

## **Authority Work Directive Summary**

### **January 12, 2012**

#### **AWD-0001 Meander Belt Width Analysis (\$92,700)**

This work will determine whether a low-flow channel can meander on a long-term basis within a 200 foot wide channel. This will result in a low-flow channel that does not impact the inner toe of slope of the diversion spoil piles.

#### **AWD-0002 Increase In Flows Through Town (\$195,000)**

This work will evaluate options for increasing Red River flows beyond these planned in the Feasibility Report through Fargo-Moorhead during flood events. The primary benefit of this would be to reduce the frequency of operation of the diversion channel and duration of staging water in the storage and staging areas. Additional flood protection structures along this reach will mitigate flood risk during flood events prior to completion of construction of the diversion channel, and will lessen the extent of temporary flood fighting measures. The in-town flood protection structures would also help mitigate the risk for floods that exceed the 100-year event after completion of the diversion channel. An additional benefit is reducing the number and cost of fish passageways for structures included in the Project.

#### **HEC-RAS Model Updates (\$93,765)**

This work will update the existing computer models of the river system hydrology developed for the Feasibility Study to include changes to the diversion alignment, the channel configuration, as well as additional detail in several other areas.

#### **Lower Rush/Rush Connection (\$125,050)**

The Diversion Channel intersects the Lower Rush River and the Rush River upstream of their natural outlets. During the feasibility study, it was determined that the flow from both the Lower Rush River and the Rush River would be directed into the Diversion Channel. The feasibility study includes a combination of a reinforced concrete drop outlet structure and a separate rock ramp for fish passage at each the Lower Rush River and the Rush River. Value Engineering (VE) Proposal No. 17 recommended connecting the Lower Rush River to the Rush River and, therefore, constructing only one drop outlet structure with associated fish passage. This VE Proposal was adopted. Before starting detailed design work, an alternatives assessment is needed to select the alternative to be designed. This work will develop design concepts and associated cost estimates (including construction and right-of-way costs) to a feasibility level, and it will also identify additional analysis needed to advance the design of the alternative selected.

#### **Local Drainage Plan (\$30,650)**

Local drainage in the Red River Valley is important to farm and land owners. Local drainage is accomplished with surface and sub-surface field drains, legal county drains, and other features. The Diversion Project will impact many of these existing local drainage ways. If provisions for drainage are not properly accommodated, localized

flooding, impacts to crop land and local residences will occur. This work will incorporate plans for re-establishing and/or improving local drainage, as well as handling drainage during the period of construction activities.

### **Transportation Master Plan (\$73,000)**

This work will develop a Transportation Master Plan for the northern section (I-94 to the Outlet) to accommodate required access and roadway transportation for local farm access; emergency service access; school bus routing; local traffic routing; construction equipment and haul routing; and Interstate highway car and truck traffic.

### **Recreation and Use Master Plan (\$138,700)**

The Diversion Project will be a major feature in the Fargo-Moorhead area. Although it will be a critical component for reducing the risk of catastrophic flood impacts in the area, it will actually be used only a small percent of the time. The beneficial use of the project features, when not actively used for flood mitigation, need to be determined.

This work will develop a recreation and use master plan for the Diversion Project. Develop overall concepts for the diversion corridor and specific recommendations for the northern portion (I-94 to the outlet).