Don’t Hold Anything Back: Tennessee Tombigbee Waterway LAMP Pilot Project

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Project Team

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How Levee Systems Look

Sizes, Shapes, & Locations Vary

Earthen Embankment

Concrete Floodwall
Former Approach

- Data/documentation submittal shows compliance with 44CFR65.10
- Mapped as contained within levee system

- Data/documentation to show compliance with 44CFR65.10 not received or incomplete
- Mapped as if no flood hazard reduction capability provided by levee system
Project History

• Monroe County, Mississippi and Itawamba County, Mississippi had preliminary maps issued during Map Modernization (March 4, 2010).

• Levee system could not be accredited. No new analysis performed on Tombigbee/TennTom upstream of Amory.

• Monroe and Itawamba county preliminary maps issued without levee providing protection.

• City of Fulton submitted appeal data on December 2, 2010

• Monroe County and City of Amory submitted appeal data on December 30, 2010
Project History

• On March 10, 2011 FEMA put these types of projects on hold pending finalized Levee Analysis and Mapping Procedures (LAMP) guidance.

• LiDAR collected for the area.

• Levee system selected as one of 25 pilot projects nationwide.
Project Location

City of Fulton
Project Location


town of Smithville

City of Amory

MONROE COUNTY
Levee Analysis and Mapping Procedure (LAMP) Approach

• FEMA has replaced the former levee analysis and mapping approach with a suite of alternative procedures created to:

  • Comply with all current statutory and regulatory requirements governing the NFIP
  • Be a cost-effective, repeatable, and flexible approach
  • Leverage local input, knowledge, and data through proactive stakeholder engagement
  • Align available resources for engineering analysis and mapping
  • Consider unique levee and flooding characteristics
  • Allow a variety of approaches to be applied to a levee system if needed
Four Features of the New Approach:

- Interactive Stakeholder Engagement Process (Local Levee Partnership Team)
- Recognition of the Uncertainty Associated with Levee Systems
- Analysis of Levee Reaches
- More Robust Levee Analysis and Mapping Procedures

This New Approach is Not:

- A revision to the process or data required to accredit a levee system
- A solution addressing recommendations of other entities, such as Levee Task Force or National Committee on Levee Safety
Overview of LAMP Approach

• There are five procedures that can be applied to a non-accredited levee:
  • Natural Valley
  • Sound Reach
  • Freeboard Deficient
  • Overtopping
  • Structural-Based Inundation

• A system can be broken up into multiple reaches in order to analyze the flood risk in its vicinity
Natural Valley Procedure

- Basic analysis to be applied to all levee systems, and/or individual reaches (procedure possible with minimal data)

- This procedure refers to the river channel and floodplain of a river system, or coastal area, prior to the addition of flood-control structures (e.g., levees)

- No additional data needs or requirements for preparation of analysis
Sound Reach Procedure

For a levee reach designed, constructed, and maintained to withstand and reduce the flood hazard posed by the base (one-percent-annual-chance) flood

- No levee reach-specific modeling necessary
- Zone D landward of the reach
- Interior drainage may map some flood hazard on the landward side
- Specified reach meets all 44 CFR 65.10 requirements and each is documented
Freeboard Deficient Procedure

- For levee reaches that cannot meet the freeboard regulatory requirements in 44 CFR 65.10 (freeboard helps to account for uncertainty in design and the base flood)
  - Natural Valley Approach is used to map landward risk
  - Zone D landward of the reach
  - Levee crest must be higher than the calculated BFE for this method to be suitable
Overtopping Procedure

- Appropriate for levee reaches that are known to overtop during the one-percent-annual chance flood.
- The BFE is calculated to exceed the height of the levee crest at a minimum of one location along the levee’s reach length.
- Structure should be designed for overtopping.
- Structural requirements are met and documented.
- Levee modeled as a lateral weir.
For a levee reach where evaluation reports and/or historic performance indicate structural issues

- Levee reports and historical information will inform the modeling effort for this scenario
- Need to identify the locations of structural issues & determine failure scenarios
Four Layers of Mapping

