Appendix U
Supplemental Draft Environmental Impact Statement Public and Private Summarized Comments and Corps Responses

Fargo-Moorhead Metropolitan Area Flood Risk Management

Final Feasibility Report and Environmental Impact Statement

July 2011

US Army Corps of Engineers ®

Prepared by:
U.S. Army Corps of Engineers
St. Paul District
180 Fifth Street East, Suite 700
St. Paul, Minnesota 55101-1678

Page intentionally left blank

Appendix U

Supplemental Draft Environmental Impact Statement Public and Private Summarized Comments and Corps Responses

Table of Contents

List of Figures

1.0 Public Comments on SDEIS

1.1 Comments and Responses

The Supplemental Draft Feasibility Report and Environmental Impact Statement (SDEIS) dated April 2011 was published in the Federal Register for a 45 day public review period on May 6, 2011. The review period closed on June 20, 2011. The review period generated a number of questions and comments on the SDEIS and covered a wide range of topics. These comments are provided in Appendix T. To best manage the responses to these comments, the Corps has captured the intent of the various comments by subject matter and then provided a single response when this summarized comment was similar to other comments. The comments have been separated into these categories:

A. Plan Formulation Alternatives
B. EIS Process and Schedule
C. Impacts
D. Modeling Technical
E. Page Specific Comments
F. Coordination of Permits
G. Project Management
H. Miscellaneous

All comments have been reviewed by the Corps. Many comments are unique and many are reiterated in comments by multiple individuals. In an attempt to respond to each comment, all comments have been condensed, paraphrased and repeated only once. These comments appear in the subsequent sections and are categorized as they relate to the planning process. Many of the responses provide a general overview and then direct the reader to the location within the Final Feasibility Report and Environmental Impact Statement where more detailed information can be found. The Final Feasibility Report and Environmental Impact Statement is referred to as the FEIS throughout this Appendix.

2.0 Comment Category A: Plan Formulation Alternatives

A-1 Water Redistribution Alternatives Provide Opportunities for Water Supply
Some comments identified alternative measures that involved redistributing water and snow from the Red River Basin to other areas of the country impacted by drought or experiencing water shortages. The water could be redistributed with pumps, hoses, and trucks, or snow could be packed into bags, trucks, or train cars and moved from the Red River Basin to more dry regions such as Colorado and Wyoming.

Response:
Planning efforts should and do consider a full array of possible solutions and evaluate effects of reasonable alternatives. Any recommended alternative must effectively and efficiently address the identified problem of flooding in the Fargo-Moorhead Metro area. Section 7.5.3 of Appendix O of the FEIS describes how alternatives are compared according to screening criteria to determine the degree to which each alternative meets the planning objectives. Water redistribution was considered in the form of storage alternatives and upstream impoundments; water redistribution to western states was not evaluated in great detail because the costs (efficiency) of transporting snow and water are greater than the benefits that could be provided by this reduction in snowpack. The study team has found that other alternatives, such as diversion channels, are more efficient (provide more benefits at less cost) and more effective (reduce flood risk to a greater degree) than water redistribution alternatives.

A-2 Storage Alternatives – Stand Alone and in Combination
Many comments asked the Corps to consider storage as a flood risk management alternative, either on its own or in combination with other flood risk management measures. Storage refers to any number of measures intended to store flows (discharge) during flood events in order to reduce the peak discharge of the event. Examples of storage measures include retention, detention, reducing drainage (i.e. farm fields), wet dams, dry dams, etc. These comments generally took the following forms:

> The Corps has failed to adequately consider all storage alternatives; the Corps should consider a state line dam and dam on the Wild Rice River south of Wyndmere; the storage being sought by Minnesota Representative Collin Peterson in the Farm Bill must be considered; large acres of undeveloped land could be used for storage; widening and deepening the current Red River channel combined with tile drainage from Wahpeton to north of Fargo would be effective flood mitigation; the Red River 20/20 basin wide retention plan should be implemented.

Response:
The study team has found that storage alternatives, either as stand-alone measures or in combination with others, do not effectively or efficiently address catastrophic flood risk in the Fargo-Moorhead Metro area. Storage alternatives have the potential to reduce flood stages in the local area downstream of a storage site while they significantly increase flood stages upstream within the storage area. The stage reductions produced by flood storage are largest immediately

downstream of the storage area and diminish with distance downstream of the storage area. If several storage sites were created over a large area, the system could have substantial cumulative benefits for relatively small and frequent flood events. However, as described in the FEIS, the amount of storage that could be practicably implemented upstream of Fargo-Moorhead Metro area would not substantially reduce the risk in the Fargo-Moorhead Metro area from large infrequent flood events. Furthermore, a system of flood storage sites would need to be implemented in many small increments over a very large geographic area over an extended period of time. Such a system would impact significantly more acres of land than the recommended plan and would be less effective in reducing flood risk in the Fargo-Moorhead Metro area. The study team has found that other alternatives, such as diversion channels, are more efficient (provide more benefits at less cost) and more effective (reduce flood risk to a greater degree) than storage. While giving full and equal consideration to storage alternatives, the study team has not recommended they be carried forward due to their relative inefficiency and ineffectiveness, and the difficulty in implementing them on a large scale. For further discussion of storage alternatives, refer to sections 8.4.2 and 8.4.3 of Appendix O of the FEIS. The selected plan (LPP) does include approximately 200,000 acre-feet of staging and storage upstream of the diversion channel inlet to nearly eliminate downstream impacts. It should be noted that several other current initiatives are considering flood storage in the Red River Basin, including two Corps of Engineers studies: the Red River Basin-wide Watershed Study and the Fargo-Moorhead and Upstream Area feasibility study.

A-4 Scope of Study – Basin-wide versus Metro Area

Some comments questioned the scope of the study and the focus on the Fargo-Moorhead Metro area instead of a basin-wide study. These comments stressed that flood risk management solutions should be developed from a basin-wide perspective, so as to find a full range of alternatives (including upstream storage), and impacts to areas outside the metro would be fully considered. The comments asked the Corps to enlarge the study area to include all upstream river basins. In order to formulate a full array of alternatives and evaluate all of their effects, it is necessary to utilize a basin-wide study area.

Response:

The problems and opportunities identified in section 2.4 of the FEIS pertain to the Fargo-Moorhead Metro area. Planning efforts should and do consider a full array of possible solutions and evaluate effects of reasonable alternatives. The significant amount of existing flood risk in the metropolitan area warrants evaluating measures that chiefly benefit the metropolitan area. Therefore, the planning objectives of this study are to reduce flood risk in the metropolitan area, and to improve environmental quality, wetland habitat and recreation in conjunction with reducing flood risk, with the constraint of avoiding increasing peak flood stages upstream or downstream of the metro. While alternatives were considered from a basin-wide perspective, and the effects of those alternatives were evaluated basin-wide, those alternatives were formulated with the objective of addressing flood risk in the metro area. The Corps of Engineers and other local, state and federal agencies are studying flood risk throughout the Red River Basin under separate efforts. For a discussion of the study area see sections 1.3 and 4.1 of the FEIS. For a discussion of problems and opportunities and objectives and constraints see sections 2.4 through 2.7 of the FEIS.

A-5 Consideration of Levee Alternatives
Some comments asked about levee alternatives and questioned if these alternatives received adequate consideration. Some asked why levees were implemented in Grand Forks but have not been recommended for Fargo-Moorhead.

Response:
Levees were considered as alternatives in Phase 2; section 5.1.2 of Appendix O of the FEIS outlines the array of measures and alternatives that were evaluated, compared, and screened in Phase 2. Section 3.4.5.1 of the FEIS discusses the factors considered regarding levees. The Fargo area lacks high ground to begin and end levees, and that limits the potential levee height. As such, the largest cost-effective levee plan could only be certified up to the 1-percent chance event. This left an intolerable level of remaining risk, so the levee alternative was dropped from consideration as a stand-alone alternative. The level of risk reduction targeted in this project was guided by a goal set by the non-federal sponsors' Work Group.

A-6 No Action Alternative
Some comments asked why a project was necessary since Fargo-Moorhead has been largely successful in fighting floods. Flood fight strategies have improved over the years and the proposed project is an unnecessary expense.

Response:
A no action alternative, or an alternative with no flood risk reduction measures in place, was considered. Under this scenario, Fargo-Moorhead would continue to rely on emergency flood fighting measures. Section 2.3.4 of the FEIS and sections 5, 7, and 8 of Appendix O of the FEIS describe the no action alternative. The no action alternative does not meet any of the planning objectives. Although Fargo-Moorhead have been successful fighting floods in recent years, it is probable that emergency measures will not always be successful. Failure of emergency measures could result in significant loss of property, and the loss of life will likely also be high given the number of people who choose to fight the flood instead of evacuate. In addition, Fargo-Moorhead spends a significant amount of time, effort, and money in the near-annual flood fights, resources that could be better spent elsewhere with a project in place.

A-7 Diversion Alignment
Some comments asked the Corps to consider alternative alignments for the diversion and/or shifting the diversion alignment. Some suggested shifting the alignment further west or further south and asked if the Corps had considered these alignment alternatives. One comment asked if the diversion alignment might have been different if staging and storage were included in the original design.

Response:
Multiple sizes and alignments for the diversion were considered and each of these alternatives was evaluated, compared, and screened according to the required criteria. The final array of diversion combinations can be found in the FEIS, Appendix O, Section 8.4.3.8. The array of alternatives includes consideration of multiple diversion sizes and alignments. Sections 3.7.3 and 3.7.4 of the FEIS discuss specific requests to move the alignment west and south of the

proposed alignment. Various channel alignments were considered, and the alignment of the proposed diversion channel was selected for technical and policy reasons. The alignment described for the LPP does take into account the upstream storage and staging. The design intent was to benefit as much existing development as possible while minimizing overall impacts to the floodplain and the environment while at the same time minimizing costs.

A-9 Consideration of Floodwalls
Some comments asked about floodwall alternatives and questioned if floodwalls may be able to solve the flooding problems in the Fargo-Moorhead area.

Response:
Floodwalls were considered as alternatives in Phase 2; section 5.1.2 of Appendix O of the FEIS outlines the array of measures and alternatives that were evaluated, compared, and screened in Phase 2. Section 3.4.5.1 of the FEIS discusses the factors considered regarding floodwalls. Floodwalls are typically more expensive than earthen levees, and floodwalls are used where there is not sufficient space to build a levee. Levees and floodwalls were screened out during Phase 2 for the same reasons discussed in Question A-5 above regarding levees. The Fargo area lacks high ground to begin and end floodwalls, and that limits their potential height. As such, the largest cost-effective levee and floodwall plan could only be certified up to the 1-percent chance event. This left an intolerable level of remaining risk, so the levee/floodwall alternative was dropped from consideration.

A-10 Consideration of Levees Combined with Floodwalls
Comments asked about the combination of levees and floodwalls as an alternative. Some comments noted that Fargo has successfully fought floods using emergency sandbag levees combined with floodwalls and questioned if levees and floodwalls could be a permanent solution.

