

FALL 2018

NESDI NEWS

Highlights & Happenings

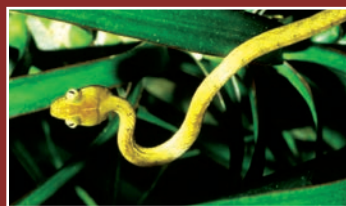


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Who We Are

The NESDI program is the Navy's environmental research and development demonstration and validation (6.4) program, sponsored by the Chief of Naval Operations Energy and Environmental Readiness Division (OPNAV N45) and managed by the Naval Facilities Engineering Command (NAVFAC) from the Engineering and Expeditionary Warfare Center (EXWC) in Port Hueneme, CA. The mission of the program is to provide solutions by demonstrating, validating and integrating innovative technologies, processes and materials and by filling knowledge gaps to minimize operational environmental risks, constraints and costs while ensuring Navy readiness.

<https://epl.navfac.navy.mil/nesdi>





From the Program Manager's Desk



Ken Kaempffe

Welcome to the fall 2018 issue of *NESDI News: Highlights & Happenings*—part of our ongoing effort to keep you informed about the Navy Environmental Sustainability Development to Integration (NESDI) program. This quarterly update provides you with the latest information about program operations, significant accomplishments and future focus

areas for the NESDI program. We hope you will find these insights useful and that they encourage you to participate (or increase your involvement) in the program over the coming months.

We've recently completed another major milestone on our annual schedule—the completion of our needs solicitation process for fiscal year (FY) 2019. A list of the 20 needs that survived the scrutiny of our management team is provided in this issue of the program's newsletter. We also provide you with the guidance and instruction you'll need to submit a pre-proposal to address any of our priority needs.

Ken Kaempffe
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FY19 Needs Solicitation Process Completed

Each year, the NESDI needs solicitation process is extremely competitive. At the end of our 2019 period, less than a third of the 69 needs submitted were advanced to the pre-proposal solicitation phase.

The NESDI program is currently accepting pre-proposals for all 20 approved needs listed below—13 FY19 needs and seven FY18 carryover needs. These FY18 priority needs were carried over since we did not solicit for proposals last year due to budgetary limitations.

APPROVED FY19 NEEDS

1. N-1240-19: Development of New Technologies for PFAS Source Remediation and Containment (HIGH)
2. N-1241-19: Handheld Storm Water Pollutant Mapper (MEDIUM)
3. N-1244-19: Nutrient Compliance Issues at Navy Shipyards (MEDIUM)
4. N-1245-19: Evaluation of Alternative Instruments for On-Site Analysis of Vapor Intrusion (MEDIUM)
5. N-1248-19: Elimination of Hexavalent Chromium from Conversion Coating Processes for Electronic Applications at Fleet Readiness Centers (LOW)
6. N-1253-19: General-Purpose Oceanic Organic Mycelium Biodegradable Apparatus (GOOMBA) (LOW)
7. N-1278-19: Low-VOC and Fast Drying Solvent-borne Aerospace Primers (LOW)
8. N-1279-19: Addressing Data Gaps in the Fate, Transport and Transformation of Insensitive and Legacy Munitions (MEDIUM)
9. N-1285-19: Reduction of Sealant Waste for Fleet/Depot-Level Operations (MEDIUM)
10. N-1288-19: Validate Adsorptive Amendments for In Situ Treatment of PFAS (HIGH)
11. N-1290-19: In-situ Biodegradation of 1,4-Dioxane and Chlorinated Solvent Mixtures in Dilute Plumes (MEDIUM)
12. N-1299-19: Study Temporary Cooling Water Total Recoverable Copper Levels During Dry Docking Availabilities (MEDIUM)
13. N-1302-19: Update Environmental Monitoring Equipment for Regulatory Compliance (HIGH)

