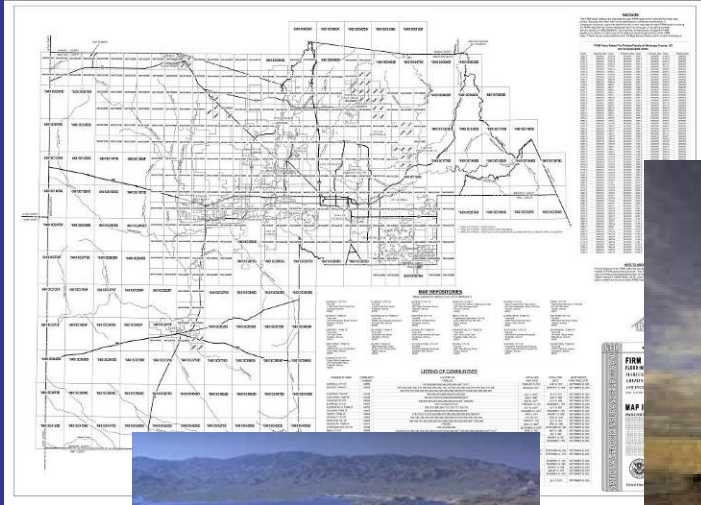


Ventura County, CA

Levee Certification Coordination Meeting

August 3, 2006



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MAP IX-Mainland

A Joint Venture of URS, Dewberry,
Schaaf & Wheeler, Airborne 1 and
Terrapoint

Meeting Agenda

- Introductions
- Background on FEMA Levee Certification Procedures
- FEMA Procedural Memorandum 34 & 43
- Levee Inventory for Ventura Co
- Overview of 44 CFR Part 65.10
- Draft Levee Certification Plan
 - Part 1: Proposed Process for PM 34 Certification
 - Part 2: FEMA Levee Certification Documentation Review
 - Part 3: Draft Levee Certification Timeline
- Resources and Technical Guidance Documents
- Levee Review Methodology
- Schedule
- Q&A - Action Items and Follow-up Activities



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Background on FEMA Levee Certification Procedures

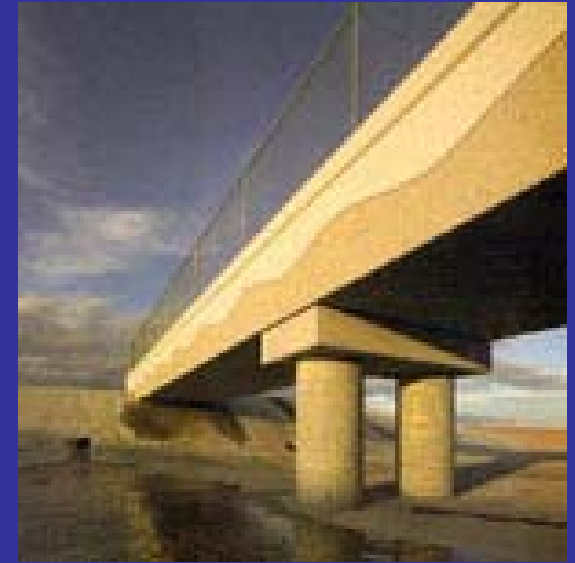
- FEMA has long been concerned with levee certifications
- Initiated Levee Policy Committee to develop recommendations to NFIP
- “Accreditation” vs. “Certification”
- FEMA does not certify levee structures, they accredit them on the FIRMs
- Pre – 1986 structures



