

FEMA's NFIP Levee Regulations vis-à-vis Levee Damage and Repairs

November 15, 2011

Introduction

FEMA does not have a policy or procedure for initiating a flood hazard mapping project specific to levees that are damaged and repaired (or not). But the situation of damaged levees can be addressed generally through existing mapping regulations, guidelines and specifications, and policies. These existing floodplain mapping program documents do not reflect directly on damages and repairs to levees. Therefore, they can only be used to infer the path forward regarding potential FEMA initiated floodplain map revisions.

Accordingly, this document is not intended for broad distribution. It is instead intended for select use in addressing the situation generally as questions arise pertaining to levee damage and repairs.

Within this context, there is no direct path between a situation of levee damage and a FEMA map revision action, or even that a FEMA map revision action will be taken. Furthermore, the outcome of any FEMA map revision action cannot be foretold simply from the situation of the levee damage and any proposed repairs. Instead, it would require a floodplain mapping study to determine the outcome.

A general reflection on existing FEMA mapping regulations, guidelines and specifications, and policies is as follows.

FEMA floodplain mapping regulations, guidelines and specifications, and policies

It is globally true that National Flood Insurance Program (NFIP) insurance rates (which pertain only to walled and roofed structures and their contents) are based on the flood zone the property is located in on the Flood Insurance Rate Map (FIRM). It is also true that the flood zone for an area may be based, at least in part, on the presence of a levee.

The impact of a levee can be divided into two general categories as regards FEMA regulations, guidelines and specifications, and policies for publishing FIRMs:

- Levees that are accredited as providing protection against the 100-year (one percent annual chance) flood
- Levees that are NOT accredited on the effective FIRM

Within this and the repair of levees contexts, the impact on potential FIRM flood zone changes behind the levee would come principally from the effective levee-accreditation status on the current FIRM and whether the damage to the levee and the repairs (or not) changed the status of the levee as regards meeting 44 CFR 65.10, Mapping of Areas Protected by Levee Systems.

- A. An accredited levee damaged and not repaired to a state meeting Part 65.10 would constitute a contributing reason, but not necessarily a conclusive reason, for FEMA to revise the FIRM. Other contributing reasons and considerations (including available funding) may be needed for FEMA to take a FIRM revision action. In a FIRM revision, a de-accredited levee would increase

the Special Flood Hazard Area (SFHA) behind the levee, with the corresponding change in flood zone(s) and insurance rates.

- B. If the levee is not accredited on the current FIRM, damage to the levee and repairs (or not) would not compel FEMA to revise the FIRM, at least not in and of themselves.

It is further true that, regardless of whether the situation is A. or B. above, any future revision of a FIRM may incorporate others factors that affect flood zones on the revised map. These include:

- a. Changes in hydrology that affect the 100-year flood discharge;
- b. Changes in discharge and/or hydraulic modeling that revise the 100-year flood elevations; and
- c. Changes based on FEMA's new Levee Assessment and Mapping Project (LAMP) procedures, which are currently under development.

Summary

A summary statement of the above might make the point more concisely.

- 1. The flood insurance rate changes that might result from levee damages and repairs (or not) will occur only as a result of a FEMA initiated FIRM revision or possibly by Letter of Map Revision (LOMR).
- 2. A FIRM revision is not necessarily (and it is highly unlikely that it would be) initiated by FEMA based only on levee damages and the extent of repairs.
- 3. If a FIRM revision is initiated, it will incorporate any additional factors appropriate to revising the FIRM, including new hydrology and hydraulics.
- 4. Those additional factors may increase the 100-year flood elevations that the levee would need to be certified to in order to meet Part 65.10.
- 5. LAMP (in combination with those additional factors) may result in un-foretold changes to the SFHA behind the levee and corresponding flood zones and insurance rates.
- 6. A flood hazard mapping study would need to be performed to determine the outcomes of 3. through 5. above.

Additional information is in the appended document entitled, *FEMA's NFIP Levee Regulations*. NOTE: The document does not incorporate the provisions of LAMP, which are currently under development.