CARRYOVER FY18 NEEDS

1. N-1179-18: Cost Effective Main Charge Remediation of Insensitive Munitions for Range Clearance (MEDIUM)
2. N-1187-18: Demonstration/Validation of Air Filtration for Indoor Air Quality (HIGH)
3. N-1188-18: Improving Site Closure Decision Making with Time Integrated Groundwater Samples (MEDIUM)
4. N-1194-18: Storm Water Piping Based Pollutant Best Management Practice (MEDIUM)
5. N-1196-18: Under Pier Sediment Pile Assessment Tools (MEDIUM)
6. N-1220-18: Electromagnetic Interference Shielding Tape (EMIST) (HIGH)
7. N-1234-18: Replacement of Cadmium in GSE Avionics Applications (MEDIUM)



How to Submit a Pre-proposal

Now that the priority needs for FY19 have been established, the NESDI program will turn its attention to the collection of pre-proposals to address those needs. The purpose of the pre-proposal is to ensure that the proposed project adequately addresses the requirements outlined in the need. The NESDI program concentrates on technologies that are sufficiently mature for demonstration and validation and supports the overall mission readiness of the Navy. Pre-proposals should address the following requirements:

- Be approximately two pages in length.
- Focus on the problem to be addressed.
- Clearly explain the project objectives.
- Quantify and qualify the technical criteria for a successful project.
- Identify the environmental constraint(s) to be resolved.
- Include the basic strategy for successfully integrating the solution into Navy operations.
- Identify the authorization stakeholders related to the proposed effort.

All pre-proposals are collected through the program's website. A Common Access Card (CAC) is required to access the site and submissions must be from Navy personnel. The website's pre-proposal page provides guidance for the submission process including links to:

- A reference guide
- The evaluation criteria used
- The elements of a pre-proposal
- The submission form

Once you have completed all of the entries on the website's submission form, hit "Submit" at the bottom of the page. Your pre-proposal will then be sent to the program's management team (the Technology Development Working Group (TDWG)) for further consideration. You have until 15 November 2018 to submit your pre-proposal.

You have until 15 November 2018 to submit your pre-proposal.



OPNAV N45
NAVY ENVIRONMENTAL SUSTAINABILITY DEVELOPMENT TO INTEGRATION PROGRAM

HOME PROGRAM DETAILS NEEDS **PRE-PROPOSALS** PROJECTS NESDI NEWS LOGIN

Pre-proposal Submission Notice: The NESDI program is currently accepting pre-proposal submissions for valid needs 15 October thru 15 November 2018. Submissions MUST be from Navy employees to be considered. Once you begin the submission process, you will be required to identify the specific need that your pre-proposal seeks to address. You will also be able to view all of the essential details about a particular need.

What's a Pre-proposal
A pre-proposal is the initial step in describing how a proposed technology successfully addresses the environmental need it targets. The NESDI program concentrates on technologies that are sufficiently mature for demonstration and validation and support the overall environmental readiness of the Fleet and Navy acquisition communities.

How to Submit a Pre-proposal
All pre-proposals must be submitted through the NESDI website's [submission form](#). A Microsoft Word [template](#) is available to facilitate offline preparation of pre-proposals prior to website submission. When using the template, please consider that special characters and formatting in Word, such as tables and bullets, will be lost when cut, pasted, and submitted to the website. Your pre-proposal should:

- Focus on and describe how it will address the need being targeted,
- Clearly explain the project objectives,
- Quantify and qualify the technical criteria for a successful project,
- Identify the environmental constraint(s) to be resolved,
- Include the basic strategy for successfully integrating the solution into the Fleet, and
- Identify the authorization stakeholders related to the proposed effort.

