



LEVEE SAFETY UPDATE

USACE Levee Portfolio Report

By Brad Arcement, Levee Safety Production Center

The USACE Levee Portfolio Report is scheduled for publication soon. This Levee Portfolio Report shares our current understanding of the portfolio of levee systems within the USACE Levee Safety Program. Managing this portfolio of levees requires an understanding of the flood risks associated with levees in the portfolio, the risk management approaches USACE uses to understand and manage these risks, and the roles of USACE, other federal agencies, states, tribes, regional districts, and local communities in assessing, managing, and communicating levee-related flood risk.

Since 2006, USACE has been working to establish a comprehensive inventory, inspection, and risk assessment of all levees within the levee portfolio. With the inventory and initial inspections complete, the first round of risk assessments on the entire portfolio is expected to be completed in 2018. This inventory, inspection, and risk assessment effort provides a more complete picture of the USACE levee portfolio than we have ever had: where levees are located (inventory); their physical condition (inspection); and the flood risk associated with the levees (assessment).

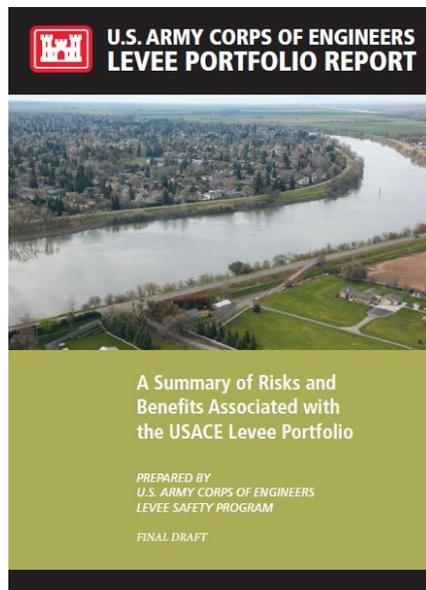
This report will summarize the best available information on the USACE levee portfolio, specifically to:

- Promote a broader understanding of benefits and flood risks associated with the USACE levee portfolio for all stakeholders;
- Provide a summary of risk factors associated with the USACE levee portfolio so that all those with levee responsibilities, including

USACE, can make informed risk management decisions on programmatic investments such as policy and technical guidance, training, and research and development; and

- Establish a baseline set of information on the USACE levee portfolio, including the collective risk across the portfolio, to enable future trends analysis.

After distribution of the report within USACE, the report will be released publicly. The report can serve as a useful tool to discuss the risks and benefits of the levees in the USACE portfolio both within our agency and with sponsors and stakeholders.



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The Levee Safety Update is an unofficial publication of the U.S. Army Corps of Engineers Levee Safety Program and contains information about initiatives that are under development and may change in subsequent updates. It provides levee safety program information to levee safety officers, levee safety program managers, other communities of practice and others interested in levee safety. Questions or suggestions for future issues can be emailed to: HQ-LEVEESAFETY@USACE.ARMY.MIL. Please visit our website at: <http://www.usace.army.mil/Missions/Civil-Works/Levee-Safety-Program/>

Status of Levee Safety Guidance Documents

FY 18 Levee Safety Guidance Status (as of Jan '18)					
Document Number	Document Title	POC/Lead	% Complete*	Current Phase	Estimated Publication Date
EC 1165-2-218	Levee Safety Policy & Procedures	Tammy Conforti (HQ)	85%	Review	1QFY19
EC 1165-2-TBD or ECB	Levee Inspection Checklist	Rich Varuso (RMC)	45%	Execution	1QFY19
EM 1110-2-1913	Levee Design Manual	Scott Shewbridge (RMC)	70%	Review	4QFY18
EM 1110-2-2502	Retaining and Floodwalls	Kent Hokens (MVP)	45%	Execution	2QFY20
EM 1110-2-2902	Conduits, Pipes and Culverts	Christina Neutz (LRL)	40%	Execution	3QFY19
EM 1110-2-1908	Instrumentation of Embankment Dams and Levees	Rich Varuso (RMC)	30%	Execution	3QFY19
EC 1110-2-6074	Guidance for EAPs, Incident Management and Reporting, and Inundation Maps for Dams and Levee Systems	Jason Sheeley (NWK)	100%	Roll-out	Published