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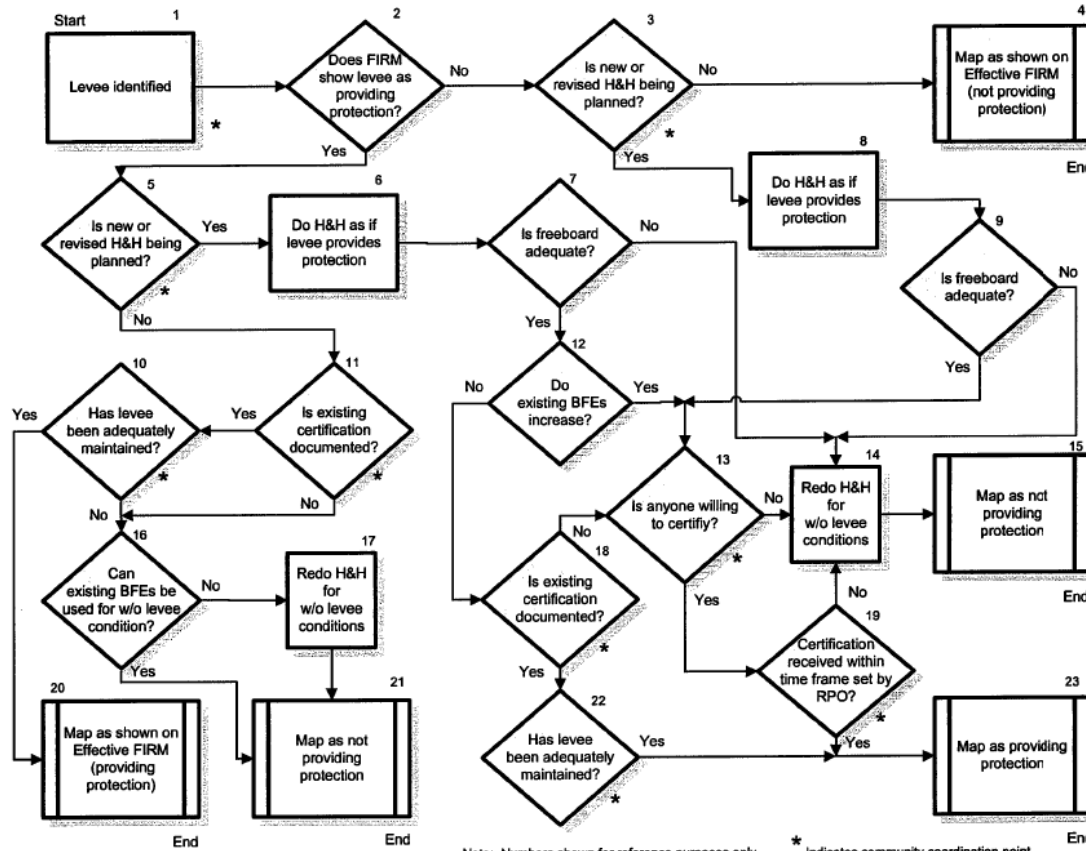
FEMA Procedural Memorandum 34 – Interim Guidance for Studies Including Levees

- [PM 34](#) issued on August 22, 2005 (before Katrina)
- Thousands of levee structures nationwide with missing, inadequate or outdated certification documentation
- Interim Guidance issued as part of larger Map Modernization effort
- Provides flowchart for identifying and mapping levees depending on certification
- Bottom line:
 - If any levee is shown on the FIRMs as offering protection from the base flood, then it needs certification documentation
 - PM 34 says levee, but the note on the FIRMs refer to levee, dike or other flood control structure



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PM 34 Levee Certification Path



Interim Guidance for Studies Including Levees

08/22/2005



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New Note For FIRMs

- **FIRM Levee Note:**

WARNING! THIS AREA IS SHOWN AS BEING PROTECTED FROM THE 1-PERCENT ANNUAL CHANCE FLOOD HAZARD BY LEVEE, DIKE, OR OTHER STRUCTURE. OVERTOPPING OR FAILURE OF THIS STRUCTURE IS POSSIBLE WHICH COULD RESULT IN DESTRUCTIVE FLOOD ELEVATIONS AND WATER VELOCITIES. PROPER PROTECTION, FLOOD INSURANCE, AND ADHERENCE TO EVACUATION PROCEDURES ARE STRONGLY RECOMMENDED. FOR ADDITIONAL INFORMATION, SEE THE NOTES TO USERS.