See our [reference guide](#) to learn more about the submission process.
Submission Period: 15 October thru 15 November 2018.
[Submit Your Pre-proposal Now](#)

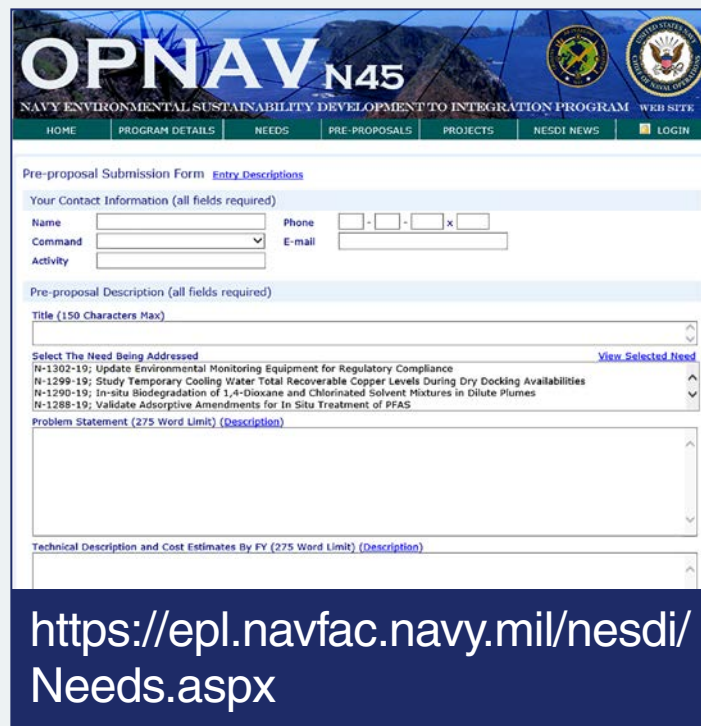
What's Next
Members of the NESDI management team along with appointed subject matter experts evaluate each proposal using [established criteria](#). This input is then leveraged to arrive at a final evaluation that determines which authors will be invited to submit full proposals. Currently, final evaluations are scheduled to be completed on 19 December 2018. Final evaluation results will be provided to authors shortly after the final evaluation cycle ends.

<https://epl.navfac.navy.mil/nesdi>

Any other questions you may have about submitting a pre-proposal should be directed to your TDWG representative or the NESDI program manager, Ken Kaempffe, at 805-982-4893 or ken.kaempffe@navy.mil. If your question pertains to the function of our website, contact our webmaster Eric Rasmussen at 732-323-7481 or eric.rasmussen@navy.mil.

Once all pre-proposals have been collected, NESDI program management will review and rank them using established criteria including how the proposed effort addresses the need, how executable the project is, if the proposed effort is ready for demonstration and validation and how feasible it will be to integrate the solution into ongoing Fleet operations. This is followed by a final evaluation that determines which pre-proposals will proceed to full proposal development.

Full proposals are requested for those pre-proposals that do the best job of meeting the evaluation criteria and addressing the explicit requirements as stated in the targeted need.



OPNAV N45
NAVY ENVIRONMENTAL SUSTAINABILITY DEVELOPMENT TO INTEGRATION PROGRAM

HOME PROGRAM DETAILS NEEDS **PRE-PROPOSALS** PROJECTS NESDI NEWS LOGIN

Pre-proposal Submission Form [Entry Descriptions](#)

Your Contact Information (all fields required)

Name Phone --x
 Command E-mail
 Activity

Pre-proposal Description (all fields required)

Title (150 Characters Max)

Select The Need Being Addressed [View Selected Need](#)

N-1302-19; Update Environmental Monitoring Equipment for Regulatory Compliance
 N-1299-19; Study Temporary Cooling Water Total Recoverable Copper Levels During Dry Docking Availabilities
 N-1290-19; In-situ Biodegradation of 1,4-Dioxane and Chlorinated Solvent Mixtures in Dilute Plumes
 N-1288-19; Validate Adsorptive Amendments for In Situ Treatment of PFAS

Problem Statement (275 Word Limit) [\(Description\)](#)

Technical Description and Cost Estimates By FY (275 Word Limit) [\(Description\)](#)

<https://epl.navfac.navy.mil/nesdi/Needs.aspx>

The call for full proposals will run from 17 January until 14 March 2019. (Full proposals are solicited by invitation only.) Successful proposals will result in new projects beginning in FY20 and beyond.



FY18 Projects Underway

In this section of *NESDI News*, we introduce you to three of our FY18 “new start” projects. These projects include an effort to minimize the use of hazardous materials as well as an initiative to develop a non-permeable barrier to help prevent the spread of the brown treesnake.

