Presented by:
Cathi Sanders
Jamie McVicker, P.E.

30 November 2017

"The views, opinions and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."
LEVEE INVENTORY, INSPECTION & RISK ASSESSMENT OF THE NATION’S LEVEES

- Overview of the Effort
- Benefits for I&R Partners
- Scope and Limitations

- Engagement and Participation
  - USACE I&R Team
  - State / Tribe officials & levee owners/operators

- Timeline of Activities
WHY IS INVENTORY & REVIEW IMPORTANT

- Reduce risk to those that live & work in leveed areas
- Reduce risk of property & environmental losses
- Encourage the use of appropriate engineering policies, procedures & technical practices
BENEFIT: INCREASE UNDERSTANDING OF RISK

- Establish a baseline understanding of levee condition and risks
- Identify orphan levees
- Inform emergency management efforts
- Identify risk management partners
I&R BENEFITS

Develop technical assistance materials, seminars, and guidelines to improve the security of levees of the United States

Build public awareness of the risk associated with living in flood prone areas
BENEFIT: IMPROVE TECHNICAL CAPACITY

- Build inspection, assessment & communication capacity w/in others
- Assist w/ data management (National Levee Database)
- Provide access to tools
LEVEE INVENTORY & REVIEW FACTS

- USACE has authorities (via WRRDA 2014) to conduct ongoing levee inventory & one-time levee review on all non-federal levee systems in NLD.

- USACE has an approved FY 18 budget to conduct levee inventory & review for non-federal levee systems.

- NLD indicates over 8,000 levee systems (roughly 15,000 miles of levees) beyond USACE portfolio.
**LEVEE INVENTORY AND REVIEW GOALS**

- **Improve national investment & management decisions** by identifying critical issues and quantifying the nation’s exposure.
- **Share best practices, procedures, & tools** for levee inventory, inspection, and risk assessments.
- **Help evaluate infrastructure** (location, condition, potential risks, vulnerability and exposure of consequences).
Partner with states and tribes to work with owner/operators

Partners can tailor participation to their resources and financial constraints

Maximize opportunities for formal and on-the-job training = increased national capacity
IMPORTANT DETAILS: INVENTORY AND REVIEW

Inventory
- General Location and Condition of Nation’s Levees
- Consequences behind levee systems
- National Levee Database

Review
- Inspection
- Screening Level Risk Assessment
- Levee System Summary

Partnership/Communication
- Create ongoing Partnership with State and Tribe
- Training / Sharing Best Practices
- Effective Communication

Ongoing Activity
One-Time Activity
Ongoing Activity

WRRDA 2014 – Title IX, Section 9004
LEVEE INVENTORY & REVIEW - KEY ACTIVITIES

- **Locate:** Upload basic information for all known levees in the National Levee Database

- **Inspect:** Assess the condition of the nation’s levees by conducting field inspections

- **Characterize:** Conduct levee risk assessments to evaluate and communicate the nature of flood risk posed

- **Share information:** Develop a levee system summary

---

WRRDA 2014 – Title IX, Section 9004
**WHAT LEVEES ARE WE TALKING ABOUT?**

<table>
<thead>
<tr>
<th>Authority/ Portfolio</th>
<th>Miles (Estimated)</th>
<th>Identified in the NLD?</th>
<th>Condition Assessed?</th>
<th>Characterized Benefits and Flood Risks?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federally authorized, USACE Operated and Maintained</td>
<td>4,000</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Federally authorized, USACE Constructed, Local O&amp;M</td>
<td>8,000</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-USACE levee (locally constructed, local O&amp;M) accepted into USACE Rehabilitation Program (P.L. 84-99)</td>
<td>2,200</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-USACE levees outside of USACE programs identified from state inventories; FEMA programs;</td>
<td>~15,000</td>
<td>Yes</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Non-USACE levees in state or community not identified</td>
<td>unknown</td>
<td>No</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>
LEVEES IN THE NATIONAL LEVEE DATABASE

Partners: Levee Owners/States/Territories/Federally-Recognized Tribes/Local & Regional Authorities
LEVEES ON TRIBAL OR RESERVATION LANDS IN THE NATIONAL LEVEE DATABASE
NATIONAL LEVEE DATABASE – NEW BUILD