Response:
Levees and floodwalls were considered as alternatives in Phase 2. Comments A-5 and A9 above and the corresponding responses address levees and floodwalls in more detail.

A-11 Locks on the Diversion
Comments asked if the diversion could have a series of locks that control the flow.

Response:
The purpose of the diversion channel is to provide an alternate path for flood water to pass around the highly developed metropolitan area. Adding locks or other structures within the diversion channel to impede flow would make the channel more expensive and less hydraulically efficient.

A-12 Alternatives & Combination of Alternatives
Some comments raised questions about the alternatives studied and asked whether the Corps had explored all alternatives. Some comments asked the Corps to step back and look for other

alternatives to address the Fargo-Moorhead flooding problems. One comment suggested that breachable levees would be a good idea.

Response:
Section 8.4.3 of Appendix O of the FEIS addresses the array of all measures and combinations of measures that were considered. This section of the appendix describes how alternatives and combined alternatives were evaluated, compared and screened. Some measures from Phase 3 were re-visited and some new measures were introduced in response to comments on the DEIS; all reasonable and practical measures and combinations of measures were considered in the FEIS.

A-13 Natural Storage Alternatives
Some comments asked whether the Corps had sufficiently evaluated all water storage alternatives, including storage in natural low spots of sloughs.

Response:
Water storage alternatives such as this were explored (FEIS, Appendix O, Section 8.4). On a basin-wide scale, storage in natural low spots could produce very small flood stage reductions over a large area, and provide some cumulative benefits to the basin. However, this type of storage would not substantially reduce catastrophic flood risk to the Fargo-Moorhead area. The study team determined that storage alternatives were relatively ineffective and inefficient. Other alternatives were found to be more effective at reducing flood risk in Fargo-Moorhead and more efficient in that they could be implemented for a lower cost. A flood storage system does provide some level of flood risk reduction, particularly for the smaller, more frequent flood events; however, the level of risk that remains for the larger, less frequent flood events is not a tolerable level of risk.

A-14 FCP
The FCP is less expensive than the LPP in regards to both initial cost and annual cost. The FCP has a higher benefit cost ratio, and the FCP has a greater chance of being approved by Congress.

Response:
The costs of the LPP and FCP are described in Chapters 3 and 5 of the FEIS. The primary planning objective is to reduce flood risk to the Fargo-Moorhead Metro area. The LPP reduces flood risk to a larger geographic area and a greater number of people than the FCP. Corps of Engineers policy requires that the study must identify an alternative that reasonably maximizes net national economic development benefits, but non-federal sponsors are allowed to request a different alternative. The Assistant Secretary of the Army (Civil Works) approved a request to recommend the locally preferred plan on April 28, 2011.

A-15 Level of Risk Reduction
Some comments asked how the level of flood risk reduction for the project was determined. One comment asked this question: "Why is the Fargo-Moorhead project being designed for a 500-year flood when the Grand Forks-East Grand Forks flood protection system was designed for a 300-year flood?"

Response:
The level of risk reduction targeted in this project was guided by a goal set by the non-federal sponsors' Work Group. The Metro Flood Study Work Group (MFSWG) established the goal of a stage of 36 feet at the Fargo gage during a 0.2-percent chance event, or the 500-year event. Neither the LPP nor the FCP meet the MFSG's original goal; however the MFSWG has accepted the level of flood risk reduction provided by the LPP, which is a stage of 40 feet for the 0.2-precent chance event. The proposed diversion would not remove the entire metropolitan area from the 0.2-percent chance floodplain, but it would enable Fargo and Moorhead to pass a 0.2-percent chance event with emergency floodfighting similar to the efforts conducted during the 2009 flood. See section 7.4 of Appendix O of the FEIS for more details. Minutes from the MFSWG meetings are included in Appendix Q of the FEIS.

A-16 Marshall Diversion
Why can't a plan similar to the Marshall Diversion be developed? The diversion in Marshall is successful at mitigating floods and does not destroy farmlands or towns.

Response: Flood risk management projects are unique, and their design depends on many factors including river slope, flood volume, and the nature of the floodplain at the project location. Therefore, it is not appropriate to directly compare projects at different locations. However, the FCP and the ND35K plan are conceptually similar to the diversion channel at Marshall, Minnesota, in that they would not include upstream staging and storage and would primarily redirect flow around the urban area. The FEIS discusses the benefits and tradeoffs between the FCP, ND35K plan and the recommended LPP which includes upstream staging.

A-17 Wetlands/Grasslands – Stand Alone and in Combination
Many comments asked the Corps to consider wetlands and grassland restoration as a flood risk management and ecosystem restoration alternatives, either on their own or in combination with other flood risk management measures. Many of these comments cited the draining of wetlands for agricultural use as a chief source of increasing flood trends. Comments noted that destruction of wetlands along the Gulf Coast has caused flooding problems. Wetland restoration alleviates flooding and some flooding has stopped in California cities because of wetland and floodplain restoration. Wetland and grassland restoration measures provide flood storage, wildlife habitat, and improve water and air quality. The National Wildlife Federation urges the Corps to formulate an alternative that would include 500,000 acre-feet of storage through wetland and grassland restoration and an additional 500,000 acre-feet of storage through temporary storage utilizing farm fields.

Response:
Opportunities for wetland and grassland restoration do exist in the Red River Basin. Wetland and grassland restoration would typically require large areas of land and would store relatively small volumes of runoff during extreme flood events. Therefore, such alternatives would be less effective in reducing flood stages than other flood storage alternatives discussed in Question A-2 above. An alternative of a combination of 500,000 acre-feet of grassland/wetland restoration and 500,000 acre-feet of storage on farm fields would require placing approximately 10 feet of water on 100,000 acres, which would have immense impacts to property, people, agriculture, and

infrastructure. In addition, significant coordination would be required for operation of the storage sites. Sections 8.4.2 and 8.4.3 of Appendix O of the FEIS contain more information on wetlands and grassland restoration measures.

A-18 Storage and Wetlands/Grasslands Restoration Alternatives Improve Environmental Quality and Benefit Wildlife

Many comments asked the Corps to consider the environmental quality improvements that could be provided by storage and wetlands/grasslands restoration alternatives. Wetlands and grasslands provide habitat for migratory birds, fish, and other wildlife; they improve water quality and decrease storm water runoff; and they contain a variety of native plant vegetation. In addition, wetlands play a role in water supply as they recharge ground and surface waters. Storage and wetlands/grasslands restoration alternatives could provide opportunities to improve environmental quality. Viable wetlands could also bring in tourism dollars to help boost the regional economy.

Response:

Section 8.4.3 of Appendix O of the FEIS considers flood storage alternatives. Flood storage opportunities and wetland and grassland restoration opportunities do exist, and with the right operational scheme, storage impoundments could improve environmental quality. Flood storage alternatives could be effective basin-wide and produce cumulative benefits basin-wide. However, these measures are not the most effective or efficient measures to reduce flood risk to Fargo-Moorhead. Any combination of flood storage systems would be costly and relatively ineffective at addressing the flooding problems in Fargo-Moorhead.

A-19 Flaws in Benefit/Cost Analysis

The process used to analyze costs and benefits is flawed. The negative effects are minimized, the recreation benefits are exaggerated, and the death projections are unrealistic.

Response:

The economic analysis presented in the FEIS uses the standard methodology prescribed by the Water Resources Council's "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" and the Corps of Engineers' Engineer Regulation 1105-2-100. Recreation benefits are not used to justify the flood risk management features of the project, but the economic analysis of recreation benefits is included to show that recreation features are economically justified as additional features. Loss of life is not monetized or included in the economic benefits presented in the FEIS.

A-20 Solution to Red River Basin Flooding Problems

The project does not even guarantee to solve the Red River Basins catastrophic flooding problems.

Response:

There is no measure that can guarantee to solve flooding problems; however, existing data and hydraulic modeling indicate that the LPP would substantially reduce flood risk in the Fargo-

Moorhead Metro Area. Even with the flood risk reduction project in place, there will always be residual risk to surrounding communities that can be further reduced through zoning, building codes, insurance and evacuation.

A-21 Waffle Project and Other Storage Alternatives
Some comments asked whether the Corps had sufficiently evaluated all water storage alternatives, including the "Waffle Project." The "Waffle" concept is a basin-wide approach that utilizes upstream water storage areas in existing depressions in the watershed. The existing network of roads and ditches contains the depressions or storage areas. Flood stages in Fargo-Moorhead during the 1997 flood could have been reduced by 3.3 to 4.4 feet if the Waffle Project had been in place. But this data is not considered in the SDEIS.

Response:
The "Waffle" concept was specifically explored as a water storage alternative (FEIS, Appendix O, Section 8.4). On a basin-wide scale, the "Waffle" could produce flood stage reductions over a large area, and cumulative benefits to the basin. However, the "Waffle" would not substantially reduce flood risk to the Fargo-Moorhead area. In addition, the "Waffle" would be costly to implement and could likely not be implemented in a period of less than 10 years. Like other storage alternatives considered, the study team determined that the "Waffle" approach was relatively ineffective and inefficient. Other alternatives were found to be more effective at reducing flood risk in Fargo-Moorhead and more efficient in that they could be implemented for a lower cost. A flood storage system does provide some level of flood risk reduction, particularly for the smaller, more frequent flood events; however, the level of risk that remains for the larger, less frequent flood events is not a tolerable level of risk. Flood storage alternatives, including the "Waffle Project," do not effectively address the identified problem of flooding in the Metro area.

A-22 Re-evaluate Alternative Screening for Reduced Environmental Effects
Appendix O of the SDEIS discusses the alternative screening analysis. Alternatives that have less environmental impacts should be re-evaluated to determine if they could meet the project purpose. Specifically the following should be examined:

- Consider alternatives with a lower, but still acceptable level of flood risk reduction focused on the 1% chance event.
- Examine incremental measures such as small levees, non-structural measures, and/or flood storage that could be combined with the diversion without control structures.
- An additional incremental measure should be evaluated that considers restriction of development within flood prone areas.

Response:
Alternative screening analysis was conducted in Phase 2 of the study and the full array of potential measures to address flood risk in the study area was considered. Nonstructural measures, flood barriers, increased conveyance, and flood storage measures were evaluated. Further re-evaluation of these alternatives was performed during alternative screening analysis #2 in Phase 2 of the study. Section 8.4.3 of Appendix O of the FEIS addresses the array of all measures and combinations of measures evaluated in Phase 4. This section of the appendix

describes how alternatives and combined alternatives are evaluated, compared and screened. Some measures from Phase 3 were re-visited and some new measures were introduced; all reasonable measures and combinations of measures were considered.

Incremental measures such as small levees and non-structural measures do not have a synergistic effect with the proposed diversion; as such, the diversion without control structures is not a feasible alternative with the incremental measures in place. A diversion without control structures is marginally feasible at best and a diversion without control structures is less efficient regardless of other incremental measures in place.

Development within flood prone areas is restricted by city floodplain ordinances based on FEMA maps. The future development in the study area is assumed to be in compliance with local city floodplain ordinances.