Enterprise-wide Hazardous Material Standardization and Minimization of General Use Consumables (project no. 556)

Making the Green Choice Easier

Navy units ashore use a variety of hazardous materials such as paints and cleaners. Approximately 24 percent of products procured Navy-wide contain one or more chemicals of concern listed on Systems Command Avoidance Lists and/or the National Aerospace Standard 411 Hazardous Materials Target List.

For most applications, each facility has a choice of which hazardous material to use. The number of commercially available, general use hazardous material products grows each year as manufacturers reformulate existing products and add new ones. This results in 1,000 new products entering the Navy inventory each month. For each new product, health, safety and

environmental data must be entered into the Navy supply recordkeeping systems for the purpose of environmental reporting.

In summary, the current procurement process for Navy general use hazardous materials procurement has become unsustainable.

To improve and streamline the process, this project team plans to identify less hazardous or non-hazardous alternatives for general use hazardous materials. This will be achieved through a collaboration among Navy Supply Systems Command (NAVSUP), Navy facilities environmental and Navy safety and industrial hygiene personnel.

NAVSUP has access to extensive hazardous materials data which can be used to identify a comparable preferred product for many Local Stock Number (LSN) items. A hazardous materials substitution algorithm/program will be designed to augment the Chief of Naval Operations-mandated Consolidated Hazardous Material Reutilization and Inventory Management Program effectiveness.

National Stock Number (NSN) items purchased via the supply system feature environmental attribute codes (ENAC) to identify environmentally preferable products. The tool developed by this project team will include a way to identify “green” general use LSN items

FY18 Projects Underway (continued)



A Hazardous Materials Supply Center.

in the same way that the ENACs are used for products procured via supply system NSN items.

The tool developed by this project team will include a way to identify “green” general use LSN items.

This project team will also identify opportunities and economies of scale through standardization of hazardous materials.

Providing end users access to a new decision tool will result in the reduction of LSNs, improved shelf life management and increased use of safer and “greener” substitutes.

In addition, the team will determine the technical and economic feasibility of replacing target hazardous materials on a large scale. It is the goal of this project to achieve a 50 percent increase in sustainable products selected and a 25 percent reduction in the number of new environmental record builds for conventional products.

The hazardous materials standardization, procurement process and the substitution tools and methods will be demonstrated and proofed at two Hazardous Materials Supply Centers. Lessons

learned and recommendations for additional refinement will be promulgated to all Hazardous Materials Supply Centers in the continental United States. The NAVSUP Weapons Systems Support Pollution Prevention team and NAVSUP headquarters will revise its hazardous materials management publication to ensure that tools and methods developed as a result of this study are promoted across the Navy.

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FY18 Projects Underway (continued)

Biochar Adsorption for Dry Dock Effluent (project no. 560)

A New Possibility for Reducing Metals Loading

Navy shipyard dry docks generate industrial process water that may contain metal particulates as well as nutrients from stormwater runoff, non-contact cooling systems and other activities that are regulated under the National Pollutant Discharge Elimination System (NPDES) program. NPDES permit requirements at Navy shipyards are becoming increasingly more restrictive—particularly with respect to the concentrations of metals and nutrients allowed in point source discharges.



A submarine awaits repair in dry dock.

(Photo Credit: MCS 1st Class Amanda R. Gray)

Due to these stringent limits and the limited capacity to treat large-volume continuous flows, shipyards may be at risk for exceeding NPDES permit limitations for metals such as copper, zinc and aluminum among others.

There are four dry docks at Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility (PHNSY&IMF), six dry docks at Puget Sound Naval Shipyard and additional docks at other Washington State and California installations with similarly restrictive permit levels.

The State of Hawaii is aware of the significant challenges imposed by NPDES permit limitations and has granted PHNSY&IMF a Schedule of Compliance and interim permit limits for pollutants such as copper. Although PHNSY&IMF can consistently attain its current interim limit for copper, the facility continues to struggle to meet the final permit limitations which will go into effect by October 2022. Best Management Practices (BMP) have helped to significantly lower metal and nutrient concentrations from the end-of-pipe discharge but do not appear adequate to meet long-term goals.