- **FIRM Notes to Users:**

FEMA recommends that a Flood Insurance Policy be purchased for structures in areas where levees are shown as providing protection from the 1% annual chance flood. Flooding is not covered by standard property/fire/dwelling insurance policies nor is it covered by Homeowners Insurance, Renters Insurance, Condominium Owners Insurance, or Commercial Property Insurance. Contact your insurance agent and local floodplain administrator for further information. Visit http://www.fema.gov/pdf/fhm/frm_gsah.pdf for information on levees and the risk of flooding in areas shown as being protected by levees.



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FEMA Procedural Memorandum 43 – Guidelines for Identifying Provisionally Accredited Levees (PAL)

- Issued September 25, 2006
- PAL Letter
 - Levee owners given a reasonable amount of time (30 days) to compile and submit data and documentation to show compliance with the requirements of 44 CFR Section 65.10
 - FEMA will provide the community 90 days to sign and return a PAL agreement that indicates the full documentation for 44 CFR Section 65.10 will be provided within 24 months of the signed agreement
- If the levee does not meet the PAL requirements, the community is no longer eligible for the PAL designation and the area landward of the levee will be remapped as Zone A (most cases).



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New Note For FIRMs

- **FIRM Levee Note:** The following note must be applied at several locations, point to the levee, and be placed landward of the levee in or near the Zone X (shaded) area:
 - **WARNING:** Provisionally Accredited Levee. For explanation, see the Notes to Users.
- **FIRM Notes to Users:**
 - **WARNING:** This levee, dike, or other structure has been provisionally accredited and mapped as providing protection from the 1-percent-annual-chance flood. To maintain accreditation, the levee owner or community is required to submit documentation necessary to comply with 44 CFR Section 65.10 by (_____, ____). Because of the risk of overtopping or failure of the structure, communities should take proper precautions to protect lives and minimize damages in these areas, such as issuing an evacuation plan and encouraging property owners to purchase flood insurance.



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Definitions

Levee - A long, narrow embankment usually built to protect land from flooding. If built of concrete or masonry the structure is usually referred to as a flood wall. Levees and floodwalls confine stream flow within a specified area to prevent flooding.

Dike – Bank of earth or stone used to form a barrier. Term often used interchangeably with levee. For USACE purposes – a dike is considered a levee, but all levees are not dikes

- A dike restrains water within an area that normally is flooded;
- A levee confines a stream channel and can protect adjacent areas from flooding.

- **Dam** - A barrier constructed for impounding water or creating a reservoir.



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Overview of 44 CFR Part 65.10

For Purpose of NFIP maps, FEMA will only recognize levee systems that meet and continue to meet criteria under this part of the Regulations (44 CFR Part 65.10) for design and maintenance

Design Criteria broken down into:

- (b)(1) – Freeboard
- (b)(2) – Closures
- (b)(3) – Embankment protection
- (b)(4) – Embankment and foundation stability
- (b)(5) – Settlement
- (b)(6) – Interior drainage
- (b)(7) – Other design criteria



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Freeboard Requirements

- Riverine levees must provide a minimum of 3 feet of freeboard above the water surface elevation of the base flood (1% annual chance) (existing BFE)
- Additional 1 foot is required within 100 feet in either side of structures (bridge, culvert,...)
- Additional one-half foot at the upstream end of levee



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Closure Requirements

- Must provide documentation of flood warning system that will trigger emergency closures
- Must provide sufficient time to complete operations, including sealing, before floodwaters reach the base of the closing
- Included with the Operations & Maintenance Plan
- Provide for periodic operations, not less than 1 year interval, of closure for testing and training purposes



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Embankment and Foundation Stability Requirements

- Engineering analysis that demonstrates that seepage into or through the levee foundation and embankment will not jeopardize stability
- An alternative analysis that levee is designed and constructed for stability against loading conditions for Case IV US COE "Design and Construction of Levees"
- Must include assessment of potential and magnitude of future losses of freeboard due to settlement using procedures in COE manual "Soil Mechanics Design – Settlement Analysis"



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Interior Drainage Requirements