A-23 LPP versus Waffle Impacts to Prime and Unique Farmland
The Tentatively Selected Plan will eliminate tens of thousands of acres of prime and unique farmland from operation and place still more at risk of limited production. On the other hand, the Waffle or Flow Reduction Strategy would only "borrow" or "rent" land from willing landowners in the event of flooding and, in most cases, will use natural storage areas to store greater amounts of water.

Response:
The upstream storage and staging areas of the LPP total approximately 39,000 acres. In the upstream staging area, there will be no impact to crop production for most years. The proposed plan does not eliminate farmland in the upstream staging area. Only for the most severe flood events will there be an effect from additional depth and duration. Even with a 1-percent chance spring flood event, the duration of standing water is estimated to only increase 5 to 15 days. The area inside the diversion channel will be at reduced risk for flood damages during all events.

A-24 Valid Planning for Project Purpose
The Corps impermissibly included an additional project purpose of eliminating downstream impacts. The Corps must start over in its planning process to identify a valid NED plan or FCP that meets the additional project purposes of reducing flooding from the five tributaries and eliminating downstream impacts.

Response:
The U.S. Army Corps of Engineers conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since Phase 1 of this study, and remain the same in Phase 4. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints

are detailed in Section 1.9 of Appendix O of the FEIS. In Phase 4 of the study, three diversion channel alternatives (LPP, FCP, ND35K) were compared and screened in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. Each of the plans in this final array, including the FCP, was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints. Section 8 of Appendix O of the FEIS details the planning process during Phase 4 of this study. From the three valid plans considered in Phase 4, the LPP is the selected plan.

A-25 Wetland Storage
Wetlands hold water and alleviate flood stages. They are like sponges that retain water and prevent flooding. Too many wetlands have been lost, and that loss contributes to flooding. Wetland restoration and storage is much less expensive than the proposed plan.

Response:
The study team has found that storage alternatives, either as stand-alone measures or in combination with others, do not effectively or efficiently address catastrophic flood risk in the Fargo-Moorhead Metro area. Wetland storage is discussed in comments A-2, A-13, A-17, A-18, and A-21 above. Efforts were taken to avoid, minimize and compensate for wetland impacts caused by the selected plan and wetland impacts related to the selected plan will be mitigated. An adaptive management and mitigation plan is included in the main report (Attachment 6 of the FEIS). This plan discusses the wetland mitigation, costs, and monitoring that will be conducted post project to ensure the success of the mitigation.

A-26 Prairie Potholes
This project should restore the prairie potholes, the potholes store water and are habitat and breeding grounds for waterfowl. Prairie pothole restoration is not listed as an alternative, when in fact, this should be the chosen alternative.

Response:
Prairie pothole restoration is a form of wetland/grassland restoration and was considered by the study team. See comments A-2, A-13, A-17, A-18, and A-21 for further discussion.

3.0 Comment Category B: EIS Process and Schedule

B-1 Request for Extension
Some comments asked the Corps to extend the comment period on the SDEIS. The city of Oxbow, ND requested an additional 45 days and the National Wildlife Federation asked for an additional 30 days for the comment period.

Response:
The requests for an extension of the comment period for the SDEIS are noted, however, the Corps did not grant an extension. The SDEIS is a supplement to the Draft Environmental Impact Statement (DEIS) that was released for public review and comment in June 2010. Many of the chapters and appendices are substantially the same in the SDEIS as the DEIS. Several public meetings and Metro Work Group meetings open to the public were held prior to the release of the SDEIS. Furthermore, the SDEIS will have been available to the public for review for longer than the required 45 days. While the official public review period began on May 6, 2011, when the notice of availability was published in the Federal Register, the document was publically available on the project website starting April 28, 2011 and was mailed out to agencies and libraries on April 29, 2011. Given the extensive public communication and opportunity for input throughout the study, the Corps did not believe an extension was warranted.

B-2 Request for Assessment
The city of Oxbow, ND requested an assessment of the mitigation, compensation, and relocation costs for the city.

Response:
The Corps concurs that a detailed appraisal will be needed to determine compensation for landowners prior to project implementation. However, the project is only in its feasibility stage at this point and has not yet been authorized by Congress. It is premature to perform a detailed appraisal of each property at this stage in the study. The FEIS includes costs of mitigating for the city of Oxbow based on a gross appraisal. A property by property assessment will be conducted after project authorization, if the project is authorized.

B-3 Alternative Alignments
Will other alignments be considered and if so, how?

Response:
Other alignments can be considered, but the same planning process that has been implemented to develop the currently recommended alignment will be required for any alternative alignment. Another alignment, if considered, may not be approved. A formal request must come from the project sponsors in order for the Corps to consider another alignment. Supplemental National Environmental Policy Act (NEPA) documentation may be required for an alternative alignment.

B-4 Timeline
Some comments addressed the project timeline; some stated that the time table is too rigid and another claimed more time is needed regardless of any time line that has been established.

Response: The Fargo-Moorhead Metropolitan Flood Risk Management Feasibility Study began in September 2008. After the flood in March 2009, the non-federal sponsors and elected officials at all levels of government requested that this study be completed as quickly as possible. The planning process complied with all laws and regulations applicable to federal water resource management feasibility studies.

B-5 Public Involvement
The planning process has lacked fair public involvement. Members of a wide community have been left out of the process.

Response:
Public involvement in this study is fully described in Chapter 6 of the FEIS. Between November 2008 and June 2011, the study team held five public and agency scoping meetings, 18 public informational meetings, and a formal Section 404(b)(1) hearing. Between August 2009 and June 2011, the Metro Flood Study Work Group, representing six local elected boards, held more than 25 meetings that were open to the public. In addition, the study team maintained a project website (www.internationalwaterinstitute.com/feasibility) where the most current public information could be found and public comments could be provided to the Corps.

B-6 Electronic Comments
The computer system does not function as described, is this intended to preclude comment? This must be corrected.

Response:
Numerous comments were received via the International Water Institute (IWI) Website (www.internationalwaterinstitute.org/feasibility) throughout the public comment period. Any problems of which the Corps was made aware were promptly referred to IWI for corrective action. Written comments were also received via U.S. postal service and in person at public meetings.

4.0 Comment Category C: Impacts

C-1 Immediate Mitigation for Upstream Impacts
Some comments asked what can be done for immediate mitigation for homes in the upstream staging area. Some stated that homes could not be sold and relocating to accept a promotion or new employment would be impossible without selling the home; they asked what can be done for mitigation now. Comments stated that market values have decreased substantially and it is not fair to have to wait ten years for a buyout or other mitigation. One comment described the situation as being "in limbo until the completion of the project, unable to sell homes or move on with life for ten years."

Response:
The exact timing of any buyouts, and whether buyouts will even be necessary, is unknown at this time. The Fargo-Moorhead Flood Risk Management Project is only in the feasibility stage, and buyouts are contingent upon Congress authorizing and funding the project. Mitigation for the project cannot begin until the project has been authorized and funded.

Real estate acquisitions are the responsibility of the non-federal sponsors. The non-federal sponsors will establish timetables for real estate acquisitions once the project has been authorized and funded based upon the needs of the project and available resources. Local communities should work with the sponsors to address issues related to the timing of required buyouts. Each affected parcel will be appraised and assessed for impact. Each parcel is unique and distinctive and must have a determination made as to the most appropriate way to mitigate project effects and compensate the owner for damages. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

C-2 Loss of Farmstead
How do you plan to put a market value on farmsteads when the entire farm operation is run out of it? Will farmsteads be relocated, and to where?

Response:
Generally speaking the value of land acquired is the fair market value of the property. The fair market value includes many aspects of the property in question. Earning potential is one of those aspects to be addressed in developing a fair market value. Regardless of the value determined, Public Law 91-646 outlines the requirements that must be followed to ensure a homeowner/landowner is compensated justly. There are programs available to assist when the acquisition of land for a project adversely affects a business. In certain circumstances, farmers and other business owners can qualify for business relocation benefits. Consult with a relocation advisor to determine whether your business qualifies for benefits under Public Law 91-646.

C-3 Impacts to Communities Upstream
Some comments expressed concern regarding the impacts to communities upstream of the proposed diversion. The human cost and impacts on the upstream communities is very high; many families with historical roots and ties in the area will have to relocate and entire

communities may be displaced. The proposed diversion will mean losing homes, businesses, churches, cemeteries, and schools; the institutions that unite rural towns will be lost and the social fabric of these communities will be destroyed. Many cultural impacts are associated with this project. Quality of life in communities upstream of the proposed diversion will be negatively impacted.

Response:
All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. Every diversion channel alternative considered provided positive benefits to some areas and resulted in adverse impacts to other areas. The proposed North Dakota alignment with upstream staging and storage will impact many people and communities in the upstream area. These impacts are described in detail in several sections of the FEIS. Appendix D of the FEIS documents community characteristics in the study area and Other Social Effects Factors. In addition, Section 4 of Appendix D of the FEIS provided a detailed Other Social Effects analysis of the alternatives carried forward in the study. Section 5.2.3 (Socioeconomic Resources) of the FEIS outlines potential impacts to communities including public health and safety (Section 5.2.3.1.5), community cohesion and sense of unity (Section 5.2.3.1.6), business and home relocations (Section 5.2.3.1.8), and others.

The FEIS documents the economic value of project impacts and reflects them in the benefits and costs of the diversion channel alternatives. The study includes an analysis of non-structural measures that could be economically justified as part of the project. The study also includes an analysis to identify any impacts that rise to the level of a taking of property under the Fifth Amendment of the U.S. Constitution. The report identifies several measures that could be implemented by others to mitigate downstream and/or upstream impacts, including flood easements, farmstead ring levees, community levees, buyouts/relocations, and other non-structural measures. Existing federal, state and local programs are available to assist in implementing such measures.

C-4 Fairness of Impacts
Some comments addressed fairness and stated that the diversion channel and the upstream impacts are not fair. The people in the Fargo-Moorhead area benefit while the people who live upstream are negatively impacted. The upstream areas are on higher ground and not flooded as frequently as Fargo; it is wrong to send water to these areas that have not been flooded. It is not fair for people upstream to bear this burden, and it is not fair for people in Fargo-Moorhead to benefit at the expense of others. Fargo is not giving anything up, others are making all the sacrifices. This is unacceptable.

Response:
Attitudes regarding fairness and related perceptions are largely subjective and likely to differ widely across various communities and populations. The proposed flood risk management project in the Fargo-Moorhead Metro area does have impacts, and these impacts are subjectively compared, evaluated and judged by many people. Further discussion of social effects can be found in Appendix D of the FEIS.

C-5 Mitigation and Life Style
Some comments questioned the process for home buyouts. As one commenter noted, a buyout would not come close to the value of their property, their golf course membership, and their lifestyle. The living arrangements and lifestyle in Oxbow and other upstream communities are unique, how can these residents be compensated?