Released USACE / FEMA – August 2017
- New Home/Web Pages & Maps / On-line Editing / Search Features
One central database:

- **Dashboard**: Program goals, metric displays, and critical information reporting
- **Risk Screening**
- **Condition and Risk Information**: Inspection; Screening; Consequence; Performance Data
- **Federal/State/Tribal**
- **Engineeering**: Location; inundation maps, cross section; attributes
- **Levee Screening and other field collection data**
- **Data provided by Federal, State and Tribal Partners**

**Tools**

- **LST**: Levee Screening Tool
- **LIS**: Levee Inspection and other field collection data

**Shared Tools**
National Levee Database

The National Levee Database (NLD), developed by the U.S. Army Corps of Engineers (USACE), is the focal point for comprehensive information about our nation’s levees. The database contains information to facilitate and link activities, such as flood risk communication, levee system evaluation for the National Flood Insurance Program (NFIP), levee system inspections, flood plain management, and risk assessments. The NLD continues to be a dynamic database with ongoing efforts to add levee data from federal agencies, states, and tribes.

Levees of The Nation

- **2,357** Levee Systems
  - 1,575 Federal
  - 782 Non-Federal
- **13,488** Miles of Levees
  - 11,521 Federal
  - 1,967 Non-Federal
- **36,626** Levee Structures
- **52 years** Average Levee Age

Click on a state below or on the map to zoom in.

- Alabama
- Alaska
- American Samoa
- Arizona
- Arkansas
- California
- Colorado
North Kansas City Levee
Location: Kansas City, Clay County, Missouri
USACE District: Kansas City
FEMA Region: Region 07

Levee System

Project Description
A brief general description of the levee system, including the location and category of the levee (USACE operated and maintained, federally authorized-locally operated and maintained or non-federal levee), brief physical description.

Maintaining Organizations
City Of Kansas City, Missouri
North Kansas City Levee Unit

Segments
North Kansas City Airport
North Kansas City Lower

Authorization
USACE Federally constructed, turned over to public sponsor operations and maintenance.

Inspection
Latest Inspection Rating
Minimally Acceptable
May 12, 2015

Risk Characterization
Levee Safety Action Classification
Normal

<table>
<thead>
<tr>
<th>People</th>
<th>Structures</th>
<th>Economics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234</td>
<td>567</td>
<td>$8,901,234</td>
</tr>
</tbody>
</table>

Provide information summarizing the risk characterization for the levee system, including the identified issues (risk drivers) and potential consequences. Include the latest information about when the risk assessment was done, the result, and the primary risk drivers. Describe the caveats that should be considered as part of the risk assessment, such as level of uncertainty in existing information.

Key Documents

Levee System Summary Sheet
2/8/2016
PDF - 14.5 KB

Inspection Report
8/18/2015
PDF - 1.86 MB
LEVEE INVENTORY & REVIEW
VALUE TO PARTICIPANTS

▪ Help evaluate infrastructure
  ▪ Location
  ▪ Condition
  ▪ Potential Risks
  ▪ Vulnerability & Exposure of Consequences

▪ Opportunity to share
  ▪ Lessons Learned
  ▪ Hands on Training
  ▪ Best Practices with Methodology & Tools

▪ Opportunity to align State levee safety activities
**Background:** Conduct levee inspections & risk assessments in coordination w/ State & Tribal Partners

**Process:**
- Pre-coordination w/ State / Tribe & letters from USACE HQ
- Organize teams / confirm participants
- Input new / refine existing data in NLD
- Prioritize levees for review
- Obtain levee owner/operator concurrence
- Hold kick-off meeting
- Obtain rights-of-entry & assess survey needs
- Complete inspection and risk assessment
- Gather lessons learned
The Honorable Bill Walker  
Governor, State of Alaska  
State Capitol  
P.O. Box 110001  
Juneau, Alaska 99811-0001  

Dear Governor Walker:  

Congress has authorized the U.S. Army Corps of Engineers (USACE) to work with interested states and levee owners/operators to conduct an inventory and review of levees across the nation. The inventory and review of levees effort will collect available levee information and assess the condition and flood risks associated with levees nationally. This information can be used by states and levee owners/operators to make informed decisions on managing flood risks associated with levees. The information collected will be included in the National Levee Database (NLD) to promote community and public awareness of the benefits and flood risks associated with levees.  