Fiscal 2018 Training Opportunities

There are several training opportunities available in fiscal 2018:

- ◆ *Levee Safety Fundamentals PROSPECT Course* (Levee Safety 101) is scheduled for May 8 – 10, 2018, at the Kansas City District office and September 14 – 18, 2018, at the HEC Office in Davis, California. Lead for this training is Jamie McVicker.
- ◆ *LifeSim Training* is scheduled for June 2018. Lead is Jason Needham.
- ◆ *Best Practices in Dam and Levee Risk Analysis* will take place in July 2018. Lead is Chuck Redlinger.
- ◆ *Levee Safety Inspection Workshop* is scheduled for August 2018. Lead is Rick Hauck.

National Levee Inventory & Review Effort Partnership with Burlington Northern Santa Fe (BNSF) Railway

By Jamie McVicker, Levee Safety Production Center

Authorized through the Water Resources Reform and Development Act of 2014 to conduct an inventory and one-time inspection and risk assessment of the nation's levees, USACE is leading this effort to learn more about the benefits and risks associated with levee infrastructure. In association with this effort, USACE has partnered with Burlington Northern Santa Fe (BNSF) Railway to conduct inspections and risk assessments on five levees that are considered non-project segments of Federal levee systems in the USACE portfolio. Field inspections and draft reports have been accomplished by the Omaha District team and risk assessments are currently underway.

The intent of this partnership is multi-faceted: 1) gain lessons learned through coordination with BNSF for access on railway property to perform survey and field inspection activities; 2) develop a unified approach for risk communication to stakeholders and communities within the leveed

area; 3) gain a better understanding of BNSF issues and concerns related to their infrastructure that also serves as part of the levee alignment; 4) provide for inroads to coordinate with the railway/highway industry at large.

A better understanding of the non-project segments may help identify: previously unknown risks, repair and rehabilitation needs, partners for flood risk management, investments, flood fighting and emergency management activities, and the ability to describe what is at stake to residents and businesses.

Gathering baseline information will allow USACE to more efficiently and cost-effectively identify the most critical levee safety issues, quantify the nation's risk exposure and true cost of maintaining levees, focus priorities for future funding, and have fully informed communities.

WRRDA 2014 Section 3013 Levee Vegetation Policy

By Steve Fink, HQ USACE



Levee Vegetation Revisit Team meeting, December 12-14, Sacramento, California. Left to right: Chris Haring, Charles Ifft, David Smith, Jeff King, Boni Bigornia, Todd Bridges, Kevin Holden, Herb Bessey, Tim O'Leary, Brad Arcement, Linda Manning, Steve Fink, Alicia Kirchner, Maureen Corcoran, Jasmine Austin, Max Wilson, and Nick Brubaker.

Others attending by webinar and not shown: Rachel Lopez, Lisa Morales, Mike Fedoroff, and Craig Fischenich, Doug Weber, Jacob Sinkhorn, and Paige Caldwell. (USACE Photo)

Section 3013 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014) required a comprehensive review of U.S. Army Corps of Engineers (USACE) guidelines related to vegetation management on levees to determine whether its current vegetation management policy is appropriate for all regions of the United States.

Implementation Guidance to comply with the WRRDA 2014 direction was prepared by Headquarters, October 19, 2017. The Implementation Guidance is available at: <http://cdm16021.contentdm.oclc.org/utills/getfile/collection/p16021coll5/id/1213>

Levee Safety has joined forces with Engineering Research and Development Center (ERDC) Engineering with Nature (EwN) to form a team comprising USACE subject matter experts and scientists. The first step is to develop a project management plan, which will serve as a roadmap for meeting the requirements laid out in WRRDA and the implementation guidance. A draft Project Management Plan (PMP) was pre-

pared as a starting point, but additional team input was required to fully and strategically scope the overall effort.

Progress consists of two webinar meetings held late November 2017, and a three day face-to-face team meeting in Sacramento District, December 12-14, 2017. The purpose of the webinars was to socialize the Levee Safety Program and the vegetation policy generally with the EwN team members, and to provide an overview of EwN and Nature and Nature Based approaches and activities for the Levee Safety team members.

The face-to-face meeting was to expand the team knowledge begun by the webinars, and to hone the activities that will help finalize the PMP.