1. **Natural Valley** (Zone D)
2. **Interior Drainage** (SFHA)
3. **Landward Hazard** (SFHA)
4. **Flooding Source** (SFHA)
Four Main Layers of Mapping

1. Natural Valley (Zone D)
2. Interior Drainage (SFHA)
3. Landward Hazard (SFHA)
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SFHA of Flooding Sources with Levee System Providing Protection
Four Main Layers of Mapping

1. Natural Valley (Zone D)
2. Interior Drainage (SFHA)
3. Landward Hazard (SFHA)
4. Flooding Source (SFHA)
LAMP Pilot Project Schedule

• Phase 1 Project Entry

• Phase 2 Stakeholder Engagement and Data Collection
  • Levee Stakeholder Engagement Meeting
  • Initial Data Analysis and Collection
  • Local Levee Partnership Team (LLPT) Meeting
  • Levee Analysis and Mapping Plan

• Phase 3 Flood Hazard Analysis and Mapping
Stakeholder Engagement Process

• Level of effort will vary during this phase based on the complexity of the levee system in question

• Intention of this phase is to:
  – Coordinate with stakeholders external to FEMA
  – Collect existing local data & system knowledge
  – Determine additional data for communities to submit
  – Perform approximate-level hydrologic and hydraulic (H&H) analyses, review of results
  – Prepare Levee Analysis and Mapping Plan
Collaboration with USACE

• Project Team met with USACE on January 9, 2014 in Mobile
• USACE asked to be included in the Local Levee Partnership Team (LLPT)
• Verified the entire system could not be accredited to the 1% annual chance flood event
• Several portions are operated, maintained, and inspected and may be considered sound reaches
• Portions of the structure that are not maintained or inspected will be considered natural valley reaches
Data Collection and Stakeholder Engagement Meeting

• 45 people attended the meeting on January 23, 2014

• Stakeholders in attendance included FEMA, MDEQ, MEMA, USACE, Monroe County, Itawamba County, City of Fulton, City of Amory, Town of Smithville, Port Itawamba, Tennessee-Tombigbee Waterway Authority, Senator Cochran’s Office, Local Engineering Consultants
Data Collection and Stakeholder Engagement Meeting
Data Collection and Stakeholder Engagement Meeting
Data Collection

• LiDAR Data for Project Study Area

• Tennessee Tombigbee Waterway Hydrologic and Hydraulic Reports (USACE)

• Tennessee Tombigbee Waterway Design Memorandum (USACE)

• Tennessee Tombigbee River Basin Regulation Manual (USACE)

• Tennessee Tombigbee Waterway Vegetation Assessment (USACE)

• Tennessee Tombigbee Shapefiles
Data Collection

• USACE Vegetation Control Plan
Data Collection

- USACE Vegetation Control Plan
Data Collection

Tenn-Tom Levee Footprint
- ● ● ● Maintained
- ● ● Unmaintained
Local Levee Partnership Team

- Data collected was presented to the Tennessee – Tombigbee Waterway Local Levee Partnership Team (LLPT) on June 12, 2014
- Options for moving forward were discussed including the Natural Valley option and Zone D designations
Local Levee Partnership Team
Local Levee Partnership Team
• The Natural Valley approach will be used for levee reaches that are unmaintained.
• The Sound Reach approach will be used for levee reaches that are maintained.
• For both approaches, it is currently the preference of the LLPT to use Special Flood Hazard Area (SFHA) designation in place of Zone D.
Report Findings to FEMA

- The hydraulic modeling will be completed and results shared with the LLPT.
- Revised Flood Insurance Rate Maps (FIRMs) will be created and shared with the LLPT before issuance.
- LLPT will be involved in the post preliminary processing steps including the 90-day appeal period.
Zone D Designation Discussion

- Zone D is not Special Flood Hazard Area (SFHA), and therefore does not include the same flood insurance purchase requirements.

- Zone D does represent an area of uncertainty in terms of flood risks.

