and environmental regulations have, among other things, required new ship construction shock trials to obtain Federal permits and conduct extensive environmental planning that can take several years to complete. The incorporation of mitigation measures in Fleet training operations to minimize the potential adverse effects on protected marine animals can significantly reduce the realism of these operations. In addition, the testing, evaluation, and deployment of new sonar detection and monitoring systems that use active acoustics are under intense public scrutiny for their potential adverse effects on whales and other marine mammals. Navy needs scientific evidence to substantiate its claims of limited or inconsequential adverse effects to marine life from operations.

This project primarily focuses on the development of planning, monitoring, and mitigating tools to aid the Fleet in minimizing contact with and the potential harassment of protected marine animals during operations, exercises, training, and undersea surveillance and weapons testing. These new capabilities will encompass historical and newly acquired data and analytical models that together can predict marine animal habitats (where they are likely to be), and their natural and expected behavior (diving patterns, prey localization, calling activity, etc.). This project consists of three major areas that will help ensure Navy compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA).
These areas are (1) Marine Ecology and Population Dynamics - Determine the likelihood of the presence of marine mammals or other protected species by developing habitat and ecological models. Refine marine animal survey techniques to optimize the accuracy of abundance estimates in small ocean regions of Navy interest.
(2) Criteria, Thresholds, and Mitigation - Establish criteria and thresholds from which to measure potential impact on marine mammals and other marine species from Navy training operations. Determine the effectiveness and usefulness of various mitigation measures in relation to the potential impact of Navy operations on marine mammals; and (3) Mitigation Methodologies - Determine the observation, detection and classification measures required to develop effective monitoring and mitigation procedures for Fleet and SYSCOM use. Focus on improving marine animal monitoring capabilities over current methods by developing new technologies or improving existing technologies that improve monitoring and mitigation effectiveness, reduce cost, and minimize impacts on readiness activities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**
Title: Marine Ecology and Population Dynamics	1.467	0.735	0.707	-	0.707
Articles:	-	-	-	-	-
FY 2014 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Continue research on ecosystems status and habitat use by marine species of Navy interest; sensor and tag development; with a priority emphasis on the population structure of beaked whales in the vicinity of Navy training ranges. Work with the Navy Marine Species Density data program to develop data standards and data management standards consistent with the best standards of the expert community. ***FY 2015 Plans:*** Continue research on ecosystems status and habitat use by marine species of Navy interest; sensor and tag development; with a priority emphasis on the population structure of beaked whales in the vicinity of Navy training ranges. A few projects related to integrating data into the Navy Marine Species Density data program were completed in FY14. This included the development of data standards for line transect surveys in coordination with the USGS, and a demonstration-validation project for improving density estimates from line transect surveys with passive acoustic data. ***FY 2016 Base Plans:*** Continue research on ecosystems status and habitat use by marine species of Navy interest; sensor and tag development; with a priority emphasis on the population structure of beaked whales in the vicinity of Navy training ranges. Work with the Navy Marine Species Density data program to develop tools and methods to improve the abundance estimates and density distribution data, consistent with the best standards of the expert community. ***FY 2016 OCO Plans:*** N/A					
Title: Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	3.654	1.113	1.760	-	1.760
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Research regarding low frequency weighting functions for dolphins and pinnipeds was completed by the Navy's marine mammal program. Research by the University of Hawaii to obtain TTS data for low frequency sounds in bottlenose dolphins was also ended. Continue research to determine what constitutes biologically significant behavioral response to Navy-generated sound on individuals with respect to disruption of natural behavior patterns, ascertaining the short and long-term effects of such disruptions and documenting avoidance behaviors, with reduced effort due to budget constraints.					