Meredosia Drainage and Levee District:  
A Tale of Two Levees

Bill Heyse, PE  
FEMA Region V

Amanda Flegel, PE, CFM  
Illinois State Water Survey

Roger Denick, PE, CFM  
STARR II – FEMA Region V Service Center
Outline

- Overview of FEMA History with Meredosia Levee
- Current Status of Meredosia Levee
- FEMA’s Levee Analysis and Mapping Procedure
  - Engagement
  - Initial Data Analysis
- Path Forward for Meredosia Levee
Meredosia Levee
The PAL Process

- **Provisionally Accredited Levee** (PAL) designation will be given to those levees that FEMA believes can provide the level of protection but for which data verifying this is not readily available.

- Community must sign an agreement to provide FEMA with levee certification by the end of a two year period.

- The documentation must show that the levee meets standards set forth in FEMA’s Code of Federal Regulations (Part 65.10).

- Preliminary maps will be issued with area behind levees shown as a Zone X (shaded) and PAL annotation will be added.

- At the end of the two year period, if the levee can be certified, FEMA will show it on the map as providing protection.
Meredosia Levee Effective Map
Accreditation Requirements

Listed in CFR 65.10

- 65.10(a) – General Requirements
- 65.10(b) – Design Requirements
- 65.10(c) – Operations Plans
- 65.10(d) – Maintenance Plans
- 65.10(e) – Certification Requirements
CFR 65.10(b) Design Requirements

- 65.10(b)(1) – Freeboard
- 65.10(b)(2) – Closures
- 65.10(b)(3) – Embankment Protection
- 65.10(b)(4) – Embankment and foundation stability
- 65.10(b)(5) – Settlement Analysis
- 65.10(b)(6) – Interior Drainage
- 65.10(b)(7) – Other Design Criteria
FEMA History with Meredosia Levee

PAL Identification – 8/13/2007
USACE/ISWS Field Tour – 10/21/2009
Submission Due Date – 11/12/2009
Levee De-accreditation Meeting – 4/22/2010
Rock River Flood Risk Review – 12/5/2011
Levee Informational Meeting – 8/21/2013
Previous Method - Mapping Flood Hazards

- Complete certification of system submitted to FEMA
- Mapped as contained within levee system boundaries
- Certification submittal *not received* or *incomplete*
- Traditionally mapped as if the levee did not provide a reduction in flood risk
Levee Analysis and Mapping Approach

- **Approach Document**
  - Finalized July 2013

- **Operation Guidance**
  - Finalized Sept. 2013
What’s New about this New Process?

- Interactive stakeholder engagement throughout the analysis and mapping process:
  - FEMA will engage community officials and decision makers in a collaborative discussion

- A suite of analysis and mapping procedures of the hazard associated with levees will be reviewed with the interested parties
  - Intention is to recognize of the uncertainty associated with hazard identification behind levees.
  - New Development – Allows communities to split a levee system into distinct reaches that are analyzed based on the attributes of the specific reach.
Non-Accredited Levees

- New process allows a non-accredited levee to be broken into multiple “Reaches”

- A “Reach” is a discrete section of a levee for which one of the five levee analysis procedures can be applied
  - Sound Reach
  - Freeboard Deficient
  - Overtopping
  - Structural Based Inundation
  - Natural Valley

- Primarily data dependent:
  - O&M Plan available?
  - As-Builts/Levee Survey?
  - Evaluation of overtopping erosion?
  - Structurally sound?
  - Closures/Tie-Ins?
The Process

Phase 1

- 10 Project Includes Potential Levee
  - 110 Follow Procedures for Accredited Levee Systems
    - Meets 44CFR65.10
    - Provisionally Meets 44CFR65.10
  - 100 Initial Accreditation Evaluation
    - Yes: 200 Levee Data Collection and Stakeholder Engagement
    - No: 30 Do Not Process as Levee
  - 120 Follow Procedures for Provisionally Accredited Levee Systems

Phase 2

- 200 Levee Data Collection and Stakeholder Engagement
  - Does Not Meet 44CFR65.10: 120 Follow Procedures for Provisionally Accredited Levee Systems
  - Meets 44CFR65.10: 300 Local Levee Partnership Team

