

## FEMA/USACE Coordination Plan

- Project:** Fargo-Moorhead Metropolitan Feasibility Study
- ND Diversion Channel with upstream staging – Federal Plan (Authorized WRRDA 2014)
- Project Design:** U.S. Army Corps of Engineers, St. Paul District
- Project Reach:** Diversion begins along the Red River of the North approximately 4 miles south of the confluences of the Red and Wild Rice Rivers and eventually re-enters the Red River north of the confluence of the Red and Sheyenne Rivers near the city of Georgetown, MN. Along the 36 mile path, it would cross the Wild Rice, Sheyenne, Maple, Lower Rush and Rush Rivers.

### **Floodplain Management Requirements – 44 CFR Sections 60.3, 65.3, 65.6, 65.8, and 65.12:**

#### **Section 60.3, Floodplain Management Criteria** – requires that communities:

- Notify adjacent communities and the state coordinating office prior to any alterations and submit copies to the Associate Administrator, Federal Insurance and Mitigation Administration (FIMA),
- Ensure the flood carrying capacity is maintained within any altered or relocated watercourse,
- Prohibit encroachments in the Special Flood Hazard Areas (SFHAs), the area subject to inundation during the base (1-percent-annual-chance) flood, with no mapped floodways that will cause increases in the base flood elevations (BFEs) of more than the allowable surcharge (1.0 in North Dakota and 0.5 in Minnesota),
- Prohibit encroachments in mapped floodways which would result in any increase in BFEs, and
- Notwithstanding any other provisions, if encroachments are allowed and will cause a rise in BFEs exceeding these limits, submit a Conditional Letter of Map Revision (CLOMR) for FEMA comment.

**Section 63.5, Requirement to Submit New Technical Data** – requires that communities submit new data when base flood elevations increase or decrease from physical changes that affect flooding conditions. This information must be submitted no later than 6 months after it becomes available.

**Section 65.6, Revision of Base Flood Elevation Determinations** – identifies data that communities must submit, under the map revision process, to support a request to revise the FIS report and FIRM including, but not necessarily limited to:

- new or revised hydrologic analysis,
- new or revised hydraulic analyses,
- new or revised delineation of floodplain boundaries, and
- new or revised floodways.

**Section 65.8, Review of Proposed Projects** – requests by communities for FEMA to provide:

- Written comments on proposed projects in the form of a Conditional Letter of Map Revision (CLOMR), and
- Comments on whether the proposed project will justify a revision to the FIRM, if the project is built as proposed.

Data required to support such requests are similar to data discussed above for a map revision.

**Section 65.12, Revisions to Reflect BFEs Caused by Encroachments** – requires that communities apply to FEMA for conditional approval (see 44 CFR Part 72 of the NFIP regulations ) of actions which will cause increases in BFEs in excess of the limits discussed above prior to permitting the encroachments to occur, and must:

- complete a request using the MT-2 application forms,
- provide an evaluation of alternatives,
- document individual legal notice to impacted property owners,
- obtain concurrence of CEOs of communities impacted by the proposed actions, and
- provide a certification that no structures are impacted by increased BFEs or a description of the proposed mitigation measures for all impacted structures, within the Revision Reach as defined below.

**FEMA Flood Insurance Study (FIS) Reports and Flood Insurance Rate Maps (FIRM):**

**Effective FIS Reports and FIRMs** - The Cass County, ND partial countywide FIS Report and FIRMs went effective on January 16, 2015. Effective FIS Reports and FIRMs for all communities impacted by the proposed project are available at the FEMA Map Service Center site at: <http://www.msc.fema.gov/>.

**Preliminary FIS Report and FIRMs** – Preliminary FIS Reports and FIRMs have been issued for Wilkin County, MN. Local project sponsors have access to the FIS and FIRMs effective and issued preliminary for their jurisdictions.

### **Red River of the North Modeling:**

**Effective FIRM Models** – The Eastern Cass Partial Countywide study went effective on January 16, 2015. The hydraulic analysis for the revised portion of the Red River of the North (South of 29<sup>th</sup> Street Southeast) was developed by Houston Engineering, Inc., and was finalized in February 2009. This analysis uses the USACE HEC-RAS steady flow model. Hydraulic analysis for the unrevised portion of the Red River of the North (North of 29<sup>th</sup> Street Southeast) was completed by the USACE in 1985. This analysis uses the USACE HEC-2 computer program.