Response:
The process of acquiring property for a project is highly regulated. The Fifth Amendment of the Constitution states that private property shall not be taken for public use without just compensation. To address what constitutes just compensation, Congress passed the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 ("Uniform Act"). The non-federal sponsors will be required to follow the Uniform Act in acquiring any lands. The Corps of Engineers will work with the non-federal sponsors to ensure the correct process and procedures are adhered to throughout the process.

Part of the process will be an appraisal, which determines the fair market value of the property. Fair market value is an estimate of the market value of a property based upon what a knowledgeable, willing, and unpressured buyer would pay. The appraisal will attempt to take all objective property features into account when determining fair market value. The fair market value is determined without consideration for the effect the project has had on the value of the land. For more information on the process for acquisitions please go to:
http://www.fhwa.dot.gov/realestate

C-6 Mitigation Options
Comments asked about mitigation options, and one stated "I would like to have something in writing to explain what our options are as homeowners and what to expect from the time table of this diversion." Currently residents are not able to sell or relocate and an explanation is needed to describe options available as well as timing. Residents feel they are left in limbo without understanding mitigation options.

Response:
At this stage in the feasibility study, it is not possible to give specific information on the options for each homeowner. Once the project is approved and funded each affected parcel will be appraised and assessed for impact. Each parcel is unique and distinctive and must have a determination made as to how to mitigate project effects and compensate the owner for damages. For more information on the process for acquisitions please go to:
http://www.fhwa.dot.gov/realestate

C-7 Home Improvements and Investments
Some homeowners questioned if investments to their properties and homes would pay off or wondered if improvements were a good idea at this point. Some asked specifically if it would be worth it to finish a basement or put up new siding on a house.

Response:
The Corps and the non-federal sponsors cannot advise on whether homeowners should make improvements. The project has not yet been authorized or funded by Congress, so any projected impacts may not occur. Any improvements made to homes and property will be taken into consideration when the property is appraised at its fair market value. The fair market value is determined without consideration for the effect the project has had on the value of the land. In general terms some improvements are more beneficial to the overall value of the home than others. For example, a swimming pool will do very little to increase value of the home as opposed to the cost of the pool.

C-8 Loss of Heritage
Some comments talked about loss of family heritage in the upstream areas. In some cases, people had family roots going back several generations; in other cases, people wished to leave land or a home as inheritance to future generations. Others stated the area had been homesteaded and some original buildings were still on the land.

Response: All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. Every diversion channel alternative considered provided positive benefits to some areas and resulted in adverse impacts to other areas. The proposed North Dakota alignment with upstream staging and storage will impact many people and communities in the upstream area. These impacts are described in detail in several sections of the FEIS. Appendix D of the FEIS documents community characteristics in the study area and Other Social Effects Factors. Section 4 of Appendix D of the FEIS provides a detailed analysis of the alternatives carried forward in the study and their impacts to the "Identity" social factor.

C-9 Relocating Trees
Some people asked what would happen to trees if they relocated. One asked if fruit trees would be moved. Another noted that hundreds of trees, including trees for hardwood harvesting, cannot be just replaced.

Response:
Generally speaking, the appraisal of a parcel looks to the parcel as a whole for valuation purposes. Each tree is not given a value; the value of the trees as a whole will be considered in the value of the property. Additionally, generally trees are not part of the relocation process and will not be moved from one location to the relocation site. However, the value of the trees and need for trees at the relocation site are all part of the negotiation process. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

C-10 Cemeteries
Many comments asked about cemeteries that would be impacted by the project. How will impacts to cemeteries be mitigated? What are the costs associated with relocating a cemetery? Have all cemeteries in the project area been identified and impacts to the cemeteries fully considered? Will family members be contacted before graves are moved? How can people pay respects to the deceased?

Response:
Additional information regarding impacts to cemeteries has been included in the FEIS. The information that has been added to Sections 4.2.2.4 and 5.2.2.4 addresses the comments and questions related to cemeteries.

C-11 Additional Upstream Impacts
Has a study been done on the impacts further upstream from Fargo (Christine, Colfax, Abercrombie, and Wolverton)?

Response:
The hydraulic model developed in the feasibility study extends from Abercrombie, North Dakota to Emerson, Manitoba. Impacts to areas in Richland County, North Dakota and Wilkin County, Minnesota are described in Chapter 5 of the FEIS. Additional analyses will be completed during the design and implementation phase to evaluate upstream impacts and potential measures to reduce impacts.

C-12 Property Value Assessment
How will property values be assessed and who will make the assessment?

Response:
If a property, or a portion of it, needs to be acquired, the property owner will be notified as soon as possible of the need to acquire the property. A qualified appraiser will be hired by the non-federal sponsors to determine the market value of the property. The appraiser must make a detailed appraisal report of his or her findings. The sponsors forward the report to the Corps of Engineers for review and confirmation of the quality and validity of the findings. Once the market value report is accepted, the property owner will be notified of the findings and the value determined will be the starting point for negotiations. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

C-13 Summer Flood Events and Crop Insurance
How will farmers be compensated for late planting or losses due to summer flood events? Can crop insurance be obtained?

Response:
The Risk Management Agency, a subsidiary of the United States Department of Agriculture, is the agency responsible for crop insurance rules and regulations. All producers will be able to obtain crop insurance in the affected area. However, they may lose coverage for flooding if it is determined that the inability to plant in the spring is due primarily to the project or if induced flooding in the summer is caused by the project. The effects of the induced flooding from the project would be compensated for by way of a flowage easement or other property interest obtained by the non-federal sponsors. The Corps of Engineers and the non-federal sponsors are in contact with the Risk Management Agency to coordinate the effects of the project.

C-14 Upstream Towns Do Not Support this Plan
Upstream towns, townships, and counties have spoken out against a project that would put more water onto their towns.

Response:
The concerns of upstream stakeholders have been noted.

C-15 Outbuildings
Some comments mentioned the process for relocating farmsteads and asked if outbuildings such as shops, sheds, and grain bins would be bought out, moved, or replaced. Compensation must include all buildings on the farmstead, not just the house.

Response:
If a farm must be relocated, the non-federal sponsors will help identify suitable replacement property for the operation. As such, the property owner will be entitled to receive relocation advisory services that include: 1. A full explanation of relocation benefits for the particular situation; 2. A discussion about the operation and what is needed for a successful relocation; and 3. A current listing of suitable properties. Other benefits can include: reimbursement for actual reasonable moving expenses, reimbursement of certain costs to search for a replacement site, and certain costs incurred to re-establish the farming operation. The movement of outbuildings such as shops, sheds, and grain bins will be evaluated on a case by case basis. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

C-16 Ring Levee Qualification
Some comments asked about qualifying for a ring dike as a mitigation option.

Response:
Qualification for a ring levee as a mitigation option is still being determined as mitigation plans are developed. The non-federal sponsors will ultimately determine which properties qualify for a ring levee.

C-17 Ring Levee Impacts on Property Values
How will ring levees impact the value of homes and properties? Will the benefits of being protected by the levee outweigh the liability of being in the storage area?

Response:
Ring levees around a home or building site may affect valuation, aesthetics, safety, and security. The impact on the value of any given home or property will be case specific. Other projects constructed by the Corps of Engineers have resulted in minor positive or negative impacts to property values. Whether a ring levee will be an effective mitigation tool will be determined on a case by case basis and will take into consideration the preferences of the homeowner. Ring levees will not be used when there are significant risks to safety and security.

C-18 Scrap Metal and Other Stored Items
What happens to miscellaneous items (such as scrap metal, and old vehicles) stored on farm land, in sheds, or other outbuildings? Will these be bought out, moved, or abandoned?

Response:
Scrap iron and other stored items are considered personal property and not part of the real property. All personal property is for the owner to do as they wish. As part of the relocation the owner may be entitled to moving costs. Moving costs may be paid by either a fixed payment or on actual reasonable moving expenses. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

C-19 Impacts to Non-Agricultural Businesses
What happens to non-agricultural business in the upstream area? Unlike a farm that could still be operated during a flood year, other types of businesses, such as a research business, could not operate. Non-agricultural businesses will be impacted, including gas stations, mechanics, grocery stores, bars, and banks.

Response:
Owners of properties and businesses that are directly impacted by the project will receive just compensation in accordance with PL 91-646. Unfortunately, no compensation is available for businesses that will only be indirectly impacted by the project.

C-20 Fish Passage
Some concern was expressed regarding the statement that "fish passage at the upstream control weir does not seem to be feasible."

Response:
Fish passage features are included on the Red and Wild Rice rivers to get fish around the control structures in these locations under all but the largest floods. Ideally, fish would also be able to pass upstream at the upper end of the diversion channel. However, the features required to make fish passage possible via the diversion channel would be extremely expensive because of the large difference in water surface elevation above and below the diversion inlet weir near Cass County Road 17. The cost to design and build a fish passage channel around this weir could reach $30 million. The Corps' opinion is that this cost would not be justified by the number of fish expected to reach the upper end of the diversion.

C-21 Impacts to School Districts
Some comments asked how the proposed diversion would impact school districts, including Central Cass School District, Kindred School District, Richland School District and others. One comment requested map projections showing school district boundaries.

Response:
Several approaches are being considered for dealing with impacts in the upstream staging and storage area; impacts to structures will depend on the type of the structure and the expected water level changes that may impact the structure. While some of these approaches may have impacts

to the tax valuation of properties in the school district, the potential loss of tax revenue is not compensable as part of the cost-shared Federal project. The Corps encourages school districts to work with the Metro Flood Study Work Group to ensure that any items that cannot be addressed by the Federal project be discussed at the local level.

C-22 Impacts to Canada
Upstream staging and storage is required to avoid downstream impacts into Canada. The Canadians have built a road that acts as a dam or a levee and restricts Red River flows. The Corps does not need to be concerned about limiting flows into Canada because this road already limits the flow.

Response:
The purpose of upstream staging and storage is to reduce downstream impacts along the entire 260 river miles between Fargo-Moorhead and the Canadian border.

C-23 Accuracy of Maps and Cost Estimates
Some comments questioned the accuracy of the staging area maps and could not locate homes or other specific structures on the maps. Concern was also expressed regarding the accuracy of ground elevation of structures shown on the maps. Since these maps are used to estimate costs, there was also a concern about accuracy of the latest cost estimates.

Response:
The maps are based on the best available aerial photography, topographic data, county property records and preliminary site visits. Although the data is not perfect, it is sufficient for a feasibility level of analysis. As the project moves forward, every affected property will be evaluated by survey teams on the ground. The current cost estimates include contingencies to account for inaccuracies in the estimate due to various factors.

C-24 Existing Sheyenne Diversion Channel
West Fargo is already protected by the existing Sheyenne Diversion Channel, and this project has already been paid for. How will the new diversion impact the Sheyenne Diversion?

Response:
The existing Sheyenne River diversion is really two diversion projects: the Horace to West Fargo diversion and the West Fargo diversion. The Fargo-Moorhead Metro diversion would incorporate and expand the Horace-to-West Fargo channel. From West Fargo north, the Fargo-Moorhead Metro diversion would run alongside the existing West Fargo diversion and be set far enough away so as to not affect the existing diversion. The Fargo-Moorhead Metro diversion would reduce risk in the cities of Horace and West Fargo from Sheyenne River floods more than the current Sheyenne Diversion does, and it will also reduce flood risk from Red River and Wild Rice River flood events.