Recent testing has indicated that the use of biochar can be an effective means of removing metals and nutrients from stormwater and process water streams. A carbonaceous by product of bioenergy production,



Biochar media. (Photo Credit: Lewis Hsu)

biochar is an inexpensive, highly porous filtration media with high contaminant retention rates. This project team will place weirs within existing dry dock drainage troughs which will result in the temporary pooling of process water. This water will then be forced to flow up through a biochar device to provide adequate contact time and sequestration of contaminants. Lessons learned from previous studies indicate that rinsing the biochar prior to use increases the contaminant holding capacity. This practice will be implemented during the demonstration.

Recent testing has indicated that the use of biochar can be an effective means of removing metals and nutrients from stormwater and process water streams.

Other deployment strategies to be tested include the use of biochar as a treatment step within the dry dock sand trap, utilizing clarifying inserts being developed under another NESDI project

FY18 Projects Underway (continued)

(project no. 543: Preventative Management of Contaminated Silt). In this case, biochar will be a drop-in media filtration component in the clarifying inserts. Remedy effectiveness will be laboratory tested via U.S. Environmental Protection Agency-approved methods.

The data from this demonstration will be made available to end users to determine if this technology is a good fit at their respective sites. If so, the passive filtration fixtures used may be fabricated by shipyard tradespeople or contractors using commercially available biochar. Coordination with shipyard personnel and commercial biochar manufacturers will aid in the integration of this technology and provide an effective means of deploying it. A final report including recommended testing and design criteria will be prepared.

Regulators will have access to the data from this demonstration as evidence of BMP improvement efforts targeting permit violation reductions. If successful, this technology will be included in future updates to BMPs found in shipyard Dry Dock Water Pollution Control Plans and future NPDES permits if applicable.

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Brown treesnake.

Development and Demonstration of a Portable, Temporary Barrier to Aid in Cargo and Equipment Inspections to Prevent Brown Treesnake Dispersal (project no. 561)

Simple Solution Aims to Save Time, Maintain Control

The brown treesnake (*Boiga irregularis*) is an invasive species with the largest current and potential impact to Department of Defense (DoD) activities in the Pacific. Since the late 1940s, the brown treesnake (BTS) has caused the extinction or extirpation of many endemic species on Guam, including 10 of 12 forest birds. Were the treesnake to successfully invade other locations, particularly the Commonwealth of the Northern Mariana Islands (CNMI) and Hawaii, it could wreak both biological and economic havoc. Given the increased military activities in the region and military construction on Guam from the Guam and CNMI military relocation, there is a risk of the

treesnake being dispersed into these areas through the DoD transportation network.

Currently, the DoD spends millions of dollars a year on the management and control of the BTS. Much of this funding goes toward inspecting all outbound cargo and equipment for BTS stowaways. (Inspection of cargo at inbound locations may also be required, depending on the location.) The primary BTS inspection method is canine inspection followed by human visual inspection. Cargo is inspected when it arrives at the outbound site and then daily until it is loaded onto a departing vessel.

Currently, the DoD spends millions of dollars a year on the management and control of the brown treesnake.

The speed at which cargo and equipment can be loaded and unloaded is limited by the number of canine teams and the time it takes for them to inspect each

New Projects Underway (continued)



Brown treesnake.

piece of cargo. If the canine teams fall behind, this can delay cargo and equipment transport and military missions.

This project team plans to use portable, temporary barriers to prevent the movement of BTS. Cargo and equipment that have passed an initial canine inspection can be stored within these barriers until the day of loading or transport, where they can undergo a final canine inspection before being moved. Such a barrier can also be used as a rapid response tool during the inspection process at a receiving jurisdiction when a canine alerts inspectors to a particular piece of cargo when

the BTS is not immediately visible. The barrier would serve as a quarantine structure until the BTS can be found and removed.