Rich Leonard, P.E.

Chief

Risk Analysis Branch

Mitigation Division

FEMA Region VII

Department of Homeland Security

9221 Ward Parkway, Suite 300

Kansas City, Missouri 64114-3372

(816) 283-7009

Richard.Leonard2@fema.dhs.gov

FEMA's NFIP Levee Regulations

FEMA involvement with levees is predominantly as regards their certification as adequate protection against the 100-year flood (in accordance with 44 CFR 65.10), so that they can be accredited on FEMA's Flood Insurance Rate Map (FIRM). This regulation is found at http://edocket.access.gpo.gov/cfr_2002/octqtr/pdf/44cfr65.10.pdf

A certified and accredited levee results in the area that is protected by the levee being shown as not being in the Special Flood Hazard Area (SFHA) on the FIRM. Accordingly, flood insurance is not required as a condition to financial assistance from a federal or federally-regulated source, nor is there a floodplain management requirement for new or substantially improved structures that would be regulated by the local government if it is participating in the National Flood Insurance Program (NFIP).

44 CFR 65.10, Mapping of Areas Protected by Levee Systems, is a FEMA regulation. It is specifically about, as reflected above, how the levee will be represented on the FIRM if it satisfies certain certification requirements. Within this context it is important to note the following.

1. 65.10 (a) says, in part, "The FEMA review will be for the sole purpose of establishing appropriate [flood insurance] risk zone determinations for NFIP maps and shall not constitute a determination by FEMA as to how a structure or system will perform in a flood event."
2. 65.10 (b) says, in part, "(1) Freeboard. (i) Riverine levees must provide a minimum freeboard of three feet above the water-surface level of the base [100-year] flood."
3. 65.10 (e) says, "(e) Certification requirements. Data submitted to support that a given levee system complies with the structural requirements set forth in paragraphs (b)(1) through (7) of this section must be certified by a registered professional engineer. Also, certified as-built plans of the levee must be submitted. Certifications are subject to the definition given at § 65.2 of this subchapter. In lieu of these structural requirements, a Federal agency with responsibility for levee design may certify that the levee has been adequately designed and constructed to provide protection against the base flood."

Within the context of these excerpts from 44 CFR 65.10, it is evident that:

- A. FEMA's role relates to flood insurance rating. This role is distinct from what may be U.S. Army Corps of Engineers' (USACE) authority and role in co-sponsoring, designing, building, and maintaining levees for flood protection purposes.
- B. FEMA's regulations do address the required height of a levee if it is to be certified and accredited on the FIRM.
- C. Certification is the responsibility of the party requesting that FEMA accredit the levee, and must be provided by a registered professional engineer.
 - There is an exception to the prescriptive structural requirements of 65.10 (b), if a Federal Agency will certify that the levee adequately protects against the 100-year flood.
 - So it may, or may not be, that a Federal agency is involved in the certification of a levee and its resulting accreditation on the FIRM.

Additional factors in describing, or differentiating between, FEMA and USACE roles are as follows:

- a. FEMA's NFIP regulations provide no authority to sponsor, design, build, inspect, or maintain levees.
- b. FEMA has no requirements that levees be built, nor that they be built to any particular level, except as needed if the levee owner seeks accreditation on the FIRM as described above.
- c. The NFIP's regulatory flood is the base (i.e., 100-year) flood. Accordingly, levee accreditation for FEMA purposes pertains to that flood. There are no additional ramifications within NFIP regulations if the levee protects to a greater level, for example, to the 500-year flood elevation. This includes no additional ramifications on flood insurance rates, or floodplain management requirements.

11-15-2011 NOTE: This document does not incorporate the provisions of FEMA's Levee Assessment and Mapping Project (LAMP) which are currently under development, but will not change what is described above.

Rich Leonard, P.E.

Chief

Risk Analysis Branch

Mitigation Division

FEMA Region VII

9221 Ward Parkway, Suite 300

Kansas City, Missouri 64114-3372

(816) 283-7009

Richard.Leonard2@fema.dhs.gov