



The Corps

Volume 21, Issue 1
February 2020

Environment



Enlisting flea beetle to combat invasive alligator weed **20**

Environmental Operating Principle #6

Leverage scientific, economic and social knowledge to understand the environmental context and effects of Corps of Engineers actions in a collaborative manner.





The Corps Environment

Lt. Gen. Todd T. Semonite
Commanding General
Publisher

W. Curry Graham
Director of Public Affairs

Lara Beasley
Executive Editor

Gene Pawlik
Managing Editor

David San Miguel
Editor

The Corps Environment is an online quarterly news magazine published by the U.S. Army Corps of Engineers under the provisions of AR 360-1 to provide information about USACE and U.S. Army environmental initiatives, policies and technologies.

Opinions expressed herein are not necessarily those of the U.S. Army Corps of Engineers, the U.S. Army or the Department of Defense.

Inquiries can be addressed to U.S. Army Engineering and Support Center, ATTN: CEHNC-PA, 5021 Bradford Drive East, Huntsville, AL 35816.

Tele: (256) 895-1150.

The Corps Environment's editorial staff welcomes submissions with an environmental, sustainability or energy focus from USACE and Army units worldwide.

Send articles, photos, events, letters or questions to the editor, at Corps-Environment-Magazine@usace.army.mil.

Submission deadlines are indicated in red:

December 15 February
March 15 May
June 15 August
September 15 November

Contents

4 EnviroPoints
Collaboration, partnership
key to program execution

6 Harbor project promotes
marine diversity

8 Agency partnerships foster,
protect sensitive ecosystems

9 Resource efficiency managers
reduce installation's energy,
water costs

11 Corps investigates munitions
found at former New York
Harbor post

14 Analysis team helps identify
potential land use concerns

16 Collaboration benefits
flood control projects

19 Hamilton City project
combines flood management,
ecosystem restoration

20 Enlisting flea beetle to combat
invasive alligator weed

23 Corps innovates, optimizes
cleanup efforts

25 Project nears completion
with landmark publication

26 Innovative construction methods
increase levee, flood wall
confidence

29 Turning algae
into crude oil

31 Black Carp captured by
Bonnet Carre Spillway

32 Course preps engineers
for threat

34 Corps, Wild Whoopers
team up to save
conservation icon

36 District cleans up contaminated
lands, eyes future for green
solar power site

38 Environmental 'hero'
recognized for dedication,
service

39 It's your career!
Are you taking charge?

www.usace.army.mil/Missions/Environmental.aspx



Project nears completion with landmark publication

By Holly Kuzmitski

U.S. Army Engineer Research and Development Center

Nearly four years ago, a team led by the U.S. Army Corps of Engineers that now includes 189 scientists, engineers and resource managers from 73 worldwide organizations, gathered to work on a set of international guidelines for utilizing Natural and Nature-Based Features (NNBF).

Today, the project is nearing completion with the publication of “Guidelines on the Use of Natural and Nature-Based Features for Sustainable Coastal and Fluvial Systems.” Expected in 2020, the guidelines will provide practitioners the best available information on the conceptualization, planning, design, engineering, construction and maintenance of NNBF to support resilience and flood risk reduction for coasts, bays and estuaries, as well as river and freshwater lake systems.

“Until this project, there were no comprehensive set of NNBF guidelines available to support practitioners and stakeholders interested in these types of solutions,” said Dr. Jeff King, deputy national lead for the Engineering With Nature Initiative.

A part of the EWN Initiative, NNBF refers to those coastal and fluvial, or river system, landscape features, either natural or nature-based, that produce flood risk management and other benefits. Natural features are those created by nature; nature-based features are engineered by people to mimic natural conditions. NNBF projects provide multi-purpose functions related to flood and storm damage reduction and ecosystem restoration. They are designed to simultaneously deliver economic/engineering, social and environmental benefits.

Examples of coastal NNBF include beaches and dunes, salt marshes, oyster reefs and barrier islands. Fluvial NNBF, in addition to floodplain restoration in rivers and streams, encompasses a range of features to detain and retain floodwaters or otherwise create space for water.

“The public increasingly has an interest in these types of projects,” King said. “Rather than looking solely at traditional infrastructure, knowing that it may have unintended impacts down the road, communities are saying, ‘Mother Nature does such a great job at solving problems; we should really be looking at what she does and simulate it.’”

EWN National Lead Dr. Todd Bridges described how the National Oceanic and Atmospheric Administration’s National Centers for Environmental Information tracks economic damages exceeding \$1 billion that result from weather-climate events.

“Since 1980, there have been 219 weather-climate catastrophes that have collectively produced \$1.5 trillion in damages; that’s a big number,” Bridges said.



“We have to ask, what strategies can we employ to reduce future impacts?” he said. “We can’t build walls everywhere. There are practical limits to the use of conventional infrastructure. We need to identify ways to leverage natural systems in combination with structural measures.”

The Corps is hearing from local sponsors who are increasingly interested in integrating NNBF into projects.

“We have these major functional areas within the Corps: planning, engineering and operations,” Bridges said. “We’re addressing all of those topics within the guidelines in a way that demonstrates and documents the design, performance and quantified benefits of NNBF.”

King sees this as a newly developing field of engineering.

“The U.S. Army Engineer Research and Development Center is doing research and field studies to answer questions about the design and associated benefits of these features,” King said. “Several Corps districts are very hungry to advance NNBF practices, but are challenged to quantify why the practices should be incorporated into projects.”

Illustrating the international collaborative nature of the effort, contributors and co-leads for the project include the United States, Canada, the

Netherlands, the United Kingdom and New Zealand; additional contributors are from countries such as the Democratic Socialist Republic of Sri Lanka and the Republic of South Korea.

One international collaborator is Dr. Jo Guy, the Environmental Agency (EA) of England’s international lead for natural flood management (the United Kingdom’s equivalent of the NNBF). EA personnel are contributing to six chapters in the publication.

When asked why the EA has an interest in contributing to the guidelines, Guy mentioned that the EA intends to be a net-zero carbon emissions organization by 2030.

“NNBF will allow us to achieve this goal and deliver solutions that make communities resilient to flooding and able to adapt to the effects of climate change,” Guy said.

The guidelines are written for a varied audience, so that a city manager or community developer who may not have a technical background will gain critical knowledge to pursue these types of projects and to assemble the appropriate technical teams.

The NNBF guidelines will be a living document hosted on a website and will be approximately 600-pages-long, including 19 chapters divided into three sections: Overarching Topics, Coastal Features and Fluvial Features. Case studies will also be integrated to demonstrate the application of features.

“We anticipate revisions and additions to the publication every three to four years; this is such a developing body of knowledge,” King said. “We will also write a printable 20-page summary for higher-level decision makers.”

“There is a large and growing base of knowledge, experience and expertise around the world in using NNBF,” Bridges said. “With this project, we are leveraging that base to produce guidelines that will benefit the entire international community of practitioners.”

For more information about the EWN initiative, please visit www.engineeringwithnature.org.