While some barriers are currently in use by the DoD, existing designs require ground penetration or disturbance (e.g., posts, walls, rebar) to withstand local environmental conditions. This is problematic on Guam and the CNMI due to unexploded munition and cultural resource issues.

Utilizing some of the design elements of other temporary barriers, the team will design

and test a new prototype barrier under controlled conditions. The successful design will then be field tested on Guam to determine its effectiveness against BTS and its ability to withstand environmental conditions. Following the successful deployment of these tasks, a full-size barrier will be built and utilized in realistic transportation situations.

The team will transition this technology to a variety of audiences (e.g., end users, DoD personnel, regulators). For long-term technology transition, the Naval Facilities Engineering Command Marianas team member will transition this technology within the DoD, at transportation venues and with regulators on Guam, CNMI and Hawaii. The team will also produce a guidance document on how to use the barrier, as well as in-person training and a training video.

Principal Investigator:

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Schedule Announced for 2019 In-Progress Reviews

We just released the dates and locations for our 2019 In-Progress Reviews (IPR). Our east coast IPR will be held the week of 29 April - 3 May 2019 at the Admiral Gooding Center onboard the Washington Navy Yard. We will hold our west coast IPR the week of 10-14 June 2019 on the Space and Naval Warfare Systems Center complex in San Diego. Look for additional details as they become available in future issues of *NESDI News*.

East Coast IPR

29 April - 3 May 2019
Admiral Gooding Center
Washington Navy Yard

West Coast IPR

10-14 June 2019
Space and Naval Warfare
Systems Center
San Diego, CA



Program Schedule

Throughout the fall, the program will concentrate its efforts on compiling and evaluating the pre-proposals we received to address the priority needs collected via our FY19 needs solicitation process. A complete program schedule for the following year is provided below.

No.	What	When
1.	Pre-proposals DUE	15 November 2018
2.	Make Pre-proposals Assignments to FWGs	30 November 2018
3.	TDWG & FWG Comments on Pre-proposals DUE	19 December 2018
4.	Evaluate Pre-proposals	7-11 January 2019
5.	Conduct OPNAV N45 Programmatic Review	16 January 2019
6.	Request Full Proposals	17 January 2019
7.	Full Proposals DUE	14 March 2019
8.	Screen Full Proposals	5 April 2019
9.	Conduct First FY19 In-Progress Review	29 April – 3 May 2019 (Washington Navy Yard, DC)
10.	FWG & TDWG Comments on Full Proposals DUE	24 May 2019
11.	Principal Investigator Answers to Full Proposal Screening Questions DUE	24 May 2019
12.	Announce FY20 Needs Solicitation	3 June 2019
13.	Complete Evaluation of Full Proposals	4 June 2019
14.	Obtain Sponsor Review & Approval of Full Proposals	6-28 June 2019
15.	Conduct Second FY19 In-Progress Review	10-14 June 2019 (San Diego, CA)
16.	Announce FY20 New Starts	26 July 2019
17.	Close FY20 Needs Solicitation	1 August 2019
18.	Screen FY20 Needs	12-15 August 2019
19.	Evaluate & Rank Needs	9 -13 September 2019
20.	Obtain Sponsor Review & Approval of Needs	16 September – 11 October 2019
21.	Request Pre-proposals	14 October 2019
22.	Quarterly Status Reports Due	7 January 2019 1 April 2019 1 July 2019 7 October 2019

Check out our web site (<https://epl.navfac.navy.mil/nesdi/Schedule.aspx>) for the latest version of our program schedule.



Getting on Our Mailing List

If you're not already on our mailing list and want to subscribe to *NESDI News*, please send your email address to Lorraine Wass at ljwass@outlook.com.

Contact Your TDWG Member

For more information about the operation of the NESDI program, contact Ken Kaempffe, the NESDI program manager, or members of the TDWG.

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In the Next Issue of NESDI News

There is a lot more information coming your way in the next issue of *NESDI News: Highlights & Happenings*. In our winter 2018-19 issue, we will provide you with more information about the pre-proposals we received as a result of our most recent solicitation.