From: Chal Martin
Sent: Friday, November 13, 2009 5:32 PM
To: Ike, Ryan
Cc: Albert Liou; Ed Brunz; Scott Thomas; Margaret Fleek; John Shultz; Charles H. Bennett; Eron Berg; LornaEllestad; ; Hanson, Jana; Mark Freiberger; Bell, Esco; Dan Berentson
Subject: Meeting to Update Region X on Dike 12 / Burlington "Certified Levee Segment" Concept

Ryan, our geotechnical report is about complete and we would like to meet with the Region X staff you might recommend, to show you what we are planning. In particular, we want to ensure that we can certify a "levee segment" that is not tied into high ground. Some have voiced concern that our proposal does not tie into high ground. However, using FEMA's Flo-2d hydraulic model, we believe this concept will work for Burlington. Although it largely does not take the City out of the flood plain, it does reduces base flood elevations in the City, while minimizing impact to both the upstream and downstream areas. This was the concept we developed over a year and a half ago, and substantial additional study since then validates this approach from our perspective.

As you know, this issue is very important to us and we want to make sure there are no fatal flaws from FEMA's perspective. Please let us know the earliest time that may be convenient for you. Thanks very much. Chal

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From: Ike, Ryan
Sent: Wednesday, November 25, 2009 8:29 AM
To: Chal Martin
Cc: Perkins, Dwight; Carey, Mark; Eberlein, Mark; Graves, John
Subject: FW: Meeting to Update Region X on Dike 12 / Burlington "Certified Levee Segment" Concept

Chal,

Ted is on leave now, but we had a chance to talk prior to his departure. What the City is requesting is not necessarily straight forward. We are also working with our HQ staff to get their interpretation. We agree that a conference call would be in order to get at some of the details, etc. As you know, we do not include non-certified levees in our modeling (they are removed to simulate failure). This being the case, a non-certified levee may not impact BFEs as we would not recognize its affect. There is also concern about that lack of tie in to higher ground. I think that a conference call or meeting is doable in December when Ted returns. He is the FEMA lead for any technical discussions related to a proposed change or modification of levees, models, etc.

In the mean time, the only additional points I would make are the same as those we've been working with Mount Vernon on: Burlington needs to be prepared to potentially address, to FEMA's satisfaction, 44 CFR parts 60.3c10 (as well as 65.12 if a rise is created) and 65.10 (for levees). The other key aspect of any map revision would be securing all necessary approvals from NOAA (NMFS) verifying that you've addressed the Endangered Species Act. If you have any questions about the environmental reviews, please work with John Graves or Mark Eberlein of our office.

Beginning in the next several days, I will be on extended leave until January. If you have additional questions, I'll be around today. After that you can also contact Mark Carey, Div Director.

Thanks,

Ryan

From: Perkins, Dwight
Sent: Thursday, December 03, 2009 2:07 PM
To: Chal Martin
Cc: Carey, Mark; Eberlein, Mark; Graves, John; Ike, Ryan; Esfandiary, Siamak; Thomas, Wilbert; Margaret Fleek; Brian Dempsey; Charles H. Bennett
Subject: RE: Meeting to Update Region X on Dike 12 / Burlington "Certified Levee Segment" Concept

Chal,

One thing that I think would really help in a discussion is a bit more detail on the design concept. There is not really such a thing as a "certified levee segment". 44 CFR 65.2b defines certification. One part states "Certification of structural works is a statement that the works are designed in accordance with sound engineering practices to provide **protection** from the base flood" (emphasis added).

(see http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=cb94159b6e8f32445398b01e08d1366c&rgn=div5&view=text&node=44:1.0.1.2.32&idno=44#44:1.0.1.2.32.0.17.2)

The problem with just doing a segment is that it does not isolate the flooding source from the community and, therefore, does not provide protection from the base flood and, therefore, can not be certified. This means that the structure would have to be removed for deriving our 1% chance (100-year) flood maps. Appendix H of FEMA's Guidelines and Specifications details the levee evaluation process a bit more clearly. It talks on page H-5 about the freeboard requirements for not only the main levee segment but the tie-in levees to high ground.

(see http://www.fema.gov/library/viewRecord.do?id=2206)

There are a number of challenges with designing a segment in isolation where water can flow around the structure. One assumption that I am making from what has been provided is that this levee would tie into Highway 20 and/or the railroad at the upstream end and a lower protection level levee on the downstream end. In a 1% chance (100-year) flood, these upstream and downstream structures would be overtopped and likely fail and there would be significant challenges with having a structure near other structures that are overtopping and/or failing. I am attaching a couple pictures of what these forces look like from a road and railroad that was overtopped from a couple of the large floods that have occurred in the past on Skagit.

With all of that said, we are more than willing to have a conference call to discuss and clarify all of the details of this and see if we can help you with what we can. It would be good to discuss 44 CFR part 60.3c10 and the ESA process as well.

From the dates you gave in the previous email, the two times that work for me are the morning of the 9th or any time on the 11th. I need to check with Siamak Esfandiary (our Headquarters engineering lead), Will Thomas (our contractor engineering lead), John Graves (our floodplain manager), and Mark Eberlein (our ESA Compliance Specialist) to see if they have time in either of those time slots. I am booked the week of the 14th so if those 2 days do not work, we may need to look at the week of the 21st. I will get back to you shortly on that.

Ted Perkins, P. E.

Regional Engineer

FEMA Region X

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