The next steps are to refine and finalize the PMP with HQ senior staff; and then undertake the actions laid out in the approved plan. The goal for PMP approval is end of February 2018. Intent is to share the PMP once it has received management approval.

Getting Levee Sponsors onboard with Risk Communication - Los Angeles District conducts workshops

By Joe Goldstein, Los Angeles District, and Stacy Langsdale, Institute for Water Resources

As part of the transformation to a risk-informed organization, to ensure communities are safer, USACE relies on its Levee Sponsors to communicate the risks associated with levees to those who could be affected. After Los Angeles District's levee Safety team received risk communication training last year, it decided local sponsors could benefit from similar training.

During the summer and fall of 2017, Los Angeles District (SPL) Levee Safety staff interviewed all 20 of its levee sponsors and then conducted three regional training workshops for them. SPL received expertise support through the USACE Collaboration and Public Participation Center of Expertise's (CPCX) [Gnarliest Collaboration Challenge](#). The U.S. Institute for Environmental Conflict Resolution with The Participation Company (representing CSRA, Inc.) provided contract support. Additionally, one author, Langsdale, of CPCX and the Public Awareness and Communication Team (PACT) supported the work on a three-month developmental detail at SPL.

The Los Angeles District is responsible for more than 120 levee systems. The District has operation & maintenance responsibility for approximately 20 percent of these, but the vast majority are operated and maintained by local cost-share sponsors. All of SPL's sponsors are county governments across Arizona and Southern California (from Santa Barbara to San Diego, and east to the border of Arizona). Across the region, there are several cases where jurisdictional boundaries divide responsibilities and benefits. For example, the City of Palm Springs is ringed by levees that are Riverside County's responsibility. In other cases, the county flood control district is the official sponsor (and thus USACE's point of contact); however, the county has delegated operation and maintenance authorities to the city or town where the levee resides. In these cases, it is less clear who is responsible and best suited for conducting outreach about levee risk.

The primary activity was a series of three workshops across the region offered to all 20 levee sponsors (including SPL). The purpose of the workshops was to (1) increase awareness of the USACE Levee Safety Program's new expectations of sponsors regarding risk communication; (2) provide some foundational skills training in risk communication; and (3) help sponsors begin the effort through providing examples and activities to start developing their own communication plans.



Levee Safety Communication team. Shown L-R: Joe Goldstein, SPL; Debra Duerr, The Participation Company (TPC); Stacy Langsdale, IWR; Jody Fischer, SPL; Nora Campbell, USIECR; and John Godec, TPC. (USACE Photo)

Prior to designing these workshops, all sponsors were interviewed to assess the situation, including their relationship with USACE and their concerns about communicating levee risk. What SPL heard provided significant input into the workshop design. Here are couple of the major concerns and how SPL addressed them:

- a. "We are not New Orleans." Our risk is different. [In Arizona], most of our levees are in good condition and are low risk. Why is this necessary?

In USACE, much of the current direction of our program is based on a response to Katrina. So, we often refer to that event, as well as Hurricane Sandy and now the hurricanes of 2017. However, Southern California and Arizona don't see themselves in stories of Atlantic hurricanes or cities surrounded by levees. So, in our workshop introduction, we described their flood risk using stories of their own major flood disasters over the past century.

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Participants at Levee Safety Communication Workshop, Orange County, California, November 7, 2017. (USACE Photo)

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- b. What are you asking us to do; how is this different from our current efforts talking about flood risk? We have several types of flood risk – we shouldn't talk about levees separately.

We definitely encouraged sponsors to build on their current efforts, rather than creating a levee-specific effort. If they are already doing flood awareness outreach, then we encouraged them to just add a component on levees. Additionally, the workshop agenda included time for selected sponsors to share successes to date on flood awareness outreach, to give the others ideas, possibly resources to borrow, and a sense of the scale of the effort.

- c. The most significant and consistent concern was about sponsor relationships with USACE and the lack of internal communication and consistency across different groups in USACE.

The workshop design team invited several of the related representatives across USACE including Public Affairs, Emergency Management, Operations, Planning, Silver Jackets, and Project Management. Although several wanted to attend, we only had one PAO at one event, and a Silver Jackets rep at one other. Unfortunately, active hurricane response was a priority at the time, and also kept FEMA from participating. To demonstrate coordination, we provided handouts and contact information for the topics that overlapped with other departments such as Public Law 84-99, and vegetation on levees.