C-25 Downstream Impacts
Some comments claimed that downstream impacts would still occur and stated opposition to any project that would result in downstream impacts.

Response:
Downstream impacts are nearly eliminated with the proposed diversion channel with upstream storage and staging. All of the flood risk management alternatives that were considered would cause both positive and negative impacts in various locations to various degrees.

C-26 Drainage
Make farmers stop draining their fields, this drainage contributes to the area flood problems.

Response:
Drainage is generally a local development issue and regulated at the local level. It is generally believed that ditching may contribute to smaller summer flood events, however it is unlikely that ditches play a significant role during extreme flood events for which the selected plan is designed.

C-27 Employment Impacts
Jobs will be affected with so many acres of land being impacted by the project. Will I have my job at a grain elevator if the elevator doesn't have any grain to handle due to persistent flooding of the acres in the upstream area? If commuter towns are displaced, the workforce in Fargo may be reduced and existing companies may have to leave the Fargo area.

Response:
Economic impacts of the project are discussed in the FEIS in Chapter 5 and in Appendix C. While some individual jobs may be lost or relocated due to the project, it is expected that the benefits of reduced flood risk will provide a climate supporting business expansion and increased employment opportunities in the Fargo-Moorhead region. Although the selected plan will increase the frequency and duration of flooding within the flood storage and staging areas, the majority of currently farmed acres will continue to be farmable most years.

C-28 Tieback Levee at Highway 17
What are the effects of the proposed tieback levee at Highway 17? Currently the overland Sheyenne River flooding that occurs in this area involves water flowing north and east across Highway 17 until it gets to the Wild Rice River. What are the effects when the levee is built and water cannot reach the Wild Rice River? Kindred, Davenport, and other areas will be at increased risk for flooding.

Response:
Local drainage issues along the entire diversion channel will be addressed in detail during the design and implementation phase. The project will include measures to capture and direct flows along the Highway 17 tieback levee into the diversion channel. The selected plan is not expected to increase flood stages anywhere on the Sheyenne River.

C-29 Studying Upstream and Downstream Impacts
Impacts upstream and downstream need to be further studied.

Response:

The project impacts have been defined in Chapter 5 of the FEIS and summarized in Chapter 3. Detailed impact information can be found in Appendix B Hydraulics.

C-30 Impacts to Tax Revenues
City property values in the upstream areas have decreased; these property values will have negative impacts on the cities by decreasing future tax revenues.

Response:
Several approaches are being considered for dealing with impacts to structures in the upstream staging and storage area, many of which will depend on the type of the structure and the expected water level changes that may impact the structure. While some of these approaches may have impacts to the tax valuation of properties, the potential loss of tax revenue is not compensable as part of the cost-shared Federal project. The Corps encourages cities to work with the Metro Flood Study Work Group to ensure that any items that cannot be addressed by the Federal project be discussed at the local level.

C-31 Appraisals
Appraisals would be made prior to the start of the project date, how is that date determined?

Response:
The timing of the appraisals and property acquisitions will be determined by the non-federal sponsors once the project has been approved and funded. The affected communities will have an opportunity to discuss acquisition timetables with the non-federal sponsors as they are being developed. Properties will be acquired before they are needed for the project. The construction schedule will be one of the primary factors in determining when properties are needed.

C-32 Assessment of Upstream Staging and Storage Area
A thorough assessment is required of the cultural, social, and economic impacts for the proposed upstream staging and storage area. Social effects have not been sufficiently analyzed or addressed, nor have the economic impacts of flooding up to 54,000 acres of agricultural land.

Response:
To clarify, the upstream storage and staging areas of the selected plan total approximately 39,000 acres. Cultural, social and economic impacts upstream and downstream are discussed in Chapter 5 of the FEIS and in Appendices C, D and E of the FEIS. While not exhaustive, the analyses of these impacts are sufficient to assess the feasibility of the project, to make a reasoned choice among the alternatives, and to comply with Corps of Engineers planning regulations and the National Environmental Policy Act (NEPA).

C-33 Soil Analysis
Expert comments in the geotechnical appendices of the SDEIS raise questions about the lack of adequate analysis of soil issues for the project. The true cost of the project cannot be estimated without proper soil analysis.

Response:
Geotechnical investigations have been conducted as part of the feasibility study. All comments generated through the Corps of Engineers' technical review processes have been adequately addressed in the FEIS. More detailed geotechnical investigations will continue during the design phase, but the information in the FEIS is sufficient for feasibility level design and cost estimating, and to make a reasoned choice among alternatives.

C-34 Growth Potential
Growth and development potential will be severely restricted for towns in and around the upstream staging and storage area.

Response:
Chapter 5 and Appendices C and D of the FEIS discuss impacts on growth and development in the study area. It is true that areas in and near the upstream staging and storage area will be significantly impacted, but positive benefits will occur in other parts of the study area.

C-35 Sedimentation
The proposed project will change the constitution of the river and there will be increased sedimentation in the protected area.

Response:
The FEIS includes the USGS report "Sediment Concentrations, Loads, and Particle Size Distributions in the Red River of the North and Selected Tributaries near Fargo, North Dakota during the 2010 Spring High-Flow Event." In addition, Appendix F of the "Red River Diversion, Fargo-Moorhead Metro Flood Risk Management Project, Feasibility Study, Phase 4" prepared by the consulting team (Moore Engineering, Inc., Houston Engineering, Inc., Barr Engineering, Co., and HDR Engineering, Inc.) includes a full exhibit presenting and interpreting this USGS 2010 dataset as well as other sediment/geomorphology datasets available for the study area, upon which an evaluation of the potential impacts on the sediment transport characteristics and geomorphology of the rivers that could be anticipated as a result of the selected plan will be made. The USGS 2010 dataset combined with the Geomorphology Study by West Consultants (2001) clearly show that the Horace-West Fargo diversion has not resulted in large changes on the sediment dynamics of the Sheyenne River; the Horace West Fargo diversion provides an example of the potential maximum impacts that can be expected from the diversion channel alternatives.

C-36 Impacts to Churches, Bars, Establishments, and Other Community Centers
Churches, bars, business establishments, and other public gathering areas will be negatively impacted by the upstream staging and storage area. What compensation will be provided for these buildings? Even if these buildings are not directly impacted, the surrounding communities will be displaced and churches will lose their congregants, bars will lose their patrons, and businesses will lose their customers.

Response:
Owners of properties and businesses that are directly impacted by the project will receive just compensation in accordance with PL 91-646. Unfortunately, no compensation is available for businesses, churches, and community centers that will only be indirectly impacted by the project. Impacts to churches and social networks are described in Appendix D of the FEIS. Section 4 of Appendix D of the FEIS provides a detailed analysis of the alternatives carried forward in the study and their impacts to the "Identity" social factor.

C-37 Soil Stability
The soils in the diversion path are not stable, the I-94 interchange at Veterans Boulevard and I-94 interchange allowing east and west bound traffic into the west end of West Fargo are examples of instability in the area. The soil in the diversion path could not withstand a 500 year event.

Response:
Geotechnical investigations have been conducted as part of the feasibility study. More detailed geotechnical investigations will continue during the design phase, but the information in the FEIS is sufficient for feasibility level design and cost estimating. The selected plan takes soil stability into account and is technically feasible.

C-38 Impacts in Comstock
Comstock will possibly be flooded. What are the mitigation strategies for Comstock, will the area be bought out? How will the grain handling facility (with grain conveyors sitting 12-15 feet in the ground) be handled? If the decision is made to ring dike Comstock, what is the effect on the groundwater? An agronomy center is located at Hwy 75 and County Road 2, and the center handles chemical, seed, and petroleum products. Will this center be relocated or protected, and if protected will access be provided to allow service to patrons south of the most affected staging area?

Response:
Operation of the proposed staging area is expected to result in 1-percent chance flood depths of one to three feet in portions of Comstock, Minnesota. Section 3.13.1.2 of the FEIS states a ring levee would be pursued for Comstock. Details relating to specific structures and businesses will be developed during the design phase

C-39 Inflation Amounts
What is the amount of inflation allowed for this project? Will that amount be cost shared with the Federal government or a cost to local residents?

Response:
The federal share of the Locally Preferred Plan will be capped at the federal share of the Federally Comparable Plan, as discussed in Section 3.14.2 of the FEIS. Inflation on those features that are common to both plans may be cost shared. All costs in excess of the federal share of the project will be non-federal costs.

C-40 Long Term Impacts
The long term impacts to the surrounding areas have not been exhaustively studied.

Response:
There is no requirement to "exhaustively" study long-term impacts. Corps of Engineers planning policy and the National Environmental Policy Act require that the Corps study and consider reasonably foreseeable direct, indirect, and cumulative impacts of the proposed action. Reasonably foreseeable impacts from the proposed action and the other diversion channel alternatives are discussed in Chapter 5 of the FEIS.

C-41 Depreciated Value
Will farmers be paid tax depreciated value for farm buildings taken in the 54,000 acre area affected by upstream staging and storage? How can farmers possibly afford to begin farming somewhere else if they get depreciated value for grain bins and other necessary farm structures? If farm structures are purchased at their depreciated value, this will have serious consequences since farmsteads would have to be rebuilt at new prices.

Response:
To clarify, the upstream storage and staging areas of the selected plan total approximately 39,000 acres. The government is required to pay fair market value for acquired property. At the public meetings, there was some confusion over the meaning of depreciated value. When a property is appraised, the condition of the buildings and other structures are taken into consideration in the value of the property. If a building or structure is in less-than-new condition, it has a depreciated value based on its condition. The concept of depreciated value for appraisal purposes is unrelated to the tax depreciated value. Even if a property has a tax depreciated value of zero, it would still be appraised at the fair market value. It may be possible to relocate structures to the new farm site. The negotiation process will address if relocation of some or all of the structures is a viable option.

C-42 LPP is More Environmentally Damaging and Expensive
The proposed LPP will result in greater ecological impacts than other alternatives. More tributaries, more acres of wetlands, forests, aquatic riverine, and fish tributaries and passages will be affected from the LPP than the FCP. The LPP will have a greater impact on wildlife and fisheries than other alternatives.

Response:
The costs and impacts of the LPP and FCP are described in Chapters 3 and 5 of the FEIS. The primary planning objective is to reduce flood risk to the entire Fargo-Moorhead Metro area. The LPP reduces flood risk to a larger geographic area and a greater number of people than the FCP.

C-43 Impacts to Prime Farmland
Thousands of acres of prime agricultural land will be affected in the upstream staging and storage area and along the diversion path.

