Elmhurst Levee Certification

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Elmhurst Levee Certification
Levee System Responsibility

Universe of Levees

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Levee System Responsibility

• Not all levees designed/maintained to USACE Standards
  – Levees first built to protect agricultural areas
  – Other levee systems have been built to protect urban areas by various federal, state, local entities

• On the FEMA FIRM panels as providing protection
  – Levee met criteria of 44 CFR 65.10 / LOMR
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Levee System Responsibility

- USACE-built levees
  - Regular inspections
- Community-built levees
  - Have not required documentation of inspections
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Levee System Responsibility

• Levee Certification
  – Documentation of levee conditions, based on NFIP’s 44 CFR 65.10 with some USACE guidance.
  – Why important to show that levee still meets criteria?
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Levee System Responsibility

• No levee system provides full protection from all flood events
  – Levee systems are designed to provide a specific level of protection, and larger events can cause them to be overtopped or fail
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Levee System Responsibility

Potential Levee Failure Scenarios

Source: FEMA
Levee systems decay and deteriorate over time

- Regular maintenance and periodic upgrades are needed
- Maintenance can become a serious challenge as levee system gets older
- When levee systems do fail, they often fail catastrophically
MID-LIFE CRISIS OF A DAM
Plant (Tree) and Animal Penetration Problems

FEMA Publication 534, September 2006
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Levee Certification Responsibilities

• How to get a levee certified?
  – FEMA does not examine or analyze structures for condition or performance assessment
  – Levee owners provide data and documentation to show levee system meets NFIP design, operations, and maintenance criteria
A levee system can be certified if evidence shows that the system meets regulatory standards to provide protection from the base flood. Typically, this statement is by a licensed professional engineer or federal agency responsible for levee system design.

FEMA will “accredit” levee systems that have been certified.
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Levee Certification Responsibilities

• If levee system cannot be certified, FEMA will not accredit the system, or will de-accredit a system that had previously been shown to meet NFIP criteria
  – These systems will not be depicted on DFIRMs as providing a 1-percent-annual-chance level of protection
Uncertified/unaccredited levee systems

- FEMA will remap the levee-impacted areas landward of these systems as high-risk areas called Special Flood Hazard Areas (SFHAs)
- Flood insurance is required in SFHAs for any mortgage that is federally backed, regulated, or insured
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Levee Certification Essentials

• How does the Levee Certification Process Begin?

  – FEMA Procedure Memorandum No. 43 – Guidelines for Identifying Provisionally Accredited Levees (PALs)
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Levee Certification Essentials

• PALs
  – PAL designation for levee systems that are reasonably expected to continue to provide 1% annual chance flood protection
  – PAL designation allows the map release and review process to proceed while data and documentation are being gathered
  – For communities that are unable to provide full and prompt documentation of levee status
• PALs (continued)
  – Levee owners will have up to 24 months to obtain and submit necessary data and documentation
  – A note clarifying the provisional nature of the PAL designation and the Zone X area will be provided on the DFIRM
  – Elmhurst Levee is currently a PAL
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Levee Certification Essentials

• FEMA Certification Criteria
  – 44 CFR 65.10 (NFIP Regulations)
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Challenges

- Understanding what guidance is out there, and what should be followed
  - FEMA/NFIP
    - Delegated to technical consultant
  - USACE
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Challenges

• PAL 2-year timeframe may be difficult to meet, if significant maintenance and documentation deficiencies exist
  – The clock starts on the PAL when the letter is signed by the community
  – As-built plans
  – Maintenance documentation
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Challenges

• Variable interpretations of FEMA requirements may cause confusion/delays
  – Tie into “high ground”
  – Freeboard “taper” requirement
  – Vegetation-Free Zone dimensions
    • USACE ETL 1110-2-571: No woody vegetation 15-ft either side from the toe of the slope & 8-ft vertical clearance.
    • Easements / Area appurtenant to levee
    • What’s growing roots?
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Challenges

• Other Issues
  – Utility relocation
  – Vegetation characteristics (turf grass vs. native grasses)
  – Certification Validity Period
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Challenges

• Public Outreach
  – Animal relocation and filling of burrows
  – Vegetation removal may conflict with residents desire for screening
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Levee Certification Essentials

- Design Criteria – 65.10(b)(1)
  - Freeboard
    - 3 ft minimum unless variance and 2 ft minimum
    - At Structures +1 ft
    - At U/S end +0.5 ft
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• Design Criteria – 65.10(b)(2)
  – Closures

Ok

Maintenance Needed
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• Design Criteria – 65.10(b)(3)&(4)
  – Embankment Protection
    • Demonstrate through engineering analysis that anticipated erosion will not result in failure of embankment or foundation
  – Embankment and Foundation Stability (includes floodwalls)
    • Evaluate expected seepage during base flood
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• Design Criteria – 65.10(b)(5)&(6)
  – Settlement
    • Assess potential and magnitude of future losses of freeboard due to settlement
  – Interior Drainage
    • Evacuating flood waters from behind the levee
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Levee Certification Essentials

- Operation Plans Criteria – 65.10(c) & Maintenance Plans Criteria – 65.10(d)
  - Formal, officially adopted flood warning system & plan
    - Closures
    - Interior Drainage Systems
    - Maintenance Responsibilities
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Levee Certification Essentials

• Submittal to FEMA – 65.10(e)
  – Data submitted to support levee system compliance with structural requirements must be certified by a registered professional
  – Certified as-built plans must also be submitted
• Questions?