USACE is seeking state involvement to coordinate the collection and sharing of levee information and to coordinate with interested levee owners/operators. USACE will be conducting a one-time levee inspection and risk assessment with interested levee owners/operators, subject to availability of funds. Participation in this effort with USACE is voluntary and does not create a federal responsibility to operate, maintain, repair, or replace levees assessed by USACE.  

USACE will use current partnerships related to state flood risk management efforts to coordinate the inventory and review of levees. However, please let us know if there is a particular point(s) of contact within the State of Alaska with whom you would like us to coordinate. Please send point(s) of contact information to DLL-CEERD-NLD-General-Support@usace.army.mil and a local USACE team member will further coordinate this effort.  

For more information regarding this effort, please see the attached fact sheet titled “Inventory and Review of the Nation’s Levees.” A website for the National Levee Database can be found at: http://nld.usace.army.mil/. The point of contact for this effort is Mr. Noah Vroman, Director, Levee Safety Production Center, at 601-631-5919 or Noah.D.Vroman@usace.army.mil.  

Sincerely,  

[Signature]  
James C. Dalton, P.E.  
Director of Civil Works
KEY TEAMS & ROLES

- **State & Tribe Liaison Teams**
  - Role: Serve as POC for State / Tribe coordination on USACE Levee Inventory and Review Activities

