



Cemeteries

Fargo-Moorhead Metro Flood Risk Management Project – May 14, 2015

- Stakeholders have expressed great concern regarding the 11 potentially impacted cemeteries located upstream from the Fargo/Moorhead area.
- The Corps/Diversion Authority have been studying impacts on upstream cemeteries in earnest since September 2013.
- The FMM Project will protect 19 cemeteries currently prone to flooding.

1. TIMELINE:

- Cemetery Mitigation Study, September 2013-June 2014:** Visited a majority of the 54 sites and interviewed the POC's to document impacts to cemeteries caused by flooding, level of effort to clean up and/or repair, and to determine possible flood impact mitigation options.
- June 2014:** Issued the "Cemetery Study" that identified the potential impacts to sites and possible mitigation solutions. Sent to POC's and posted on www.fmdiversion.com. Potential impacts included access issues, debris, monument displacement, tree/grass damage if during growing season.
- Cemetery Site Visits, July and September 2014:** USACE/Sponsor team conducted site visits at all 11 sites and met with cemetery POC's to hear their concerns and gather information to inform the development of a Mitigation Plan. Also present were concerned family members, church officials, caretakers, the Upstream Cemetery Authority, and MnDak Upstream Coalition. Attendees' preference for mitigation included protective berms with associated interior drainage facilities and providing/maintaining access during floods.
- Cultural Surveys and Rights of Entry, August 2014 to Present:** Phase 1 Cultural surveys have been/are being performed on 8 of the 11 sites. Three sites have not granted rights-of-entry (Roen, South Pleasant Church, Eagle Valley). Three sites have been determined eligible for listing in the National Register of Historic Places (Lower Wild Rice and Red River, Hemnes and Clara cemeteries). The resulting reports serve as historic documentation of each site and are informative and impressive. Copies are provided to the sites and SHPO's as they are developed.
- Cemetery Mitigation Study, September 2014 to Present:** Mitigation Alternatives Report was prepared that presented several mitigation alternatives and costs (protective berm, access, debris fencing, anchoring headstones, raising site). **See table.** The berm with access alternative for the sites would cost in excess of \$14 million. Max. levee heights range from 1.3 ft to 16 ft.

| No. | Item | ESTIMATED COSTS PER SITE (\$1,000) | | | | | | | | | | | |
|--------------------------------|--------------------------|------------------------------------|---------------------|----------------------------|------------------------------------|------------|-----------|--------------|------------|----------------|--------------|----------------|--------|
| | | North Pleasant 1 | South Pleasant 2 | South Pleasant Church 3 | Lower Wild Rice and Red River 4 | Clara 5 | Roen 6 | Hemnes* 7 | Eagle 8 | Wolverton 9 | Hoff** 10 | Comstock 11 | |
| MITIGATION ALTERNATIVES | | | | | | | | | | | | | |
| 1A | BERM | 291 | 408 | 367 | 4,147 | 974 | 0 | 432 | 510 | 1,025 | 2,682 | 84 | 10,920 |
| 1B | OFFSITE ACCESS | 744 | 290 | 0 | 0 | 1,093 | 0 | 640 | 384 | 0 | 0 | 0 | 3,131 |
| 1.A+B | BERM WITH OFFSITE ACCESS | 1,035 | 698 | 367 | 4,147 | 2,067 | 0 | 1,072 | 874 | 1,025 | 2,682 | 84 | 14,051 |
| 2 Op 1 | DEBRIS FENCE & ANCHORING | 679 | 413 | 574 | 587 | 552 | 74 | 555 | 700 | 592 | 528 | 383 | 5,637 |
| 2 Op 2 | DEBRIS FENCE & ANCHORING | 490 | 261 | 356 | 1,422 | 620 | 74 | 508 | 438 | 411 | 548 | 346 | 5,474 |
| 3. | LOW AREA RAISE | 0 | 0 | 187 | 0 | 0 | 0 | 0 | 424 | 399 | 0 | 386 | 1,396 |

* Hemnes costs assume reclaimed and stabilization of Red River bank are successful. Cost of berm/floodwall option with stabilization was estimated to be \$2,848,000.
 **Berm alternative for Hoff 140th Ave S crossing includes the crossing improvement across Wolverton Creek. Cost of floodwall option is estimated to be \$8,280,000.