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Continue research on selected topics related to hearing-based criteria, such as hearing weighting functions and anatomically derived hearing properties for species that cannot be tested directly. ***FY 2015 Plans:*** The program will continue research to determine what constitutes biologically significant behavioral response to Navy-generated sound on individuals with respect to disruption of natural behavior patterns, ascertaining the short and long-term effects of such disruptions and documenting avoidance behaviors. Research related to anatomically derived hearing properties for large whales will also continue since this is a priority of the regulator. One project in this topic area closed out in FY14, but another is ongoing and the execution timeline has been delayed due changes principal investigator's availability. ***FY 2016 Base Plans:*** Funding will be applied to the required focus area to support the refinement of criteria and thresholds for our at-sea training and testing permits which are required in FY18. Projects are often 1-2 year efforts and must be initiated in FY16 or they would jeopardize the ability to obtain authorization from regulatory agencies to conduct training and testing activities. Additional funding is required for the Navy's Southern California Behavioral Response project to support the close out and final analysis of field data collected over the past five years. Overall, the program will continue research to determine what constitutes biologically significant behavioral response to Navy-generated sound on individuals with respect to disruption of natural behavior patterns, ascertaining the short and long-term effects of such disruptions and documenting avoidance behaviors. Research regarding anatomically derived hearing properties for large whales will also continue since this is a priority of the regulator. Funding in these focus areas allows the Navy to meet environmental compliance requirements for impacts analysis and avoid costly litigation. ***FY 2016 OCO Plans:*** N/A					
Title: Mitigation Methodologies: Monitoring, New Technology, and Risk Assess	1.477	2.028	2.825	-	2.825
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continue research to determine the observation, detection and classification measures required to develop effective monitoring and mitigation procedures. Focus to improve marine mammal monitoring capabilities over current methods by developing new and adapting existing technology for improved performance, reduced cost and reduced impacts on the realism and effectiveness of readiness training. In FY 15 and beyond an increased					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
effort in assessing the potential of unmanned air and underwater platforms, to reduce the cost of monitoring, expand coverage and reduce impacts on readiness training. ***FY 2015 Plans:*** The Navy recently obtained new permits for at-sea training and testing activities across our Navy ranges. The new permits have specific requirements that must be answered by our monitoring efforts, however, they also allow the Navy more flexibility in terms of the monitoring methods we employ. As a result, the LMR program requires increased investment in the development and demonstration of new or improved monitoring methodologies to transition these capabilities to the Fleets and SYSCOMs to meet our permit requirements. Research in the following areas will continue or increase: 1) evaluating the use of underwater gliders to expand our coverage and reduce our costs; 2) improvements to current passive acoustic recording devices (i.e. HARPs) to improve their longevity, accuracy, and reduce lifecycle costs; and 3) integrating a real time passive acoustic monitoring system for Navy operational use. LMR is increasing investment to fund the deployment and refinement of the M3R system to transition aspects of the program to the Fleets and SYSCOMs, and eventually reducing the RDT&E burden associated with this project. ***FY 2016 Base Plans:*** To support our ongoing permit requirements to monitor the effects of at-sea training and testing activities, increased investment is required in this focus area to remain in compliance. Overall, the LMR program will continue to fund monitoring capabilities of marine animals to include; the development of new technologies and improvements to existing technologies. In particular, investment in the use of UUV and AAVs will increase as these platforms have recently become more mature and are able to be leveraged to meet monitoring requirements with some modifications to their hardware. The Navy is also working to refine the High-Frequency Recording Package (HARP), which is our most common passive acoustic recording system in Navy-wide use for acoustic monitoring. Improvements to this system will increase the duration of deployments, increase the bandwidth and accuracy of recordings, and reduce lifecycle maintenance costs. Increased funding in FY16 will be used to accelerate the transition of new or improved lower cost monitoring technologies to the Fleets and SYCOMs to reduce the impacts on readiness activities that current monitoring and mitigation technologies have. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	6.598	3.876	5.292	-	5.292