- **NLD Team**
  - Role: GIS support for Inventory

- **Inspection & Risk Assessment Teams**
  - Role: Levee Inspection & Risk Assessment
<table>
<thead>
<tr>
<th>Division</th>
<th>District</th>
<th>Liaison</th>
<th>Email</th>
<th>Phone</th>
<th>States Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRD</td>
<td>LRL</td>
<td>Frank, Dan</td>
<td><a href="mailto:Daniel.D.Frank@usace.army.mil">Daniel.D.Frank@usace.army.mil</a></td>
<td>502-315-6291</td>
<td>IN, KY, MI, OH, TN, WV</td>
</tr>
<tr>
<td></td>
<td>LRH</td>
<td>Humphreys, David</td>
<td><a href="mailto:David.W.Humphreys@usace.army.mil">David.W.Humphreys@usace.army.mil</a></td>
<td>304-399-5146</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LRN</td>
<td>Kohl, Phyllis</td>
<td><a href="mailto:Phyllis.Kohl@usace.army.mil">Phyllis.Kohl@usace.army.mil</a></td>
<td>615-736-5948</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LRH</td>
<td>Stephens, Ashley</td>
<td><a href="mailto:Ashley.L.Stephens@usace.army.mil">Ashley.L.Stephens@usace.army.mil</a></td>
<td>304-399-5947</td>
<td></td>
</tr>
<tr>
<td>MVD</td>
<td>MVP</td>
<td>Austin, Jasmine</td>
<td><a href="mailto:Jasmine.J.Austin@usace.army.mil">Jasmine.J.Austin@usace.army.mil</a></td>
<td>651-290-5321</td>
<td>IL, IA, LA, MN, MS, ND, WI</td>
</tr>
<tr>
<td></td>
<td>MVD</td>
<td>Caldwell, Ben</td>
<td><a href="mailto:Ben.S.Caldwell@usace.army.mil">Ben.S.Caldwell@usace.army.mil</a></td>
<td>601-631-5593</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MVS</td>
<td>Graef, Hal</td>
<td><a href="mailto:Harold.W.Graef@usace.army.mil">Harold.W.Graef@usace.army.mil</a></td>
<td>314-331-8790</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MVR</td>
<td>Haberman, Cory</td>
<td><a href="mailto:Cory.J.Haberman@usace.army.mil">Cory.J.Haberman@usace.army.mil</a></td>
<td>309-794-5324</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MVP</td>
<td>Stephens, Jennifer</td>
<td><a href="mailto:Jennifer.W.Stephens@usace.army.mil">Jennifer.W.Stephens@usace.army.mil</a></td>
<td>504-862-2972</td>
<td></td>
</tr>
<tr>
<td>NAD</td>
<td>NAE</td>
<td>Bachand, Mike</td>
<td><a href="mailto:Michael.L.Bachand@usace.army.mil">Michael.L.Bachand@usace.army.mil</a></td>
<td>978-318-8075</td>
<td>CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT, VA, Wash DC</td>
</tr>
<tr>
<td></td>
<td>NAP</td>
<td>Lewis-Coker, Christine</td>
<td><a href="mailto:Christine.T.Lewis-Coker@usace.army.mil">Christine.T.Lewis-Coker@usace.army.mil</a></td>
<td>215-656-6679</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NAP</td>
<td>Myers, Chris</td>
<td><a href="mailto:Christopher.Myers@usace.army.mil">Christopher.Myers@usace.army.mil</a></td>
<td>215-656-5621</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LRE</td>
<td>Weidel, Mary</td>
<td><a href="mailto:Mary.T.Weidel@usace.army.mil">Mary.T.Weidel@usace.army.mil</a></td>
<td>313-226-3393</td>
<td></td>
</tr>
<tr>
<td>NWD</td>
<td>NWK</td>
<td>Garden, Cassidy</td>
<td><a href="mailto:Cassidy.C.Garden@usace.army.mil">Cassidy.C.Garden@usace.army.mil</a></td>
<td>816-389-3851</td>
<td>ID, KS, MO, MT, NE, OR, SD, WA, WY</td>
</tr>
<tr>
<td></td>
<td>NWS</td>
<td>Gonia, Michael</td>
<td><a href="mailto:Michael.J.Gonia@usace.army.mil">Michael.J.Gonia@usace.army.mil</a></td>
<td>206-764-6194</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NW0</td>
<td>Horihan, Colleen</td>
<td><a href="mailto:Colleen.M.Horihan@usace.army.mil">Colleen.M.Horihan@usace.army.mil</a></td>
<td>402-995-2718</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NWK</td>
<td>Wood, Jennifer</td>
<td><a href="mailto:Jennifer.Wood@usace.army.mil">Jennifer.Wood@usace.army.mil</a></td>
<td>816-389-3686</td>
<td></td>
</tr>
<tr>
<td>POD</td>
<td>MVS</td>
<td>Ellis, Katie</td>
<td><a href="mailto:Mary.K.Ellis@usace.army.mil">Mary.K.Ellis@usace.army.mil</a></td>
<td>314-202-0004</td>
<td>AK, HI, Guam, American Samoa, N. Mariana Isl.</td>
</tr>
<tr>
<td></td>
<td>POA</td>
<td>Kalli, George</td>
<td><a href="mailto:George.A.Kalli@usace.army.mil">George.A.Kalli@usace.army.mil</a></td>
<td>907-753-2594</td>
<td></td>
</tr>
<tr>
<td></td>
<td>POA</td>
<td>Shaw, Wendy</td>
<td><a href="mailto:Wendy.L.Shaw@usace.army.mil">Wendy.L.Shaw@usace.army.mil</a></td>
<td>907-223-6895</td>
<td></td>
</tr>
<tr>
<td>SAD</td>
<td>SAJ</td>
<td>Apple, David</td>
<td><a href="mailto:David.P.Apple@usace.army.mil">David.P.Apple@usace.army.mil</a></td>
<td>904-232-1757</td>
<td>AL, FL, GA, NC, SC, USVI, PR</td>
</tr>
<tr>
<td></td>
<td>SAS</td>
<td>Bryan, Nathan</td>
<td><a href="mailto:Nathan.H.Bryan@usace.army.mil">Nathan.H.Bryan@usace.army.mil</a></td>
<td>912-652-5314</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAJ</td>
<td>Whiting, Almur</td>
<td><a href="mailto:Almur.S.Whiting@usace.army.mil">Almur.S.Whiting@usace.army.mil</a></td>
<td>904-232-1451</td>
<td></td>
</tr>
<tr>
<td>SPD</td>
<td>SPL</td>
<td>Bedolla, Kristen</td>
<td><a href="mailto:Kristen.K.Bedolla@usace.army.mil">Kristen.K.Bedolla@usace.army.mil</a></td>
<td>213-452-3603</td>
<td>AZ, CA, CO, NM, NV, UT</td>
</tr>
<tr>
<td></td>
<td>SPK</td>
<td>Gonzalez, Juan</td>
<td><a href="mailto:Juan.M.Gonzalez@usace.army.mil">Juan.M.Gonzalez@usace.army.mil</a></td>
<td>916-557-7936</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPL</td>
<td>Silvertooth, David</td>
<td><a href="mailto:David.L.Silvertooth@usace.army.mil">David.L.Silvertooth@usace.army.mil</a></td>
<td>213-452-3997</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPA</td>
<td>Trujillo, William</td>
<td><a href="mailto:William.J.Trujillo@usace.army.mil">William.J.Trujillo@usace.army.mil</a></td>
<td>505-239-9589</td>
<td></td>
</tr>
<tr>
<td>SWD</td>
<td>SWF</td>
<td>Brasher, Brian</td>
<td><a href="mailto:Brian.S.Brasher@usace.army.mil">Brian.S.Brasher@usace.army.mil</a></td>
<td>816-886-1728</td>
<td>AR, OK, TX</td>
</tr>
<tr>
<td></td>
<td>SWF</td>
<td>Kennedy, Matthew</td>
<td><a href="mailto:Matthew.C.Kennedy@usace.army.mil">Matthew.C.Kennedy@usace.army.mil</a></td>
<td>817-886-1447</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWF</td>
<td>Little, David</td>
<td><a href="mailto:David.M.Little@usace.army.mil">David.M.Little@usace.army.mil</a></td>
<td>817-886-1737</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWT</td>
<td>Smiley, Bill</td>
<td><a href="mailto:William.E.Smiley@usace.army.mil">William.E.Smiley@usace.army.mil</a></td>
<td>918-669-7330</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWL</td>
<td>Watkins, Brent</td>
<td><a href="mailto:Brent.Watkins@usace.army.mil">Brent.Watkins@usace.army.mil</a></td>
<td>501-324-6172</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWL</td>
<td>Webb, Elmo</td>
<td><a href="mailto:Elmo.J.Webb@usace.army.mil">Elmo.J.Webb@usace.army.mil</a></td>
<td>501-324-5840</td>
<td></td>
</tr>
</tbody>
</table>
USACE Team qualifications:
- I&R Lead (Licensed P.E.)
- GIS / Inventory Subject Matter Expert (SME)
- Levee Inspection SME & Support Team
- Levee Risk Assessment SME & Support Team
- Quality Assurance SME