Response:
Approximately 6,878 acres of prime and unique farmland would be impacted by the diversion footprint of the selected plan. This impact is considered to be less than significant based on the large quantity of farmland in the project area and the fact that over 90-percent of all farmland is considered prime and unique in this region. An analysis of prime and unique farmland was not conducted specifically for the storage and staging areas; there will be no impact to crop production in those areas for most years. Only for the most severe flood events will there be an effect from additional water and duration. Even with a 1-percent chance spring flood event, the duration of standing water is estimated to only increase 5 to 15 days.

C-44 Incremental Benefits
By starting the project on the north end and working south, are you foregoing incremental benefits for the entire duration of construction? If you started on the south end, couldn't Fargo benefit from whatever control the early stages of the dam diversion can provide?

Response:
If the project was started on the south end there could be potential benefits to Fargo upfront. There could be some technical complications and changes to the operating plan would be needed. The study team will evaluate construction sequencing during the design and implementation phase. Any substantive changes may require supplemental NEPA documentation. Section 3.13.2 of the FEIS describes the design and construction considerations.

C-45 Impacts to Memorial Sites
Memorial sites in the upstream area will be impacted and destroying these locations will damage the value of the memorials. How will you save monuments and memorials and preserve the ability of people to visit the site?

Response:
Mitigation for monuments and memorials will be determined on a case-by-case basis. Relevant issues will be whether the monument/memorial can be relocated, whether it can be protected by a ring dike, and who has control over the site. These issues will be addressed during the negotiations for acquisition. See Section 5.2.3.1.10 of the FEIS for further discussion.

C-46 Devils Lake
How will the proposed project protect Fargo from flooding on the Sheyenne River caused by excessive flows from Devils Lake? That event is more likely than the 500 year flood that is being used to plan this project.

Response:
The selected plan would improve the Fargo-Moorhead Metropolitan Area's ability to withstand excessive flows from Devils Lake.

C-47 Federal Grant Funded Parks
The Oxbow Community Memorial Park (Nadia's Hope Playground) was funded through the Land and Water Conservation Fund. The Oxbow Park District received a LWCF grant of

$40,000 which was matched with $40,000 of local funding. Recreation areas that receive federal assistance through the LWCF must remain dedicated to public outdoor recreation use and must be maintained in perpetuity. If this is not possible, a replacement park must be provided and designated as such through an official conversion process. If conversion is required, North Dakota Parks and Recreation Department must be contacted prior to taking any action. See Section 3.13.12 of the FEIS for further discussion.

Response:
The final disposition of the Oxbow Community Memorial Park will be determined during the design and implementation phases of the project in coordination with the North Dakota Parks and Recreation Department and the National Park Service. Information regarding this park was added to the description of the locally preferred plan in Chapter 3 of the FEIS.

C-48 Emergency Access on Upstream Roads
Many of the residences in the upstream area are on raised land and have not experienced flooding. Who will be responsible to raise the roads in the area so people who live here will have access to fire and sheriff departments and medical assistance as needed? Will residents be forced to leave their homes if emergency vehicles cannot access them? The safety of residents and people needing to use these rural roads has not been adequately addressed.

Response:
Residences will generally not be allowed in areas where the post-project flood depths are three feet or greater. Residences in areas where post-project flood depths are between one and three feet will be considered for ring levees, and access during floods is a concern that will be considered when deciding whether a ring levee is appropriate. There are no local road raises planned as part of the project. It should be noted that the Fargo-Moorhead region has not experienced a 1-percent chance event, so it is not surprising that many areas shown within the existing 1-percent chance floodplain have not been flooded in previous flood events.

Emergency access during floods is an existing problem in the study area. The Minnesota 35K diversion (FCP) and North Dakota 35K diversion (ND35K) would increase the frequency of flooding downstream to varying degrees depending upon location. Increased loss of emergency egress would occur infrequently for relatively short periods of time. The selected plan would have minimal impacts to downstream flood stages, but could have impacts to emergency access upstream. All diversion plans would significantly improve public safety in the Fargo-Moorhead region by reducing the risk to several major medical facilities in the benefitted area and by improving emergency vehicle travel throughout the project area.

C-49 Western Alignment
The western alignment should be considered. The western alignment protects critical infrastructure including the electrical power west of West Fargo and the Raymond interchange, a vital transportation hub. With the currently proposed alignment, three of the crossings over the existing West Fargo diversion will be lost, further disrupting access and transportation. These crossings would not be lost if the western alignment was implemented. The western alignment would impact fewer acres of wetlands. The western alignment would be safer because it is on

higher ground the proposed alignment, there would be less of a need for levees around the channel. The western alignment will preserve the existing West Fargo diversion and the flood protection already provided. Finally the western alignment will allow the city of West Fargo to grow and develop in the future.

Response:
The proposed western alignment was considered and is discussed in Section 3.7.3 of the FEIS.

C-50 Forest Land Mitigation
The 2:1 mitigation ratio is adequate to restore riparian/upland forests removed due to construction activities.

Response:
Comment noted.

C-51 Floodplain Forest Performance Standards
Although they are native species, American elm and green ash are not recommended for use in the mitigation efforts because of Dutch elm disease and emerald ash borer. Mitigation efforts should attempt to focus on establishing other non-host, native tree species. Silver maple is not considered a native species to North Dakota, and quaking aspen, which is a native species, should be considered as a more appropriate substitute for silver maple.

Response:
An adaptive management and mitigation team is in the process of being established and will include the cooperating agencies. As a group the team will carefully select the tree species used in the project. This will include native floodplain forest tree and shrub species, with a goal of diversity. American elm and green ash do have known diseases that will impact them; however, they are trees that are native to the area and very important to the existing floodplain forest. The majority of trees planted will be the other mentioned species, but both green ash and American elm will most likely still be included in the planting plan. There are currently Dutch elm disease resistant American elm being planted for Corps projects; this variety could be available for this project. Emerald ash borer has not been identified in the Fargo Moorhead Metropolitan area yet, and whether it will reach the area remains to be seen. Based on the likelihood of emerald ash borer reaching the area, the number of green ash planted will be closely looked at. As suggested in the comment quaking aspen will be added to the diverse species list.

C-52 Seasonal Flooding on Trees
The Corps should consider timing of inundation and duration of flooding when assessing if additional mitigation areas should be sought for seasonal flooding on trees.

Response:
The timing and duration of the flooding is an important component to consider when looking at how flooding could impact the native tree species in the area. Flooding during the growing season is more problematic to tree health than flooding while trees are dormant. The majority of the flooding that will be induced by the project will be during the months of March, April and

early May, which is considered a period of dormancy for the tree species in the region. Flooding in May that extends into June could have an impact if it is long lasting. Floodplain tree species in the area that would be impacted can survive months of flooding during the growing season as long as their canopies remain above water.

C-53 Diversion Crossings and Road Raises
It doesn't make sense to build the project in an area that has highways that will need to be raised and multiple rivers and railroad crossing. Raising these highways could create dangerous situations in the winter if cars go off the road.

Response:
Diversion crossings and transportation impacts are discussed in the FEIS as well as Appendix C (Economics). More information on the impacts to bridges and other infrastructure, along with a map detailing the location of bridges, can be found in section 5.2.3.1.4 of the FEIS. Sections 3.8.3 and 3.8.4 of Appendix C of the FEIS contains additional details about impacts to rural and public infrastructure. There will be bridges placed at a minimum of every three miles to get around the diversion channel. Standard safety rules, laws and regulations for highway travel with heavy equipment will have to be complied with. Standard safety rules, laws and regulations will be applied to raised highways. There are no local road raises planned as part of the project.

C-54 Road Repairs
Roads in the upstream staging and storage area will be damaged every time they are flooded. How will these roads be maintained and who will pay for it? If people are removed from the staging area, who will be left to pay taxes and maintain roads and infrastructure needed by farmers and commuters?

Response:
Impacts to downstream and upstream infrastructure are addressed in Sections 3.8.3 and 3.8.4 of Appendix C of the FEIS. More information on the impacts to bridges and other infrastructure, along with a map detailing the location of bridges, can be found in section 5.2.3.1.4 of the FEIS. Maintenance of roads will remain a local responsibility.

C-55 Socioeconomic degeneration
Several comments mentioned the issue of socioeconomic degeneration. This project may cause accelerated migration of rural residents. NEPA requires analysis of this socioeconomic degeneration. Aspects of socioeconomic degeneration include people moving away, impacts on local businesses, and impacts on property values. Some residents may be forced to choose between their choice of environment for raising a family and economic pressures to be close to work. The project will impose hardship on some communities.

Response:
The issue of socioeconomic degeneration is discussed in the FEIS in section 5.2.3.1.7 and in section 5.2.3.2.1. This is also addressed in Appendix D of the report.

C-56 Flowage Easements
Flowage easements on farmland will decrease the value of farmland and the landowners will be adversely impacted by this. Are these forced reductions in property values included in the project cost, or is this a cost that must be borne by the property owner?

Response:
The amount paid for a flowage easement is directly related to the amount of impact to the value of the property. The payment to the landowner includes the difference in value of the property without the project and the value with the project. Therefore it is expected that lands subject to a flowage easement have a decreased value and as such the owners are compensated for the decrease in the value of the land.

C-57 Mitigation for School Districts
Kindred School District would be adversely impacted by the proposed project. With nearly 100 employees, it is the largest employer in the District. About 20% of the District's student population lives in areas that would likely be bought out and the loss of this student population would negatively impact the District. The District has committed to construct and finance a new school; however, it may fall short on the financial obligations with the loss of student population. Kindred School District would lose federal educational grant funds, as well as taxable valuations, if the LPP is implemented. The District needs mitigation if the proposed diversion is implemented. Similarly Richland School District could lose 20% of its student population, and suffer economic losses.

Response:
Impacts to schools in the upstream staging area are discussed in Section 5.2.3.1.7 of the FEIS. Shifts in student population from one school system to another are considered regional transfers; as such, there is no gain or loss to the national economy overall. Although the selected plan may have impacts to the tax valuation of properties in the school district, the potential loss of tax revenue is not compensable as part of the cost-shared Federal project. The Corps encourages school districts to work with the Metro Flood Study Work Group to ensure that any items that cannot be addressed by the Federal project be discussed at the local level.

C-58 Fish and Wildlife Service Coordination Act
Under the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the U.S. Fish and Wildlife Service (USFWS) is authorized to provide recommendations to the Corps on federally funded water development projects. The USFWS has recommended the FCP alternative rather than the LPP.

Response:
The Fish and Wildlife Service has been involved in the process from the very beginning of the planning process; they have provided a Fish and Wildlife Service Coordination Act report in which they have made recommendations for this project. Each of those recommendations is addressed in the FEIS. The Fish and Wildlife Service Coordination Act report can be found in Attachment 3 of the FEIS and responses to the recommendations can be found in Chapter 6.