- **June 2015:** Send the draft Cemetery Mitigation Plan to POC's and SHPO's. Post on FMDiversion.com. Request comments by 30 June 2015.

2. IMPACT SUMMARY:

- **In the Staging Area:** 7 cemeteries would potentially experience additional depth impacts (100-year flood) ranging from 0.3 feet to 8.3 feet.
 - Comstock Cemetery (Clay Co MN)
 - North Pleasant Cemetery (Cass Co ND)
 - Hemnes Cemetery (Richland Co ND)
 - Roen Family Cemetery (Clay Co MN)
 - Clara Cemetery (Clay Co MN)
 - Hoff Cemetery (Clay Co MN)
 - Lower Wild Rice and Red River Cemetery (Cass Co ND)
- **Upstream of the Staging Area:** 4 cemeteries would potentially experience additional depth impacts (100-year flood) ranging from 0.1 feet to 0.5 feet.
 - South Pleasant Cemetery (Richland Co ND)
 - South Pleasant Church Cemetery (Richland Co ND)
 - Wolverton-Salem Lutheran Cemetery (Wilkin Co MN)
 - Eagle Valley Cemetery (Richland Co ND)

| Cemetery | Existing 1% | | | | Max depth (feet) | With Project 1% | | | | County | In Project Staging Area | Flooding under existing conditions (1% event) |
|-------------------------------------|-------------|-----------------|----------|------------------|------------------|-----------------|----------|------------------|---------------------------------|--------|-------------------------|---|
| | Low point | Water Elevation | Duration | Max depth (feet) | | Water Elevation | Duration | Max depth (feet) | Added Depth from Project (feet) | | | |
| 1 North Pleasant Cemetery | 921 | 920.7 | 0 | 0 | 922.4 | 5 | 1.4 | 1.4 | Cass, ND | Yes | No | |
| 2 South Pleasant Cemetery (Lium) | 923 | 927 | 7.5 | 4 | 927 | 8 | 4 | 0 | Richland, ND | No | Yes | |
| 3 South Pleasant Church Cemetery | 927 | 928.2 | 4 | 1.2 | 928.3 | 4 | 1.3 | 0.1 | Richland, ND | No | Yes | |
| 4 Lower Wild Rice River Cemetery | 908 | 913.9 | 10 | 5.9 | 922.2 | 12 | 14.2 | 8.3 | Cass, ND | Yes | Yes | |
| 5 Clara Cemetery | 915 | 915.4 | 2 | 0.4 | 922.3 | 9.5 | 7.3 | 6.9 | Clay, MN | Yes | Yes | |
| 6 Roen Family Cemetery | 917 | 917.5 | 1.5 | 0.5 | 922.3 | 8.5 | 5.3 | 4.8 | Clay, MN | Yes | Yes | |
| 7 Hemnes Cemetery | 921 | 919.6 | 0 | 0 | 922.7 | 3.5 | 1.7 | 1.7 | Richland, ND | Yes | No | |
| 8 Eagle Valley Evangelical Cemetery | 924 | 925.7 | 2.5 | 1.7 | 926.2 | 5 | 2.2 | 0.5 | Richland, ND | No | Yes | |
| 9 Wolverton Cemetery | 923 | 926.8 | 4 | 3.8 | 927.2 | 7 | 4.2 | 0.4 | Wilkin, MN | No | Yes | |
| 10 Hoff Cemetery | 908 | 914.2 | 10 | 6.2 | 922.2 | 12 | 14.2 | 8 | Clay, MN | Yes | Yes | |
| 11 Comstock Cemetery | 922 | | 0 | 0 | 922.3 | 2 | 0.3 | 0.3 | Clay, MN | Yes | No | |

