



// **USACE / Landscape Architecture Workshop on Engineering with Nature**

Vicksburg, MS | July 25-27, 2017

BOTTOM LINE UPFRONT

The US Army Corps of Engineers (USACE), the Dredge Research Collaborative (DRC), and a diverse group of landscape architects (LA) held an Engineering with Nature (EWN) workshop at the US Army's Engineer Research and Development Center (ERDC) in Vicksburg, MS. The workshop introduced the respective communities and offered an opportunity to identify potential working relationships. Specifically, participants explored potential collaborations through discussions and exercises that prioritized EWN approaches for new and/or existing water infrastructure projects and operations. Throughout the meeting, participants developed and refined ideas that established/integrated EWN approaches and designs into water dependent projects. Ultimately, workshop participants were able to define more than 40 clear, prioritized activities that will form the basis for future collaboration. Four projects were chosen for focused attention and development during the workshop.



BACKGROUND

Co-organized by USACE and The DRC, the USACE and LA Workshop on EWN was attended by 35 total participants. USACE participants (17 total) originated from Headquarters, Engineer Research and Development Center, Institute for Water Resources, Buffalo District, Philadelphia District, Charleston District, Galveston District, New Orleans District and Chicago District). Of the previously identified representatives, several were also members of the USACE's Landscape Architecture-Community of Practice (COP). Participants from outside the USACE consisted of 18 landscape architects representing a diverse number of universities (Harvard, University of California-Davis, Rhode Island School of Design, Cornell, SUNY Buffalo, University of Toronto, Louisiana State University, Auburn University, and University of Southern California); private sector firms (SCAPE, SWA Group, AECOM and ENE); and a state government agency (Louisiana's Coastal Protection and Restoration Authority). The DRC is a non-profit organization focused on advancing public knowledge of sediment management and envisioning/realizing preferred sedimentary futures. It was represented by ten individuals that were affiliated with the previously identified universities and SCAPE.

Over a period of two and a half days, participants gained a greater understanding of how USACE missions are executed. They also learned more about the USACE's EWN Program and the associated EWN research/project portfolio. Likewise, participants gained insight into the expertise and valuable contributions that landscape architects provide when developing and/or designing sustainable solutions that are applicable to the EWN Program and USACE's business lines. The workshop included plenary presentations and discussions that focused on project-specific vignettes and historic/current EWN work within the EWN Proving Grounds (i.e., Philadelphia, Galveston and Buffalo Districts). Breakout exercises were intermixed with the plenary sessions. The four breakout groups were comprised of a mixture of USACE and LA participants. In the first session, groups were charged with identifying specific project opportunities that integrate approaches to landscape architecture and incorporate EWN principles/practices into water-infrastructure projects (design, development and operations). The second breakout activity concentrated on integrating applications of landscape architecture and EWN on the scale of systems (i.e., a network of individual projects operating within a large geographical area (e.g., watershed, estuary coastline)). Galveston District's Coastal Texas Project was offered as an example for the breakout groups to consider when developing/designing potential EWN solutions that would maximize engineering and ecosystem service benefits for the large Corps project. In the final breakout session, groups were asked to pick one of their working ideas and advance it as far as they could towards a realized proposal.

OUTCOMES

The high quality of engagement among USACE and LA participants was evidenced by the focused, energetic, and productive dialogue, which resulted in the identification of more than 40 high-priority project ideas and opportunities. Projects were discussed and prioritized within the breakout group sessions and results were presented to all attendees during the plenary sessions. The breakout exercise on the final day of the workshop asked the four teams to refine and advance one project idea of their choosing. During this phase, project ideas were expanded to consider timing (immediate, short-term, or long-term opportunities), resource needs, geographical scale, project scope, anticipated engineering and ecosystem service benefits, potential concerns, information gaps, design considerations, regulatory challenges, interagency/stakeholder involvement and next steps. The four groups were then asked to report their final project analysis to all workshop attendees. The following descriptions highlight the four projects that were prioritized and advanced by each of the respective breakout group teams:

- 1 Utilize EWN Strategies to Conduct Maintenance Dredging of the South Carolina Section of the AIWW:** The DMMAs that have traditionally received South Carolina's AIWW maintenance dredging material are at full capacity. The proposed project would leverage EWN principles/techniques to develop alternative placement sites adjacent to the AIWW. Thus, projects like thin-layer placement, dune construction and other NNBF alternatives would be realized.
- 2 Central Valley/California Delta Multi-benefit Flood Infrastructure:** This project builds off of strong local initiatives to retrofit this region's extensive and vulnerable flood management infrastructure. The team suggested using EWN strategies to inform levee setbacks and other 'room for the river' type projects to create multi-functional floodplains that benefit a variety of species and surrounding communities, and that will serve as a model for other parts of the US. Suggested engagement includes an EWN demonstration at the project-scale, such as within the Sacramento Flood Control Project (given its proximity to urban areas and human uses) and a broader envisioning project that would assist stakeholders and communities imagine how multiple EWN features throughout the region would benefit the larger system.
- 3 Incorporating EWN Solutions into Texas Coastal Initiative:** A Systems Approach That Seeks Alternatives to Currently Planned Hardened Structure(s): Galveston Bay is scheduled for a major effort to improve resilience to extreme weather events and storm surges. Currently, four approaches are being considered, all of which emphasize hardened edges (seawalls etc). The team worked up a schedule for how a team of LAs could be brought online to explore and propose alternatives more in line with EWN principles. The approach would be to work with the District and local stake holders to gather ideas and put together a set of EWN-first proposals that would then be tested against established performance requirements.
- 4 Establish a EWN/LA Tiger Team:** This project/initiative would ultimately create a working group that consists of a diverse team of scientists, engineers, landscape architects, etc. that assemble to to perform design-driven research that will support the incorporation of EWN approaches into Corps-based, water-resources projects and support the use of EWN strategies more broadly by providing research and testing of EWN approaches. Teams would operate on 2-3 year cycles and would work on a focused design research topic / question, with impacts ideally reaching multiple Corps District projects. Subjects would be chosen by EWN and DRC representatives, and could begin with a focus on some of the core themes that precipitated out of the other breakout sessions and groups. Promising subject areas for initial Tiger Teams include 1) passive sediment management strategies focused on inland waterways and 2) layered coastal defense strategies, The team would convene for an approximately one-month period each year to consider overall objectives for Corps projects and offer innovative project designs/alternatives that maximize EWN principles/concepts.



NEXT STEPS

The immediate next steps that will be taken include:

- 1 Prepare an executive summary of the workshop (present document);
- 2 Distribute a draft workshop proceedings report to participants for feedback by September 30, 2017, to be followed by report finalization and joint publication;
- 3 Breakout Groups continue to elaborate/expand prioritized project and develop a 2-3 page white paper that characterizes needs, issues, challenges and proposed recommendations for pursuing projects by September 2, 2017. When applicable, design renderings will also be provided that highlight the EWN strategies that are recommended.
- 4 Host follow-up teleconference by September 15, 2017, between USACE and DRC leadership to track progress and identify any future action items that are needed.