C-59 Impacts in Grand Forks

The analysis provided in the FM Flood Report introduces both a new hydraulic software model (HECRAS unsteady state model) and new flood frequency analysis methodology (shorter duration "wet years" statistical analysis). While this new software was useful, it also causes difficulties to correlate the flows and frequencies with what downstream communities are currently using for regulatory and engineering purposes. For example, Grand Forks' current DFIRM was based on a 2001 hydrology study and the 2003 Regional Red River Flood Assessment Report that was not a HECRAS unsteady state model. In order to reconcile any variations, the Project must include a detailed study of Grand Forks local hydrology and hydraulics with the new software to precisely identify impacts at the local level. Because they have not been precisely identified using the same models, Grand Forks is concerned about the potential impacts, particularly the impacts to the three bridges connecting East Grand Forks and Grand Forks. The highest of these bridges is very near the 50-year event when it needs to be closed, and this closure would have a negative impact to Grand Forks and East Grand Forks.

Response:

Stage hydrographs at the Demers Avenue bridge for the 10-percent and 1-percent chance wet-period flood events show that the peak elevation is slightly higher with the LPP, but the duration of stages above elevation 819 for the 10-percent chance event and above 825 for the 1-chance event are somewhat less (Figure U-1: State Hydrographs of Demers Avenue Bridge). While the hydrology and hydraulics used for the Fargo-Moorhead Metropolitan Area Flood Risk Management study are different from what was used for the Grand Forks' current DFIRM, they are sufficient to conclude that at Grand Forks the LPP will increase peak stages on the order of 0.1 to 0.3 ft for moderate and major floods and but will slightly reduce the duration of the highest stages. The higher stage might be a negative impact for any particular flood, but the shorter duration may be a benefit for any particular flood. The higher stage does not significantly reduce the level of flood risk reduction provided by the Grand Forks / East Grand Forks project and FEMA has stated that Flood Insurance Study updates will not be required for Polk County, MN and Grand Forks County, ND with the LPP.

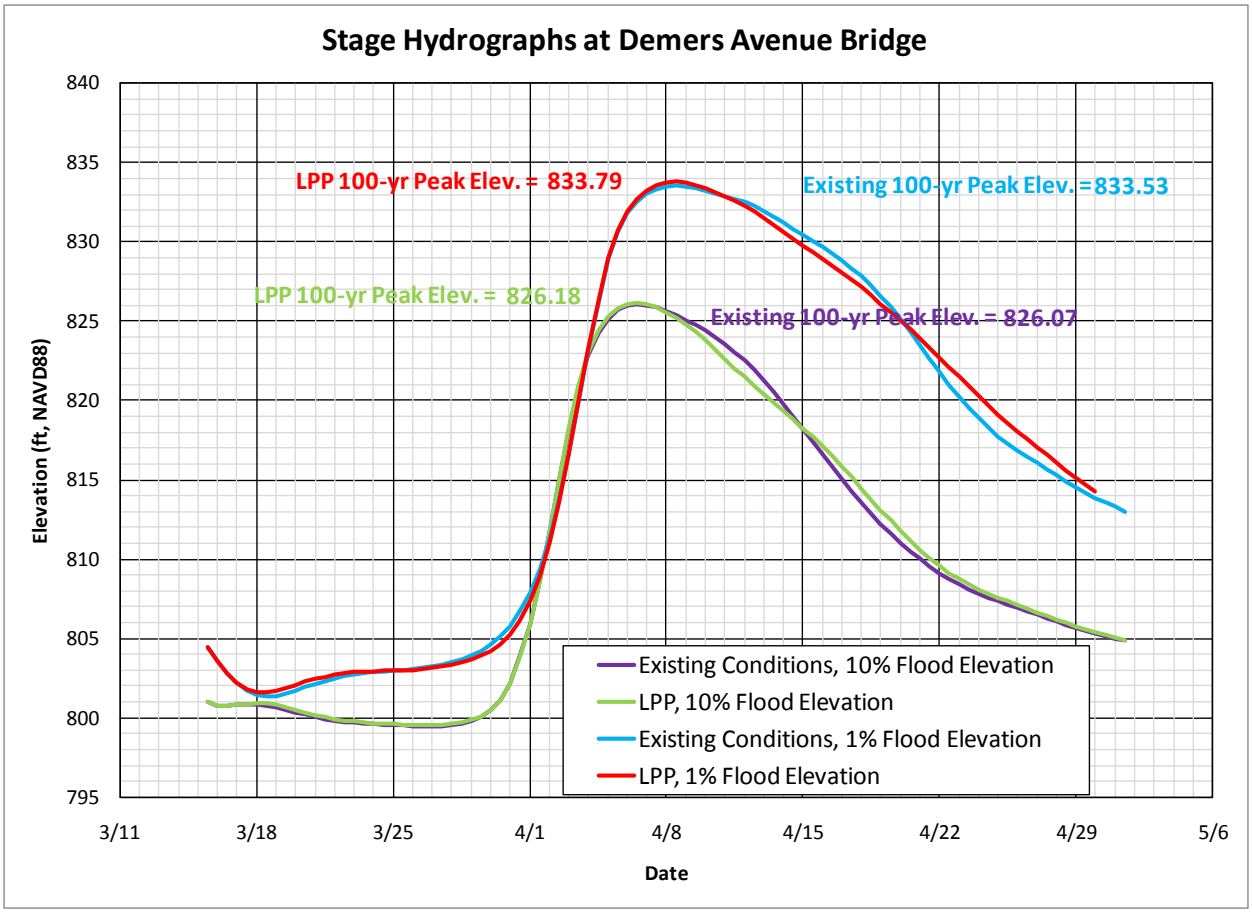

Figure U-1: State Hydrographs of Demers Avenue Bridge

C-60 Impacts to Utilities in Upstream Staging and Storage Area
What are the impacts to utilities in the upstream area? Including Cass Rural Water System, Oxbow and Bakke sewer system, and Cass County Electric? What are the costs of mitigation?

Response:
Utility relocation costs have been included for all known utility lines crossing the diversion channel and other structural features of the project, along with contingency amounts to account for unanticipated costs. Once the design of the project is more finalized, the non-federal sponsors will work with the utilities to determine what specific utility lines will need to be relocated.

Generally, just compensation is considered to be the appraised market value of the property at the time of the taking. However, with utilities, roads, railroads, cemeteries, and other facilities serving a public purpose, there may not be a market value for the property. In that case, the substitute facility doctrine provides that the proper compensation is a functionally equivalent facility. Providing a functionally equivalent facility may involve alteration, lowering, raising, or removal and replacement of the affected facility or part thereof. Several criteria must be met for

the substitute facility doctrine to apply, including that the owner of the facility must have a compensable interest in the property and must have a factual or legal duty to replace the facility.

C-61 Impacts to Aquifers
What will happen to the aquifers? Will stored water leach current and historically used herbicides, pesticides, and other chemicals out of the soil and into the ponded water? Would these chemicals be able to migrate down to the aquifers and would they then impact drinking water? Has the Corps examined soil and water samples from the former grain elevator in Hickson to determine if chemicals are present that may impact the aquifers?

Response:
The soils in the area are typically tight glacial clays. These types of soils are not conducive to transmitting large quantities of water especially over the relatively short timeframe that any proposed diversion would be filled for a high water event. Much of the proposed staging area would be inundated naturally during extreme flood events, and the project is only increasing the depth of inundation. For these reasons it is anticipated that there would be little to no impact to water quality in the aquifers from the diversion channel alternatives. Soil and water sample analysis at specific sites may be performed as needed during the design phase. If necessary, long term monitoring of regional aquifers likely would be the responsibility of the non-federal sponsors as part of Operation and Maintenance.

C-62 Impacts to Power Lines
Are power lines able to go underwater and what is the cost to ensure they will continue to supply electricity? Minnesota Power has a high voltage transmission line that may be impacted by the project, will it be relocated or modified to withstand the effects of elevated water levels?

Response:
Utility relocation costs have been included for all known utility lines crossing the diversion channel and other structural features of the project. Impacts to power lines in the staging and storage areas are expected to be minimal, but this will be verified during the design and implementation phases of the project.

C-63 Project Failure and Loss of Life
If the proposed project were to fail, what would be the "loss of life probability?"

Response:
Safety and potential loss of life associated with a failure of the system are discussed in Section 3.10 of the FEIS and in the Levee Breach and Loss of Life Analysis Report attached to Appendix D of the FEIS.

C-64 Impacts to Walcott Township
The maps in the SDEIS indicated that water could rise up to in the area around the Wild Rice River, including Walcott Township. However, the SDEIS does not consider Walcott Township to be in the staging area. What are the impacts to Walcott Township? Property values, taxes, and access roads would all be impacted.

Response:
The 1-percent chance flood stage at Highway 46 on the north side of Walcott Township is expected to increase one foot or less. Impacts would gradually decrease southward to nearly zero feet at Richland County Road 2. Very little additional acreage is affected by project impacts in Walcott Township, as shown on Figures 65, 67, 69 and 71 in Chapter 5 of the FEIS. All impacted areas outside of the defined staging area will be analyzed to determine if the impacts constitute a taking that would require compensation under the Fifth Amendment of the U.S. Constitution.

C-65 Impacts Outside Staging Area
There will be impacts outside the designated staging area as shown by the red lines on the map. This is misleading and the costs to this additional impacted area are not fully included. These red lines are a best guess only, and that offers little information and little confidence to the public.

Response:
Stage increases for the 1-percent chance event outside the defined staging area are expected to be less than one foot. All impacted areas outside of the defined staging area will be analyzed to determine if the impacts constitute a taking that would require compensation under the Fifth Amendment of the U.S. Constitution.

C-66 Climate Change
Climate change impacts should be modeled and taken into account. The Corps' precipitation projections were calculated without taking into account climate change.

Response:
On 28-29 September 2009, the St. Paul District conducted an Expert Opinion Elicitation (EOE) on increasing flood flows on the Fargo, ND-Moorhead, MN flood risk management project. Six Federal experts and 6 Observers addressed this issue including climate change impacts. For a full account of this proceedings refer to Appendix A-1B. For a full account of the methodology developed to implement the panel's recommendations, see Appendix A-1C. The direct GHG emissions from the project would be limited to those related to construction of the diversion channel alternatives, and would cease upon conclusion of construction. Any impact would not be meaningful.

C-67 Additional Agribusiness Economic Impact
Businesses related to agriculture will experience substantial economic losses. These losses to agribusiness are not included in the SDEIS. Such losses include a reduction in inputs and yields, for both the staging area and the storage area, reduced agricultural production resulting from impacts to general drainage, and other business losses due to limited access on roads in the upstream area. Although summer use of the project would be infrequent, the economic losses and loss of production would be very large. Loss of production means less food produced. Agriculture is the economic engine of the state of North Dakota and the impacts to agricultural have not been sufficiently addressed.

Response:
There will be no impact to crop production for most years. Only for the most severe flood events will there be an effect from additional water and duration. Even with a 1-percent chance spring flood event, the duration of standing water is estimated to only increase 5 to 15 days.

C-68 Cultural Resources
The proposed Fargo Diversion will impact thousands of acres of historical land containing information of past cultures, including historic farming communities and Native American communities. One comment stated that the cultural survey should be redone.

