

Scott Tornquist

From: Tricia Sandahl [tsandahl@masoncity.net]
Date: Friday, December 16, 2005 3:47 PM
To: scott@TornquistForRiverCity.com
Subject: RE: Winnebago River Levy

yeah, for the most part.

-----Original Message-----

From: Scott Tornquist [mailto:scott@TornquistForRiverCity.com]
Sent: Wednesday, December 14, 2005 4:59 PM
To: Tricia Sandahl
Subject: RE: Winnebago River Levy

Chapter 5

- OK, the pedestrian bridge project includes widening of the river channel, which will enlarge flood plain area downstream of Hampshire, thus dropping flood levels to a point whereby it may be unnecessary to raise the height of the levy anyway. This is good.
- Even if we wanted to raise the height of the levy, this effort could actually destabilize what we have since we are unsure the base of the levy could support the added weight.
- Regardless of the disposition of the bridge project, we need to address the trees, seepage, and boils. The bridge has no impact (positive or negative) on these issues.
- If the bridge proceeds, the increased surge may make it unnecessary to add height to the levy. If the bridge project were to fail to materialize, we may need to top off the levy, but we can only return it to the height recorded in the 1970's. Further, we can only add material to the levy after the trees, seepage, and boils have been resolved.

So, at this point, there is no reason (with respect to Hampshire flooding issues) the bridge project should not proceed.

I think I got it, huh?
ST

From: Tricia Sandahl [mailto:tsandahl@masoncity.net]
Sent: Wednesday, December 14, 2005 12:31 PM
To: scott@TornquistForRiverCity.com
Subject: RE: Winnebago River Levy

Scott,

I am always happy to provide you with sleep-inducing reading material. Yesterday's email was a broad treatment of a very technical issue. Here's more detail:

Your first point is accurate. The most immediate threat to the levee isn't overtopping, it's the trees. The next most immediate threat is the general condition. During the 2004 floods there was a lot of seepage through the base of the levee. Adding to the top will not help the seepage and boils. Adding extra weight to the top of the levee might in fact hasten failure at the base.

On the second point, FEMA does not have the application for the bridge yet. Approval of the bridge is a 5 step process. I spoke with WHKS about it yesterday and I think we're on step 2. The US Army Corps of Engineers has approved the bridge and the channel widening/excavation that will be required in East Park. The Iowa DNR has just started their review. If they approve it (and they likely will since they have been in the loop since the project's inception) an application for a Letter of Map Amendment (LOMA) will go to FEMA (Step 4). If the LOMA is approved, then the the floodplain would be redrawn after the project is complete and the required channel work has been completed. At this point, the existing levee height would be recognized. Step 5 is the local permit.

The Park Board has been managing this project. I have been involved on the technical side in my role as flood plain manager. Mark Suby and Dan Brown have been working with the Park Board and the Council. Before we take steps to stop the submittal to FEMA, we need to look at some of the positives in going forward. First, the existing floodplain maps were made using an older hydrologic model that is not as accurate as the model used today. If the LOMA is approved, the

more accurate elevations will take effect and the 100 year flood level will be lowered in this area. This will benefit the entire community. Second, the geography in the flood study will be accurate. Our existing maps contain significant inaccuracies. For instance, the area around the deer pen in East Park is shown in the floodplain; the maps do not recognize the bluff on the south side of the river. The new study corrects this. Third, if the LOMA application is stopped, and the project redesigned there will be considerable cost to the city. The LOMA is necessary because significant work must be done in the floodway to avoid raising flood levels. The bridge can be designed so that this work is not necessary. However, it will need to be 150 ft. longer which will nearly double the cost of the bridge to about \$1 million. Fourth, as a condition of the LOMA, the city must do significant work in the Winnebago River channel. This work includes overbank removal in East Park. (aprox 25' of the south bank of the river will be excavated). When the channel is widened, it will result in a decrease in the 100 year flood levels between the Carolina Bridge and the ICE railroad bridge, in the area where the levee appears to have settled. The increased height in the levee may not be needed.

I'd encourage you to speak with Mark Suby and Dan Brown. They are much better acquainted with what the discussions with the City Council have included.

Here's a link to an article in this month's Governing magazine about the state of man-made levees in the U.S:
<http://www.governing.com/articles/12flood.htm>

Tricia

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-----Original Message-----

From: Scott Tornquist [mailto:scott@TornquistForRiverCity.com]
Sent: Wednesday, December 14, 2005 11:17 AM
To: Tricia Sandahl
Subject: RE: Winnebago River Levy

Tricia:

You overwhelmed me with information; thanks for the education.

I've gone through your info three times, and slept on it. The following two points have risen to the surface:

- Regardless of the disposition of the Corp of Engineers study, we need to find a way to properly clear the trees and infill the resultant cavities. Due to the vegetative state, we could experience a catastrophic failure of the levy even if the top of the levy is not breeched.
- If we were to try to reestablish levy heights, the best we can do is the height recorded in the 1970's BUT this opportunity is eliminated without recourse if/when FEMA approves the pedestrian bridge project, which FEMA has in it's possession.

Can you please confirm that I have properly stated the above two points. If I have, my next question is this: did/does the Council understand that if/when FEMA approves the pedestrian bridge we have backed ourselves into a corner regarding the levy? If not, should this message be communicated expediently? If this is new information to the Council, can the pedestrian bridge application be withdrawn from FEMA until we've had the discussion and measured all the pro's and con's of moving forward?