**Preliminary FIRM Models** – Preliminary FIS Reports and FIRMs have been issued for Wilkin County, MN. The hydraulic analyses for the Red River of the North from the Clay County boundary to approximately 90 feet downstream from State Highway 210 were performed by USACE, St. Paul District and FEMA. The work was completed in January 2003. The models used for the preliminary FIS Report and FIRMs along the Red River of the North utilize the USACE HEC-RAS steady flow models.

**USACE Fargo-Moorhead Metropolitan Feasibility Study Models** – The HEC-RAS models used for this study along the Red River of the North were developed by the USACE by converting the 2003 steady flow models to unsteady flow models and also included updating overbank data with LiDAR information, updating channel bathymetry with recent surveys, and adding many storage areas and connections. The models prepared by USACE included:

- **Existing or Pre-Project Conditions Model (ECM)** – The USACE’s updated HEC-RAS unsteady flow model which incorporates the updated floodplain and channel information will be used as the pre-project conditions model.
- **Revised or Post-Project Conditions (RCM) Model** – The USACE’s updated HEC-RAS unsteady flow model for existing conditions was updated to include the effects of the proposed Fargo-Moorhead Metropolitan Feasibility Study project, and represents the post-project conditions model.

These models were based on the hydrology analysis for the wet period of record (1942-2009), which provides a peak discharge of 34,700 cubic feet per second (cfs), compared to the 29,300 cfs peak discharge used in the effective models for the 1-percent-chance-annual flood. FEMA has reviewed the hydrology for both the wet period 1-percent-chance-annual flood peak discharge of 34,700 cfs and the period of record (through 2009) peak discharge (33,000 cfs) and found that either discharge would be reasonable for FEMA mapping.

### **Impacts on Other Streams**

The other major streams potentially impacted by this project are:

- Wild Rice River
- Sheyenne River
- Maple River
- Lower Branch of the Rush River
- Rush River
- other minor streams shown on effected FIRMs along the proposed diversion route

### **Information Required for CLOMR Application:**

The following information would be needed for the submission of the CLOMR application:

- **MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision including:**
  - **Form 1 - Overview & Concurrence Form** provides the basic information regarding the revision request and requires the signatures of the requester, community official(s), and engineer,
  - **Form 2 -Riverine Hydrology & Hydraulics Form** provides the basic information on the scope and methodology of hydrologic and/or hydraulic analyses that are prepared in support of the revision request,
  - **Form 3 -Riverine Structures Form** provides the basic information regarding hydraulic structures constructed in the stream channel or floodplain. This form should be used for revision requests that involve new or proposed channelization, bridges/culverts, dams/basins, and/or levees/floodwalls,
  - **Payment Information Form** -Provides the basic information regarding any fees paid for a CLOMR, if required (note: federally sponsored flood-control-projects where 50 percent or more of the project’s costs are federally funded are exempt from fees), and
  - **ESA Compliance Documentation** – must be submitted for CLOMRs only. Appropriate documentation includes a copy of an Incidental Take Permit, an Incidental Take Statement, a “not likely to adversely affect” determination from NMFS or USFWS, or an official letter from NMFS or USFWS concurring that the project has “No Effect” on proposed or listed species or designated critical habitat.

- **Additional supporting information which would accompany the forms listed above includes:**
  - **Revision Reach** - The extent of the revision is defined by an effective tie-in at the upstream and downstream limits for each flooding source. An effective tie-in is obtained when the revised base flood elevations from the *post-project* conditions model are within 0.5 feet of the *pre-project* conditions model at both the upstream and downstream limits. The downstream end of the revision reach is at the outlet of the diversion channel, and the upstream end of the reach will be near model station 2650000 as shown in the attached map. The upstream end of the reach on the Red River is approximately 2 miles east and 0.75 miles north of Christine, ND. Christine, ND is within the revision area. The upstream end of the reach on the Wild Rice River coincides with the northern boundary of Richland County, ND.
  - **Staging Area Regulatory Mapping** - The areal extent of flood inundation required by the Project for operation in the Staging Area will be mapped as floodway in order to ensure that the required storage volume is available for the project during the 1-percent-annual-chance event. Any additional flood inundation area beyond the extents of what is required by the project during the 1-percent-annual-chance event will be mapped as floodplain in order to portray the elevated flood risk outside of the required staging area.
  - **Mitigation of Project Impacts** - The extent of mitigation of impacts caused by the Project is also defined by the revision reach. The impacts within the designated project Staging Area will be mitigated in accordance with the Project's Feasibility Study/EIS (FEIS) dated July 2011, and authorized for construction in WRRDA 2014. Impacts caused by the Project to structures located within the revision reach that are not identified for mitigation in the FEIS will generally follow the same mitigation strategy as identified in the FEIS. The impacts caused by the Project on all insurable structures within the revision reach will be mitigated through agreed methods consistent with those specified by the National Flood Insurance Program (NFIP). For residential structures, these include elevation, relocation, buy-outs, and ring levees. For non-residential structures, these include dry flood proofing, elevation, relocation, buy-outs, and ring levees. The CLOMR will include a general plan as to how structures will be mitigated. A site-by-site analysis will not be necessary for the CLOMR.

