

Three Corps-owned flood storage projects in the Red River basin benefit the study area: Lake Traverse, Orwell Lake, and Lake Ashtabula. Opportunities exist to build additional flood storage, but previous Corps studies have found insufficient national economic interest to support Federal involvement in such projects. The studies have also shown that flood storage alone cannot provide an acceptable level of risk reduction for the Fargo-Moorhead Metropolitan Area.

Despite the lack of Federal financial involvement, the Cass County Joint Water Resource District recently built a dam on the Maple River upstream and approximately 35 miles southwest of Fargo. The Bois de Sioux Watershed District in the headwaters of the Red River basin and the Buffalo-Red River Watershed District are also designing and constructing flood storage projects. These smaller projects provide incremental benefits, but they are not sufficient to prevent major flood damages in the Fargo-Moorhead Metropolitan Area. It is likely that additional flood storage would be built upstream of the study area, but that storage alone is not likely to adequately reduce flood risk to the study area over the next 50 years.

2.5.2 Effectiveness

The effectiveness of flood storage depends on many factors, including distance from the benefited area, volume of water retained, timing of the storage, size of the drainage area controlled, and the amount of runoff contributed from the controlled area during each particular flood event. Because each flood event is different with respect to the major sources and timing of runoff, it would be very difficult to ensure that a system of remote storage sites would be reliably effective at reducing flood stages in the Fargo-Moorhead area.

The St. Paul District's Fargo-Moorhead and Upstream Area Feasibility Study is assessing the viability of multipurpose projects to provide both flood storage and aquatic ecosystem restoration. In 2005, Phase 1 of that study determined that it may be possible to build 400,000 acre-feet of flood storage in the watershed using projects of 2,000 to 20,000 acre-feet each. (Note: this capacity is the most storage determined to be possible, due to limits of topography and landowner willingness.) An impoundment downstream of White Rock Dam near the North Dakota/South Dakota border that could provide up to 60,000 acre-feet of storage was also considered. A model of such a system of impoundments indicated that it could reduce the 1-percent chance flood stage in Fargo-Moorhead by less than 1.6 feet.

The Energy and Environmental Research Center (EERC) at the University of North Dakota conducted a study of the "Waffle concept" to use the existing road network with additional water control structures to store flood water from spring floods on farm fields. According to EERC's final report for the Waffle Project, dated December 2007, between 49,000 and 100,900 acre-feet of Waffle storage could be obtained upstream of Fargo-Moorhead (calculated from Table 7, page 47). The study found that flood stages in Fargo-Moorhead during the 1997 flood (nearly a 1-percent chance flood event) could have been reduced by 3.3 to 4.4 feet if the Waffle Project had been in place (Table 16, page 68).

This alternative would have a low level of effectiveness.

2.5.3 Environmental Effects

This alternative would have moderate positive impacts