ST

From: Tricia Sandahl [mailto:tsandahl@masoncity.net]
Sent: Tuesday, December 13, 2005 11:07 AM
To: scott@TornquistForRiverCity.com
Cc: Pat McGarvey; Gary Wilfong; Myrtle Nelson
Subject: RE: Winnebago River Levy

Scott,

Thank you for the positive comments. I am the primary contact for the Reconnaissance Study so it is my responsibility to keep tabs on the status of the project. In other words, I am just doing my job.

Increasing the height of the levee to the original construction elevation from 1961 is not possible. It *may* be possible to increase it to the levels reflected in the city's 1980 Flood Insurance Study. If the height is increased, it still will not provide protection at the 100-year flood level and the homeowners in the floodplain behind the levee will still be bound by the floodplain management ordinance. The additional height that can be added is negligible.

The levee is located in the floodway. It is illegal to create an obstruction in the floodway that would increase flood levels anywhere in the city. It would violate our local floodplain management ordinance as well as state and federal law and the state prohibits any increase in flood levels, period. It is my understanding that there are places along the levee where anecdotal evidence suggests there has been some settling. Rex Bergo has contacted me about filling in these low spots.

When the flood insurance study was prepared in the late 1970's, it did recognize a levee east of the Carolina Bridge. The model shows the levee in the stream cross section approximately 80 ft. east of the bridge, however it does not define its extent. The elevation at this point was 1082.3 ft. The next cross section was taken at the campground, approximately 1,500 ft. east of the bridge. The elevation here is significantly higher and the levee is not shown. The model assumes that the levee tapers away at a consistent rate between the two points. The model does not show where the levee ends at the east end of the Bergo property.

The city *may* be able to increase the height of the levee to the levels shown in the 1970's study. The most detailed (and most recent) elevation information I have access to are 2 ft. contours in our GIS system. The elevation of the levee varies from 1080 ft. to 1084 ft. Without a survey of the levee, I can't tell if we can increase the height. A .pdf of the map is attached. The city would have to work with the Iowa DNR and FEMA to determine just how much height can be added to the levee.

Before the city starts adding height to the levee, we need to do some research to determine if the existing levee is sturdy enough to withstand the work. We should work with a qualified engineering company and do test boring to see what the levee was constructed with. A qualified engineering firm can also provide suggestions to strengthen the existing levee. The residents along the levee reported numerous boils during the floods in 2004. They also reported, and I witnessed, extensive seepage through the levee, especially the base. There may be ways to strengthen the core of the levee without changing the elevation. We also need to look at the trees along the levee. Trees are the biggest threat to a levee. When the levee becomes saturated, a tree's root ball can no longer support its weight. Trees will fall out of the levee, taking the root ball and a portion of the levee with them. The voids left behind create weak spots in the levee. There are numerous fallen trees along the levee now, and several more trees fell during the flooding in 2004. Clear cutting the trees is not an option because when the tree is cut the root ball will die. As the root ball decays, it creates voids in the levee that weaken the structure and increase the likelihood of failure. If the trees are removed we will also need to do extensive grubbing and filling on the levee. While this can be done it is very expensive and time consuming.

If the city decides to improve the levee, we *must* commit to its maintenance for the long haul. The levee was built in 1961 and has not been maintained since then. Trees were allowed to overgrow both shoulders of the levee, weakening

the structure. The same thing is happening with channelized portion of Cheslea Creek near the AGP plant. If the levee is improved, the Council *has* to commit the funds and manpower necessary to maintain it.

WHKS restudied the Winnebago River when they designed the pedestrian bridge from East Park to the Campgrounds. Their study has been included in the permit application for the bridge. It establishes new (more accurate) flood elevations in this reach of the stream and reflects the extensive excavation that must be done in East Park to widen the river channel. It also establishes the existing stream bank geometry including the levee, as the baseline from which any floodway obstruction is gauged. This means that the opportunity to raise the levee back to the 1970's level will be lost when FEMA approves the bridge project.

Floodplain issues can be very complicated. I'd be happy to discuss this with you further if you have any other questions.

Tricia

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-----Original Message-----

From: Scott Tornquist [<mailto:scott@TornquistForRiverCity.com>]

Sent: Monday, December 12, 2005 9:26 PM

To: Tricia Sandahl

Cc: Pat McGarvey

Subject: Winnebago River Levy

Tricia:

I appreciate the initiative you took on 12/08/05 to check on the status of Federal funding for the levy. Sounds like things are moving the right direction, but, we also know that government works slowly, and the study may take years before we get to implementation. I am of the mindset that we need to find a way of making immediate remedial repairs to at least get the levy back to the original elevations, especially in the Hampshire area, even while we "study" the long term solutions.

The preliminary CIP for 2007 includes \$350,000 for N. Carolina and N. Hampshire improvements (Storm Sewer Fund). It is not clear if this includes work on the levee; hope to learn more 12/13/05 at CIP workshop. The Storm Sewer Fund also includes \$50,000 for Levee maintenance; don't know if this is in the same area.

Just wanted to thank you for your efforts thus far, and share my thoughts. I am hopeful the balance of the Council agrees.

12/19/2005

Scott Tornquist

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*Visit my website at **TornquistForRiverCity.com***

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