- **Models accompanying Form 2 including:**
  - **Corrected Effective Model (CEM)** – The USACE 2003 steady flow HEC-RAS model is utilized to best represent the current effective and preliminary modeling on the Red River of the North. It uses the current effective peak discharge for the 1-percent-chance-annual flood (29,300 cfs). Therefore, this model will be the base condition model used for comparison purposes in the CLOMR submittal.
  - **Existing or Pre-Project Conditions Model (ECM)** – The USACE’s updated HEC-RAS unsteady flow model which incorporates the updated floodplain and channel information will be used as the pre-project conditions model.
  - **Revised or Post-Project Conditions (RCM) Model** – The USACE’s updated HEC-RAS unsteady flow model for existing conditions was updated to include the effects of the proposed Fargo-Moorhead Metropolitan Feasibility Study project, and represents the post-project conditions model.
- **Public Notices and Property Owner Notifications** - The primary purpose for notifications, whether they are public notices or property owner notifications, is to make certain that all affected parties (property owners and communities) are aware of any proposed changes to the map prior to those changes being permitted and shown on a revised FIRM.
  - **For Section 65.12 Revisions Based on Proposed Encroachments** - This requirement is met by providing individual legal notice to all impacted property owners explaining the impact of the proposed map revision on their property. The community must notify property owners of the impact to their property prior to the community issuing building and/or construction permits for the proposed project.
  - **For Section 65.6 Revisions of Base Flood Elevations** – Anytime BFEs are being revised (whether increasing or decreasing) or being established along a flooding source, notification of these BFEs must be published in the community’s local newspaper twice within a 10-day period. FEMA publishes this notification, on behalf of the affected community(s). The

2<sup>nd</sup> publication date of this notice initiates the 90-day appeal process for the map revision. The notification is required during the actual map revision process.

- **Comparison of Models** – A comparison of the models should be made to address the impacts of the project on the corrected effective, existing or pre-project, and revised or post-project conditions BFEs, and SFHA and floodway boundaries. Discharge differences between the various models based on updated or revised hydrology conditions should also be discussed and evaluated.
  
- **Suggested Model Comparisons:**
  - Comparisons of the CEM BFEs to the BFEs for the current effective FIS profiles (which are both based on the same peak 1-percent-annual-chance discharges) discussing the differences in the BFEs.
  
  - The ECM to the CEM. For this comparison, since the ECM model uses HEC-RAS unsteady flow with updated hydrologic data and the CEM model uses HEC-RAS steady flow, the 1-percent-annual-chance peak discharges are not similar and cannot be compared directly. Therefore, the comparisons would be best estimated by comparing the ECM model elevations for the 2-percent-annual-chance flood (peak discharge comparable to the CEM 1-percent-chance-annual discharge) to the CEM 1-percent-annual-chance elevations. Discuss and explain the differences related to hydrologic and hydraulic conditions in the models.
  
  - The RCM to the ECM, which represents the comparison of the post-project conditions to the pre-project conditions. For this comparison, discuss the differences in BFEs and boundaries of the SFHAs and floodways. In addition to the Red River of the North, comparisons for all other flooding sources shown on the effective FIRMs, where applicable, will be necessary.
  
  - The RCM to CEM, which represents the comparison of the post-project conditions to the base conditions model and identifies the area impacted by this revision request.



**Information Required for Map Revision Application:**

It is anticipated that a request for a map revision will be submitted upon completion the project. The ECM and the RCM will be updated to reflect post-project conditions and used in the submittal for the map revision for the project. Information will need to follow the requirements of 44 CFR Part Section 65.6 and the MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision. Remapping will be initiated upon request by the local communities, following project completion.