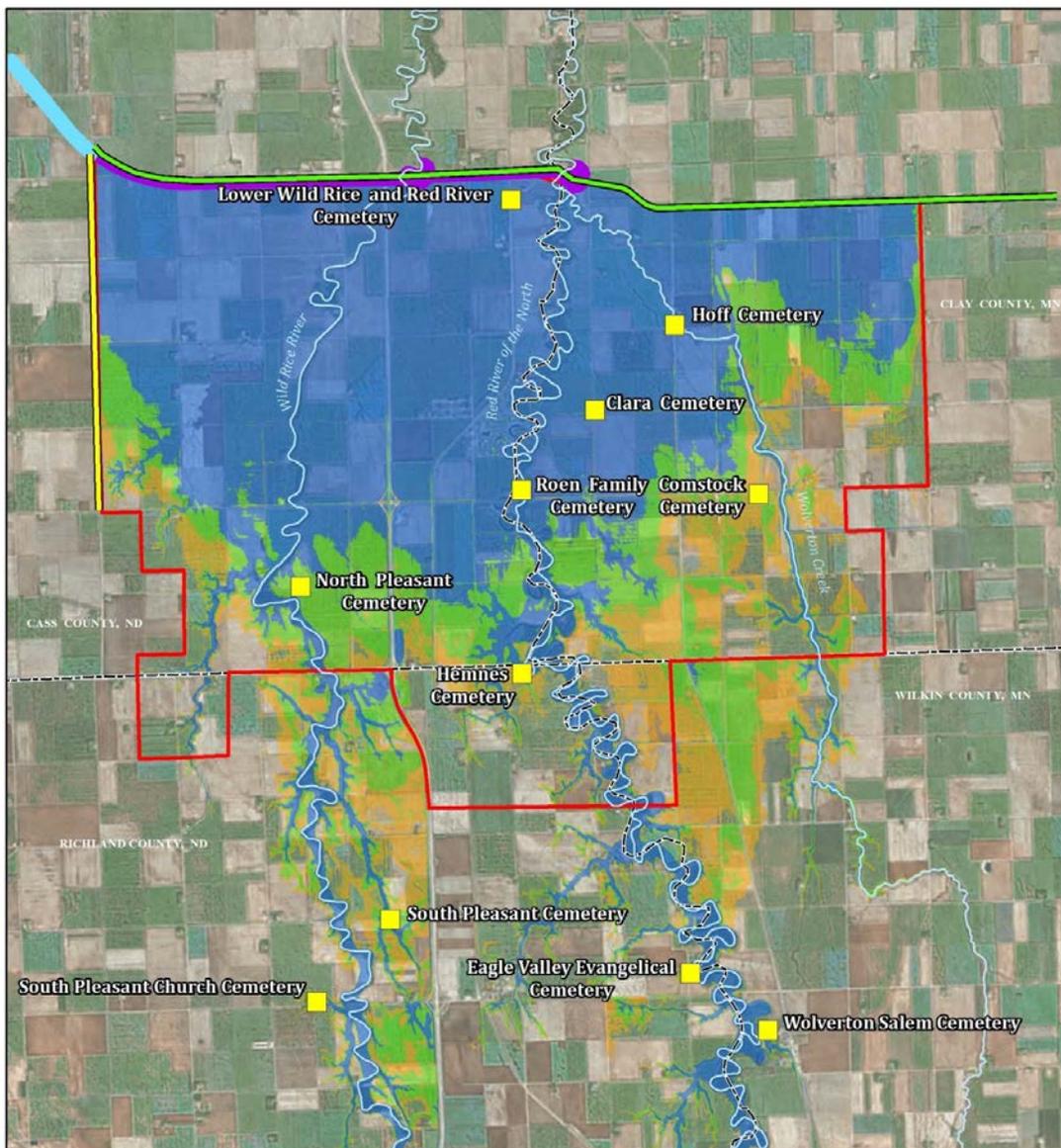
3. MITIGATION PLAN SUMMARY:

- The **Federal Mitigation Plan** consists of obtaining flowage easements on cemeteries within the Staging Area, as is required in the staging area for operation of the Project. Impacts caused by the Project do not rise to the level of a Taking under the 5th Amendment:
 - None of the induced flooding would be more frequent than once every ten years; nine of the 11 cemeteries would not have induced flooding at even the 10-year event
 - Two cemeteries with induced flooding at the 10-year event would suffer only very minor additional flooding.
 - Past flooding has caused only minimal damage to cemeteries in the area, and the induced flooding from the Project is likely to also cause only minor damage.
 - For less-frequent events (50-yr, 100-yr), impacts are of limited duration, infrequent, and would cause minimal physical damage.
- In addition to obtaining the federally-required flowage easements, the **Diversion Authority** as part of the Project Operation and Maintenance (O&M) Plan, can clean-up or offer assistance to clean-up the staging area (cemeteries, roads, ditches, fields, etc.) after operation of the Project. The details for this work have yet to be established.