Partner Team Engagements:
- Inventory Coordination
- Field Inspection
- Risk Assessment
- Lessons Learned & Best Practices
PROPOSED INVENTORY & REVIEW TIMELINE
STATE PARTNERS

Initial Mtgs & Gov/Tribal Letters
Levee Prioritization & Coordination w/ Levee O/O
Kick-Off Mtgs & R-o-E
Surveys, Inspections & Risk Assessments*
Brief Results & Complete Review

1st Qtr → 1st & 2nd Qtr → 1st & 2nd Qtr → 2nd & 3rd Qtr → 3rd & 4th Qtr

FY18
Capture and Document Lessons Learned & Best Practices

GOAL: Initiate 80 reviews

*Surveys & Inspections are weather dependent & levee reviews are subject to available funding.
HOW YOUR STATE CAN GET INVOLVED

- Contact one of the State liaisons listed by assigned state
- Establish date & location of face-to-face meeting
- Review levee information within the State
  - Assist USACE to refine existing levee information
  - Assist USACE in finding additional levees
- Coordinate with USACE to prioritize levees for review
- Assist USACE with coordinating effort with levee owners/operators
- Participate, to extent desired, with levee inspections, risk assessments and risk communication
QUESTIONS???

Jamie L. McVicker, P.E.
Jamie.McVicker@usace.army.mil
314-331-8426

Cathi Sanders
Catherine.Sanders@usace.army.mil
816-389-3726