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

(U) RDTEN Contracts are Competitive Procurements.

E. Performance Metrics

Quarterly Program Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 9204 / *Marine Mammal Research*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Criteri & Thresholds	SS/CPFF	University of Hawaii : Hawaii	0.630	0.200	Dec 2013	-		-		-		-	Continuing	Continuing	Continuing
Mgmt (Mar Ecol & Pop Dynamics)	WR	EXWC : Port Hueneme, CA	0.400	0.622	Nov 2013	0.300	Dec 2014	0.550	Oct 2015	-		0.550	Continuing	Continuing	Continuing
Mitigation Methods	WR	OASIS Technologies, Inc. : Lexington, MA	0.427	-		0.329	Dec 2014	0.354	Jan 2016	-		0.354	Continuing	Continuing	Continuing
Mitigation Methods	WR	Bahamas Maine Mammal Research Organization (BMMRO) : Bahamas	0.043	0.131	Nov 2013	-		-		-		-	Continuing	Continuing	Continuing
Mitigation Methods	WR	SPAWAR : San Diego, CA	0.000	-		0.169	Dec 2014	0.692	Jan 2016	-		0.692	Continuing	Continuing	Continuing
Mitigation Methods	SS/CPFF	Scripps Institute : San Diego, CA	0.000	-		0.250	Jan 2015	0.250	Oct 2015	-		0.250	Continuing	Continuing	Continuing
Mitigation Methods	SS/CPFF	Oregon State Univ : OR & HI	0.000	-		0.285	Jan 2015	0.321	Jan 2016	-		0.321	Continuing	Continuing	Continuing
Mar Ecol & Pop Dynamics	WR	NAVAIR : Lakehurst, NJ	0.000	-		0.220	Jan 2015	0.082	Oct 2015	-		0.082	Continuing	Continuing	Continuing
Mar Ecol & Pop Dynamics	SS/CPFF	BMC Inc. : Chicago, IL	0.000	-		0.215	Jan 2015	0.075	Jan 2016	-		0.075	Continuing	Continuing	Continuing
Mitigation Methods	WR	NUWC : Newport, RI	7.363	1.000	Nov 2013	0.560	Nov 2014	1.120	Jan 2016	-		1.120	Continuing	Continuing	Continuing
Criteria & Thresholds	SS/CPFF	SEA Inc : Aptos, CA	1.545	0.236	Feb 2014	-		-		-		-	Continuing	Continuing	Continuing
Mar Ecol & Pop Dynamics	WR	NPGS : Monterey, CA	3.219	0.300	Dec 2013	-		0.030	Oct 2015	-		0.030	Continuing	Continuing	Continuing
Mar Ecol & Pop Dynamics	MIPR	NOAA SWFSC : La Jolla, CA	2.779	0.632	Dec 2013	-		0.035	Oct 2015	-		0.035	Continuing	Continuing	Continuing
Mitigation Methods	SS/CPFF	Scripps Institute : La Jolla, CA	8.835	0.600	Jan 2014	0.280	Dec 2014	-		-		-	Continuing	Continuing	Continuing
Mitigation Methods	SS/CPFF	Oregon State Univ. : Corvallis, OR	1.631	0.222	Jan 2014	0.155	Nov 2014	0.058	Jan 2016	-		0.058	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Criteria & Thresholds	SS/CPFF	Woods Hole Oceanographic Inst : Woods Hole, MA	2.726	0.403	Jan 2014	-		-		-		-	Continuing	Continuing	Continuing
Criteria & Thresholds	WR	SPAWAR : San Diego, CA	2.733	0.400	Nov 2013	-		0.642	Jan 2016	-		0.642	Continuing	Continuing	Continuing
Criteria & Thresholds	WR	Cascadia Research Collective : Olympia, WA	3.244	0.950	Jan 2014	1.113	Nov 2014	1.083	Oct 2015	-		1.083	Continuing	Continuing	Continuing
Mar Ecol & Pop Dynamics	MIPR	NOAA NEFSC : Woods Hole, MA	0.816	0.312	Dec 2013	-		-		-		-	Continuing	Continuing	Continuing
Criteria & Thresholds	SS/CPFF	San Diego State Univ : San Diego, CA	1.787	0.457	Feb 2014	-		-		-		-	Continuing	Continuing	Continuing
Criteria & Thresholds	WR	CNAF : San Diego, CA	1.677	0.133	Nov 2013	-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	39.855	6.598		3.876		5.292		-		5.292	-	-	-

Remarks

Major performers in the Marine Mammal Monitoring on Ranges (M3R) project will develops techniques for passive acoustic monitoring in the Southern California Offshore Range (SCOR) and other Navy Range Complexes, including the Hawaii Range Complex, and others, including the planned Undersea Warfare Training Range (USWTR) on the US Atlantic coast. Visual survey, tagged animal data, and other survey methods will be used with M3R to calibrate the derived data products from each, while producing information on the relative cost, strengths and weaknesses that will allow Navy environmental managers to optimize the allocation of compliance funding. These methods also serve to provide animal density estimation and predictive modeling. Other major projects include data standards development, signal processing technology development to accelerate analysis of large monitoring data sets and reduce cost, and data development to support next-generation risk criteria based on improved and expanded hearing and behavioral response data.

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	39.855	6.598		3.876		5.292		-		5.292	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

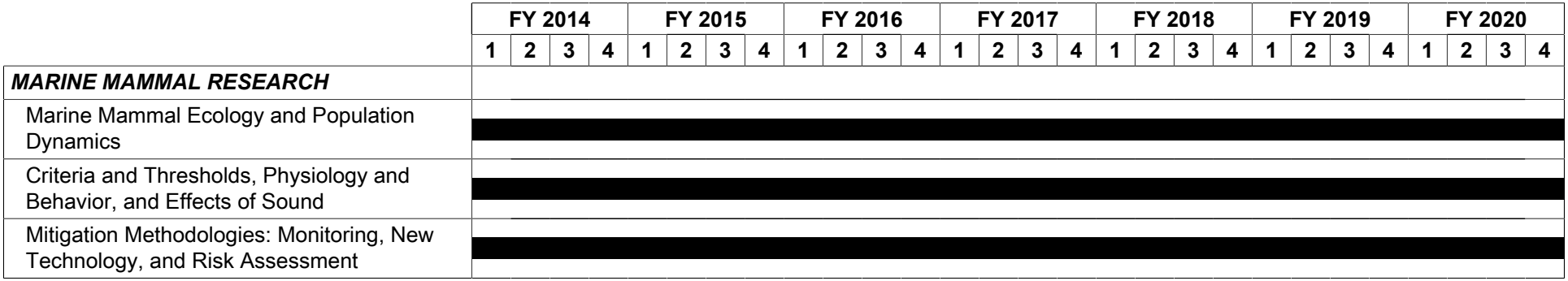

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MARINE MAMMAL RESEARCH				
Marine Mammal Ecology and Population Dynamics	1	2014	4	2020
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	1	2014	4	2020
Mitigation Methodologies: Monitoring, New Technology, and Risk Assessment	1	2014	4	2020