We also coordinated with FEMA in advance and included some of their input.

As a result of the interviews and workshop invitation, Los Angeles County requested a pre-workshop meeting to clarify what was being asked of them and why. The request for public outreach is a particularly big lift in Los Angeles County, where they will need to gain approval from the Board of Supervisors, and because any effort is multiplied 28 [systems] times, to duplicate the effort in all of their communities. The pre-meeting was invaluable and provided an opportunity to clarify and understand the County's concerns. As a result, we gained their commitment. A large number of their staff (15) fully participated in the November workshop.

At the first workshop we held in September in Arizona, the discussion of the Levee System Summaries (LSS) triggered several concerns. As a result, we revised our presentation with the following key messages for our sponsors:

1. The content shouldn't be a surprise to you – it's just a repackaging of the risk assessment(s) you've seen already.
2. You will get an opportunity to review and provide feedback. (We showed them the process of developing the LSS, and highlighted what we want them to review – the table with the risk drivers and what is being done about it.)
3. We're posting them to the NLD but we want you to take the lead in outreach.

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- This document may not be a “first touch” marketing piece, but it is written in plain language so that those ready for more detail will be able to understand it. Use it to develop your own outreach products.

At both California workshops, the only concern was if two weeks was long enough for sponsors to conduct their review. They understood much more clearly.

Overall SPL was pleased with the workshops. Within a couple weeks of the Arizona workshop, the Town Manager of Clifton, Arizona released a video with on point flood risk messaging. [Available at: <https://www.youtube.com/watch?v=gxVxTk0okfQ&feature=youtu.be>] Also, we heard feedback from Bill Harris, Customer Service Program Manager of San Diego, that he felt we (including outreach professionals) affirmed that his approaches to outreach were ap-

propriate and worthwhile and was motivated to build on his successes to add discussion on levees.

However, the long-term impact is yet to be seen. There are challenges to keeping up the momentum, especially with staff changes at SPL. Author Goldstein was promoted to Dam Safety Program Manager, and Levee Safety Program Manager, Jody Fischer, retired at the end of January 2018, without a replacement in place. Sponsors may take initiative on their own, but may need periodic encouragement or additional support from SPL to keep talking about levee risks as an on-going activity.



[Gnarliest Collaboration Challenge](#)

USACE I-Wall Review

By Michael Sharp, Engineer Research and Development Center

Following Hurricane Katrina, USACE initiated an effort to identify and evaluate all I-walls in the USACE inventory regarding the implementation of lessons learned from the Interagency Performance Evaluation Task Force (IPET) on the performance of I-walls. Implementation of lessons learned was carried out on the USACE I-wall inventory in a three-phase evaluation beginning with Phases 1 and 2 in 2006 and Phase 3 in 2011. Phase I assessments were based entirely on observations of performance of I-walls from Hurricane Katrina; Phase II assessments were based on a more detailed understanding of the identified I-wall failure mode (gap between wall and soil) as a result of additional modelling efforts; and Phase III assessments were based on an extension of the identified failure mode to foundations and walls beyond those particular to New Orleans.

Each Division identified respective I-wall projects as required in Phase I of the assessment and conducted Phase II assessments as dictated by the results from Phase I.

Based on these, analyses recommendations were made for each levee project on the need to proceed to a Phase III assessment. Since 2009, USACE adopted a levee portfolio risk management process that incorporates a broader discussion on benefits and risks associated with levees. There has been an effort underway to consider both the

Phase I and II evaluations in conjunction with the risk management process to assess, manage, and communicate risks associated with I-walls in the overall levee system. A team from the Mississippi Valley Division Dam and Levee Safety Production Center worked to comprehend the findings of the Phase I and II evaluations, evaluate the recommendations for a further Phase III assessment, incorporate findings from the Screening Level Risk Assessments, and make a determination of those I-wall projects that need further evaluation based on risk. This effort resulted in a report to USACE headquarters and a webinar to inform Levee Safety Officers and Levee Safety Program Managers.



Damaged I-wall from Port Arthur, Texas (USACE Photo)