- FEMA strongly recommends that property owners purchase flood insurance to cover structures in Zone D.
Zone D Designation Discussion

FACT SHEET FOR STAKEHOLDERS

Unmapped Areas on Flood Hazard Maps
Understanding Zone D

BACKGROUND

Flood hazard maps, also known as Flood Insurance Rate Maps (FIRM), are important tools in the effort to protect lives and properties in communities across the nation. By showing the extent to which areas of a community and individual properties are at risk for flooding, these flood maps help residents and business owners make better financial decisions about protecting their property.

However, flood risks are dynamic and can change over time. Water flow and drainage patterns can be altered dramatically due to surface erosion, lead use, and natural forces. As a result, flood maps for these areas may no longer accurately portray the current flood risks. Consequently, the Federal Emergency Management Agency (FEMA) has been updating the nation’s flood maps using the latest data gathering and mapping technology and new flood maps are being issued nationwide.

UNDERSTANDING ZONE D

The level of flood risk is indicated on the flood map by a letter. For example, flood zones labeled with the letters B, C, or X represent moderate- and low-risk areas. Flood zones identified by the letters A or V represent high-risk areas, known as Special Flood Hazard Areas (SFHAs). On some flood maps, there may also be a zone labeled with the letter D. The Zone D designation is used for areas where there are possible but undetermined flood hazards, as no analysis of flood hazards has been conducted. The designation of Zone D is also used when a community incorporates portions of another community’s area where no map has been prepared.

Flood insurance is available in Zone D and property owners should be encouraged to purchase it. However, flood insurance is not federally required by lenders for loans on properties in these zones. Although these areas are often undeveloped and sparsely populated when designated as Zone D, lenders may become aware that new development in such areas has increased the possibility of property damage from flooding. Consequently, they may require coverage as a condition of their loans, even if it is not federally required.

Flood insurance rates for properties in Zone D are commensurate with the uncertainty of the flood risk. Consequently, as seen in the table below, the Zone D premiums can be higher than a standard low-risk X zone premiums and significantly higher than the Preferred Risk Policy (PRP) premiums. If an area is being remapped and properties are going from Zone B, C, or X to Zone D, the insurance agent should determine if grandfathering the existing low-risk area for future rating will provide a lower premium than the new Zone D premium. Also, since Zone D is not considered an SFHA, a property that was designated in Zone D on the previous map and is newly designated in an SFHA by a map revision effective may be insured under the PRP based on the 2-year PRP eligibility extension. More details on grandfathering and PRP Extension can be found at https://www.fema.gov/library/viewrecord.do?id=7745.

<table>
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<tr>
<th>Premium Comparison (October 1, 2011 Rates)</th>
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<tr>
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<tr>
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<tr>
<td>Post-FIRM, Home</td>
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<tr>
<td>Pre-FIRM, Manufactured Home</td>
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To learn more about flood insurance coverage and options, visit www.FloodSmart.gov. For more information about FEMA’s latest mapping initiatives, visit www.fema.gov/plan/prevent/final-index.html.
Concerned about flooding sources within the City of Amory and the Town of Smithville

Requested that the flooding sources be redelineated within the City of Amory and Town of Smithville
City of Amory

- 6 detailed studies (Burketts Creek, Burketts Creek Tributary 1, Burketts Creek Diversion Channel, Roundhouse Branch, Stream 1, and Upper Burketts Creek)
- 6 FIRM panels (0063, 0064, 0157, 0176, 0177, and 0178)
Town of Smithville

- 3 approximate studies
- 2 FIRM panels (0060 and 0070)
City of Fulton

- 2 approximate studies
- 1 FIRM panel (0145)
Where Do We Go Next?

- Pilot Study Report was accepted by FEMA
- Revised hydraulic modeling will be incorporated
- Draft work maps will be presented to the LLPT at the end of 2015
- Preliminary Flood Insurance Rate Maps for Monroe and Itawamba Counties will be issued in early 2016
Thank You

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