Phase 3

- 300 Local Levee Partnership Team
  - 400 Levee Analysis and Mapping Plan
  - 410 Additional Data Collection (if Necessary)

660 Flood Hazard Analysis and Mapping

500 AR/A99

610 System-Wide Procedures
- Interior Drainage
- Natural Valley Zone D

620 Levee Reach Procedures
- Sound Reach
- Freeboard Deficient Reach
- Structural-Based Inundation Procedure
- Natural Valley Procedure

630 Flooding Source Procedures

800 Best Practices & Implementation Review Process

[Icons: Indicates community engagement]
Phase 2 – Coordination

- The level of effort during this phase will vary depending on the levee system, but will typically consist of:
  - Conduct initial coordination with stakeholders
  - Collect existing data
  - Determine additional data communities plan to submit
  - Hold face-to-face meetings
  - Perform approximate-level hydrologic and hydraulic (H&H) analyses
  - Prepare Levee Analysis and Mapping Plan
Local Levee Working Group

- **Purpose**
  - Provide feedback and data so FEMA can make a final decision on how the levee system should be modeled and how the levee-impacted area should be mapped.

- **Participants**
  - CEO or designee (decision making authority)
  - Levee owner
  - Floodplain manager
  - Local engineer
  - FEMA regional representative
  - USACE representative (if appropriate)
  - CTP or FEMA contractor for project
  - Others as determined by the community or region
Initial Data Analysis

- Performing Limited Data Analysis Helps With Informed Discussions During LLPT Meetings
- Approximate Analysis of Structural-Based Inundation, Overtopping or Natural Valley Based on Available Data
- Expect Multiple Breach Locations and Widths (Simple 2-D Modeling Likely)
Meredosia Levee Data Collection

Data Collected

- Operation and Maintenance Plan
- Structural Design Information
- USACE Inspection Reports
- LiDAR
Back-door Levee Data Collection

Date Collected
- LiDAR – Top of Levee Survey
# Initial Levee Analysis

<table>
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<tr>
<th>Reach Description</th>
<th>Potential Methods</th>
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<tr>
<td>Meredosia Levee – Mississippi River</td>
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<tr>
<td>Backdoor - Rock River Levee</td>
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</table>
Initial Levee Analysis

Mississippi River Levee
- Accreditation
- Natural Valley Analysis
  - Mississippi River BFE
  - Impact area east to I-88

Backdoor – Rock River Levee
- Overtopped Analysis
- Natural Valley Analysis
## Mapping Scenarios - short list

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<tr>
<th>Scenario</th>
<th>Mapping Analysis</th>
<th>Potential Base Flood Elevation</th>
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**Proposed Rock River base flood elevation**
## Data Requirements

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<th>Requirement</th>
<th>Sound</th>
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<th>Overtopping Approach</th>
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Levee Analysis and Mapping Plan

- After deliberations by Local Levee Partnership Team, a Levee Analysis and Mapping Plan will be delivered. It will include the following:
  - Copies of meeting data developed, including agendas, meeting minutes, etc.
  - Summary of data and information collected
  - Summary of information and data FEMA expects to receive from Levee Stakeholders
  - Summary of flood hazard analysis and mapping options and timeframe for delivery
Planned Path Forward

Scenario B:

Meredosia Levee: Accreditation

Meredosia Backdoor levee: Natural Valley
Path Forward

- August 2013 - Levee Informational Meeting
- September 2015 - Levee Stakeholder Engagement Meeting
- January 26, 2016 - Draft LLPT Report
- February 22, 2016 - LLPT Coordination Call
- March 2016 - Final LLPT Report to be released
- June 2017 - Additional Data Collection due to FEMA
- Late 2018 - Prelim Flood Insurance Rate Maps (FIRMs)
- ~2020 - Effective FIRMs
- All dates are approximate and based on FEMA funding
Questions?

Bill Heyse
FEMA Region V
312-408-5323
Bill.Heyse@fema.dhs.gov

Roger Denick
STARR II / FEMA Region V Service Center
312-262-2281
Roger.Denick@starr-team.com

Amanda Flegel
Illinois State Water Survey
217-300-3468
aflegel@Illinois.edu