- If a levee system is determined to meet the criteria under 44 CFR 65.10, then interior drainage analysis must be performed to identify sources and magnitude of interior flooding certified by a P.E.
- Based on joint probability of interior/exterior flooding
- Must consider capacity of drainage lines and pumps to evacuate interior floodwater
- COE EM 1110-2-1413
"Engineering and Design-
Hydrologic Analysis of Interior
Drainage Areas"



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Other Design Criteria Requirements

- FEMA may require additional information for unique situations (high vulnerability) to demonstrate that levee system provides adequate protection
- “Sound engineering practice” will be the standard for which FEMA will make its determinations
- FEMA will provide rationale for requesting additional data



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Operations and Maintenance Plan

Maintenance Criteria

- Levee systems must be maintained in accordance with an adopted plan
 - And part of the floodplain ordinances
- Copy of the plan must be provided by the levee system owner to FEMA
- All maintenance activities must be under the jurisdiction of Federal, State, or local agency participating in the NFIP
- Plan must ensure height, stability and overall integrity of the levee system are maintained
- Maintenance activities, frequency and responsible agent



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Resources and Technical Guidance Documents

- To take away from today's meeting for reference:
 - PM 34 & 43
 - 65.10
 - Sample USACE certification letter
 - This presentation
 - Levee spreadsheet
 - Timeline / schedule
- [EM 1110-2-1913](#) - Engineering and Design- Design and Construction of Levees
- [Levee Owner's Manual](#) for Non-Federal Flood Control Works
- [EM 1110-1-1904](#) - Engineering and Design- Settlement Analysis
- [EM 1110-2-1413](#) - Engineering and Design- Hydrologic Analysis of Interior Drainage Areas
- [EM 1110-2-2502](#) - Engineering and Design- Retaining and Flood Walls



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Resources and Technical Guidance Documents (con't)

- [EM 1110-2-301](#) - Engineering and Design-Engineering and Design - Guidelines for Landscape Planting and Vegetation Management at Floodwalls, Levees, and Embankment Dams
- [EM 1110-2-2705](#) - Engineering and Design - Structural Design of Closure Structures for Local Flood Protection Projects
- FEMA Guidelines & Specifications for Flood Hazard Mapping Partners ([Appendix H](#))



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Resources and Technical Guidance Documents (con't)

- FEMA Website

<http://www.fema.gov/plan/prevent/fhm/index.shtm>

- MT – 2 Forms

http://www.fema.gov/plan/prevent/fhm/dl_mt-2.shtm

- MAPIX – Mainland Project Coordination

<http://www.map9-m.com/>



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Discussion of Levee Operation, Maintenance and Performance

- Lets Review the Levee Inventory
- Group Discussion
 - Levees of concern
 - Inspection and Maintenance Reports
 - Levee performance records during recent floods
 - Need for field reconnaissance?



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DRAFT Levee Certification Plan

- Consists of three parts:
 - Part 1: Proposed [PM 34 Certification Process](#)
 - Part 2: Draft [FEMA Levee Certification Documentation Review Package](#)
 - Part 3: Draft [Levee Certification Timeline](#) including PAL
- Provide suggested process and framework for submission of certification documentation



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Methodology

- Step 1: Levee Inventory
- Step 2: Research Available Data
- Step 3: Evaluation
 - Existing levees
 - Categorize levees 1, 2, 3
- Step 4: Create Specific plans for levee categories
- Step 5: Submit certification package
- Step 6: FEMA / IDIQ review of packages
- Step 7: FIS / FIRM edits
 - Discussion in FIS eligible levees in FIS
 - Re-map eligible levees on FIRMs as offering protection
 - Add levee annotation notes on map and in Notes to Users



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Timeline

- Levee Inventory
- PAL Letter
- 30 day certification submittal
- 90 PAL agreements
- Levee failure scenarios (if needed)
- Revised preliminary DFIRM
- Levee failure scenarios (if needed), may issue proof copies of DFIRM panels if any changes
- Removal of PAL designation if packages submitted before LFD
- LFD issued
- Effective DFIRM (may have PAL note on effective panels)
- Map Revisions after 24 month PAL expiration



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Questions & Action Items



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