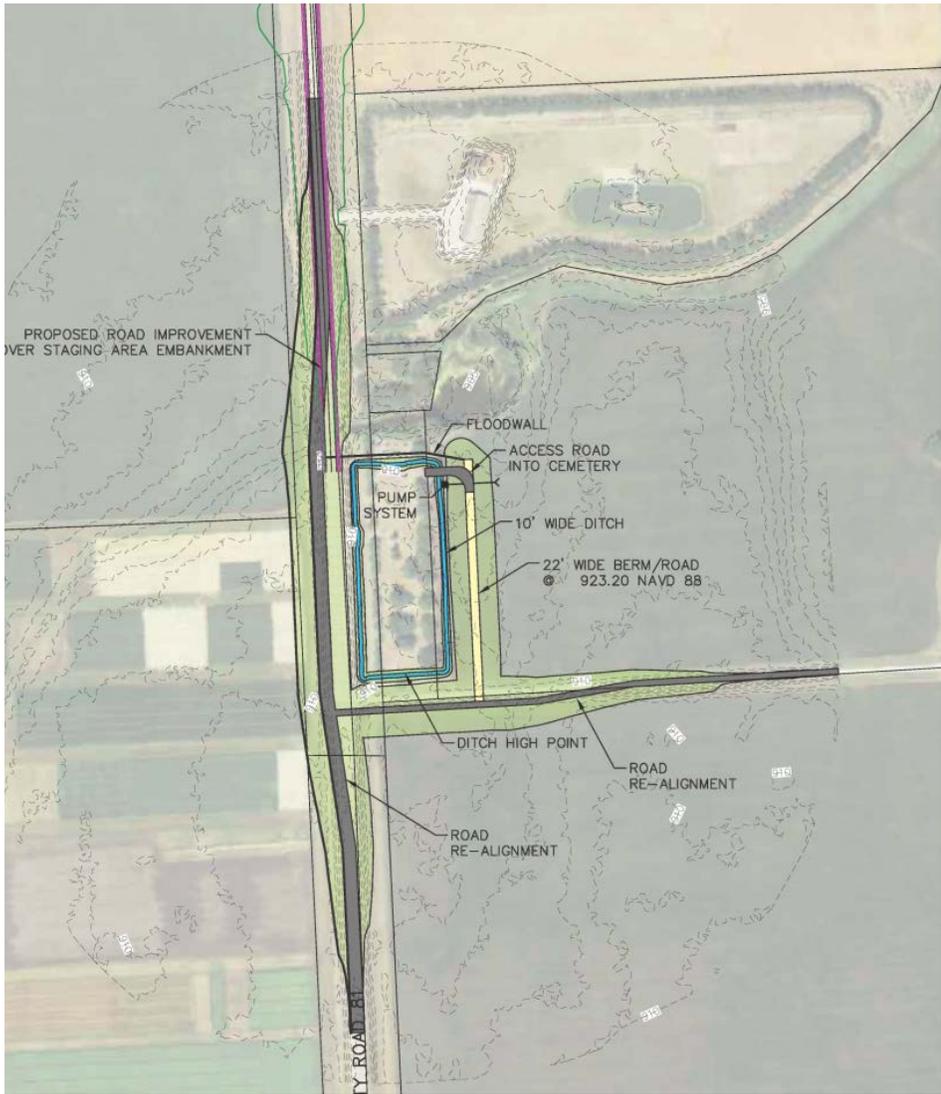
- No Federal mitigation is required for potentially-impacted cemeteries located outside the staging area.

4. ADDITIONAL:

- We have kept the cemetery POC's informed on progress via letters and telephone calls and mailing copies of reports generated.
- Various entities have been provided briefings on this subject including the ND Legislature, City of Moorhead, Clay County, Diversion Authority, ND SHPO, Congressional members and the MN Governor.
- Any flood mitigation feature that would involve physically altering the cemetery site may adversely affect the historical integrity of that site, particularly in regard to integrity of design, setting, and feeling.
- Hemnes Cemetery is a significant historic site and is currently being threatened by river bank erosion. The ND SHPO has been made aware of this issue. According to the POC's, requests for assistance from Richland County have been unsuccessful.



11 Cemeteries Potentially Impacted by FMM Project



Lower Wild Rice and Red River Cemetery – Protective Berm/Interior Drainage Layout

Hemnes Cemetery – Existing riverbank erosion

