Guidelines on the Use of Natural and Nature-Based Features for Sustainable Coastal and Fluvial Systems

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Hurricanes: Surge, Waves, and Rain
A Spectrum of Solutions
Integrating Across the Spectrum

“The USACE planning approach supports an integrated strategy for reducing coastal risks and increasing human and ecosystem community resilience through a combination of the full array of measures: natural, nature-based, nonstructural, and structural. This approach considers the engineering attributes of the component features and the dependencies and interactions among these features over both the short and long term. It also considers the full range of environmental and social benefits produced by the component features.”

Dear Mr. Secretary:

This letter is to inform you of a new U.S. Government Accountability Office engagement on Natural Coastal Infrastructure—code 102172. The enclosure provides information on the engagement. If we determine it is necessary to visit locations other than those specified in the enclosure, we will advise you.

We would appreciate your notifying the appropriate officials of this work. The next step will be to set up an entrance conference. At that meeting, we will request that your agency identify a point of contact for this engagement.

Sincerely yours,

Anne-Marie Fennell
Director
Natural Resources and Environment

Enclosure

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Bryan Kitchens, WHS, (bryan.k.kitchens.civ@mail.mil)
International Guidelines on the Use of Natural and Nature-Based Features for Sustainable Coastal and Fluvial Systems

Purpose: Develop guidelines for using NNBF to provide engineering functions relevant to flood risk management while producing additional economic, environmental and social benefits.

- Publish NNBF technical guidelines by 2020:
  - Multi-author: government, academia, NGOs, engineering firms, construction companies, etc.
  - Addressing the full project life cycle
  - Guidelines in 4 Parts
    - Overarching
    - Coastal Applications
    - Fluvial Applications
    - Conclusions
Natural and Nature-Based Features

NNBF are landscape features that are developed to provide engineering functions relevant to flood risk management while producing additional economic, environmental and social benefits.
Guidelines Table of Contents

Part 1: Informing the Use of NNBF
- Preface/Definitions
- Introduction
- Principles for Use of NNBF in Coastal and Fluvial Systems
- Community Engagement
- General NNBF Framework
- System Considerations and Combining Elements
- Performance Measures and Metrics
- Analysis of NNBF Benefits
- Monitoring, Maintenance, and Adaptive Management

Part 2: Coastal Systems
- Introduction
- Beaches and Dunes
- Wetlands and Intertidal Areas
- Islands
- Reefs
- Sub-Aquatic Vegetation
- Upland Plant Communities
- Enhancing Environmental Value of Conventional Infrastructure

Part 3: Fluvial Systems
- Introduction
- Applying NNBF at Watershed Scale
- Applying NNBF at Sub-Watershed Scale
- Naturalizing Techniques

Part 4: Conclusion
- Summation and Future Directions
Development Approach

- Voluntary project team
- Editorial Board (Bridges, Simm, Beck, Mohan, Collins Lodder)
- Individual Chapter Teams, with Co-Leads
- Peer review of final product
- Periodic, in-person working meetings combined with virtual engagement and drafting
International NNBF Guidelines:
Team Meeting #1; United States;
Vicksburg, MS; 25-26 October, 2016
International NNBF Guidelines:
Team Meeting #2; United Kingdom;
10-13 July, 2017
International NNBF Guidelines:
Team Meeting #3; Silver Spring, MD;
30 Oct- 3 Nov, 2017
Schedule

- 5th in-person meeting Santa Cruz, CA 17-22 Sept., 2018.
- Dec 2018 second draft of chapters submitted to EB.
- Dec 2018-Feb 2019 EB review.
- 6th in-person meeting, Mar/Apr 2019, Location ???
- Draft chapters completed June 2019.
- Guidelines Launch Event Mar/Apr 2020 ???
- Training events 2-3 formal events in 2020-2021 ???
Priorities (By Chapter)

• Refining 3-5 key chapter messages
• Refining case studies
• Refining key graphics
• Identifying gaps/needs for second draft by Dec. 2018