Response:
A Phase I cultural resources survey of the proposed diversion alignments and tieback levees on both the North Dakota and Minnesota sides of the Red River is currently underway. If changes are made to these alignments, any new areas will also be surveyed. A Phase I survey consisted of a walkover of the project area by archeologists to identify and record any surface-visible prehistoric and historic archeological sites. Subsurface testing during the survey involves small hand-dug shovel holes or soil auger holes to identify shallowly buried prehistoric archeological sites and soil cores to identify more deeply buried sites. The purpose of this survey is to locate and record both prehistoric and historic archeological sites and any standing structures over 50 years old. The next step will be to do testing and archival research for any archeological sites found in the selected alignment to determine if they are eligible for inclusion on the National Register of Historic Places. Archival research and interviews on the history of any 50 year old or older structures, including farmsteads, will be conducted to determine if they meet any of the eligibility criteria for listing on the National Register (i.e., the site/building is associated with significant historic events; is associated with important persons; has a distinctive type, period or method of construction, is the work of a master architect, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; and/or has the potential to provide information important to history or prehistory). Finally, any archeological sites and architectural structures listed on or determined eligible to the National Register which will be impacted by the diversion construction will have to have those impacts mitigated prior to diversion or tieback levee construction in that area. Mitigation for eligible or listed prehistoric or historic archeological sites generally consists of data recovery excavation of a portion of the site. Mitigation for historic architectural sites generally consists of large-format photography and measured drawings of any buildings and structures, a scaled planview map of a farmstead layout, and a written history of the site. Native American tribes with historic ties to the Red River Valley are also being consulted regarding locations in the project area which are important to them either currently or historically.

C-69 Wet Cycle and Need for Flood Management
The substantial flooding of recent years does not necessarily indicate a wet cycle or increase the likelihood of future flood events. If you flip a coin and get heads three times in a row, that does not increase the odds of getting heads the fourth time. Each event has 50/50 odds, changing the odds is just playing with the numbers. If the area is in fact in a wet cycle, what happens if it shifts back into a dry cycle by the time the project is constructed?

Response:
Hydrologic methods and assumptions used to support the study recommendation are described in Appendix A, Hydrology, of the FEIS. The study team used the best available information to estimate the probability of future flood events and the associated expected economic damages over the 50-year period of analysis. If the future is actually drier than anticipated, the project will be operated less often.

C-70 Impacts to Organic Farming
Our farm is certified organic and we will not be able to keep our organic certification if our land is flooded and contaminated with water containing chemicals, residue, debris, and seed that is genetically modified.

Response:
The government is required to pay fair market value for any property interest it acquires. The amount paid for a flowage easement is directly related to the impact to the value of the property. The payment to the landowner includes the difference in value of the property without the project and the value with the project. Therefore it is expected that lands subject to a flowage easement have a decreased value and as such the owners are compensated for the decrease in the value of the land. Unfortunately, this may not fully compensate for all impacts on revenue streams, such as organic certification.

C-71 Longer Commutes
Commutes and travel time will be longer as drivers have to go around the diversion. This will have costs, both fuel and lost productivity. In addition, these longer travel times will increase air pollution and vehicle emissions.

Response:
There will be bridges placed at a minimum of every three miles to get around the diversion channel. Standard safety rules, laws and regulations for highway travel with heavy equipment will have to be complied with. The environmental consequences of the diversion channel alternatives are discussed in more detail in Chapter 5 of the FEIS. Diversion crossings and transportation impacts are discussed in the FEIS as well as Appendix C (Economics).

C-72 Wetland Mitigation
Will mitigation wetlands be able to replicate the wetlands impacted by the project? Who will maintain the new wetlands?

Response:
An analysis was completed to describe the form and function of the wetlands to be lost; this information was used for designing the wetland types for the bottom of the diversion channel. An adaptive management and monitoring plan has been developed to ensure that proper form and function is achieved with the new wetlands. The types of wetlands lost are mostly farmed wetland with very poor function ratings. When overall wetland functions are considered the wetland development associated with the LPP is expected to fully offset any losses associated with project construction. Wetlands within the proposed diversion corridor will not be subject to

the regular disking/plowing for agricultural production to which the majority of the existing wetland resources are subject. The replacement of wetland functions lost will be done within the same watershed as the impacts, adequately addressing some of the needs of the watershed.

C-73 Mosquitoes
There is a possibility for increase mosquito habitat and an increased mosquito problem associated with the water in the upstream storage and staging area. The SDEIS lacks a cost and risk assessment for mosquito borne diseases.

Response:
Currently Fargo ND, Moorhead MN and Cass County are part of a mosquito spraying program to combat the mosquito problem; this plan would be adjusted to include any areas where the project would result in mosquito habitat.

C-74 Fish Stranding
If fish stranding occurs and it is not possible to resolve the problem, then nothing will be done. This is unacceptable, something must be done about fish stranding if it occurs.

Response:
If substantial fish stranding is observed following project operation, the Adaptive Management Team (including the sponsor and resource agencies) can discuss actions to remedy the situation. This could include modifying project operations, construction or grading activities in specific problem areas, or if warranted, implementing additional mitigation to address the issue.

C-75 Impacts South of Highway 46
Have complete studies on impacts south of Highway 46 been done? We have seen maps showing impacts of less than a foot ranging to 2.6 feet 10 miles to the south. This seems inaccurate and incomplete; has a credible impact study been done for the area south of Highway 46?

Response:
Impacts have been assessed upstream to Abercrombie, North Dakota. During the public meetings, several maps were presented; some showed impacts (differences between the with-project and without-project condition), while others showed total flood depths. Increases to the 1-percent chance flood stage outside of the defined staging area are less than one foot. One-percent chance flood depths vary significantly depending on the location and ground elevation. See Section 5.2.1.4 in the FEIS for updated information.

C-76 Impacts to Sugarbeet Production
The best time to plant sugarbeets is mid April to early May, and sugarbeets do not tolerate standing water. Sugarbeet production in the upstream staging and storage area will disappear, and there will be many negative repercussions of this including substantial economic losses.

Response:
There will be no impact to crop production for most years. Only for the most severe flood events will there be an effect from additional water and duration. Even with a 1-percent chance spring flood event, the duration of standing water is estimated to only increase 5 to 15 days.

C-77 Total Water Time in Staging and Storage Areas
The plan states that water will be held in the staging area for an extra seven days, however, this is flawed. The plan also states that water will be held in the staging area beginning when the river level reaches 26 feet. In 2011 the river reached that level on April 4th and it did not drop below 26 feet until May 9th. This is 35 days until the water would begin to drain out of the storage area, and it could take an extra seven days to run off the staging area. The area would not have been clear of water until May 16 and then it would have taken an additional 14 days to dry enough to be ready for planting (under ideal conditions) and planting would have occurred on May 30 at the earliest. Without the project, we planted wheat on May 3rd in land that would be in the staging area. With the project in place, that planting would have been 27 days later, not the seven days as described in the plan.

Response:
Staging would actually start when the Fargo gage reading is between 27 and 28 feet. For a typical 10-percent chance (10-yr) event, staging would increase flood durations on the order of 3 to 10 days, depending on the elevation of the land. For a typical 2-percent chance (50-yr) to 1-percent chance (100-yr) event, staging would increase flood durations 5 to 15 days, depending on the elevation of the land. For a typical 0.2-percent chance (500-yr) event, staging would increase flood durations 1 to 11 days, depending on the elevation of the land. This information can be found in Attachment 5, Appendix F, Exhibit D, Figures F-D9 through F-D12. The presence of staging does not mean that all areas below the maximum staging elevation of 922.9 are wet for the entire duration of staging. The information provided in Attachment 5, Appendix F, Exhibit D accounts for the time needed to drain. Drying time would be approximately the same for areas that would get wet under existing and with-project conditions. Drying time does need to be added to areas that only get wet under with-project conditions. Additional modeling work is being done to investigate how the staging frequency and duration can be reduced.

C-78 Sedimentation and Impacts to Fish
The proposed alternative will have a significant effect on the geomorphology, sedimentation and sediment dynamics of the Red River. The diversion channel will substantially affect sedimentation in the Red River and tributaries. Experiences with the Sheyenne Diversion channel make it clear that large changes in sediment dynamics are likely to occur. Sedimentation can reduce storage capacity that leads to flooding. Sedimentation can also have negative impacts on aquatic life that can lead to fish mortality and changes in behavior. Sedimentation impacts and sedimentation mitigation costs must be included in the Final EIS.

Response:
The FEIS includes the USGS report "Sediment Concentrations, Loads, and Particle Size Distributions in the Red River of the North and Selected Tributaries near Fargo, North Dakota during the 2010 Spring High-Flow Event." In addition, Appendix F of the "Red River

Diversion, Fargo-Moorhead Metro Flood Risk Management Project, Feasibility Study, Phase 4" prepared by the consulting team (Moore Engineering, Inc., Houston Engineering, Inc., Barr Engineering, Co., and HDR Engineering, Inc.) includes a full exhibit presenting and interpreting this USGS 2010 dataset as well as other sediment/geomorphology datasets available for the study area, upon which an evaluation of the potential impacts on the sediment transport characteristics and geomorphology of the rivers that could be anticipated as a result of the selected plan will be made. The USGS 2010 dataset combined with the Geomorphology Study by West Consultants (2001) clearly show that the Horace-West Fargo diversion has not resulted in large changes on the sediment dynamics of the Sheyenne River; the Horace West Fargo diversion provides an example of the potential maximum impacts that can be expected from the diversion channel alternatives.

C-79 Wetland Replacement

The Corps' suggestion of replacing wetlands by simulating wetland conditions on the bottom of the diversion channel in a low flow channel is not feasible. Mitigating for wetlands by designing the bottom of the diversion channel as a wetland is not enough. There are not enough acres in the bottom of the diversion to satisfy the necessary mitigation for this project. The SDEIS does not address how these wetlands will be comparable to the previously existing wetlands that were affected by the diversion and does not describe the diversion channel wetlands' functions for surrounding wildlife. A long and narrow strip of wetlands does not provide the same habitat function as a larger contiguous wetland. The wetlands being filled also perform an essential function in flood control efforts. The Final EIS must describe the function of the low flow channel and how it is guaranteed to compensate for wetlands that are affected by the diversion.

Response:

A detailed wetland analysis has been done for the LPP, FCP and ND35K. A summary of this analysis can be found in the FEIS Chapter 5, and the more detailed analysis is located in Appendix F. As part of this analysis, wetlands were delineated and a function analysis was done using the Minnesota Routine Assessment Method (MnRAM) as recommended by the Fish and Wildlife Service for each wetland type. This analysis identified wetland functions, including functions for wildlife and flood control. Using this information the Corps is confident that mitigation within the diversion channel bottom would adequately mitigate for the loss of wetlands. This mitigation not only includes the 10 foot wide low flow channel but also includes the entire 250 foot bottom width of the diversion channel and an undetermined distance up the side slope of the channel. Wetland features will be included during the design of the diversion channel to ensure that different wetland functions are being incorporated into the plan.

When overall wetland functions are considered, the wetland development associated with the LPP is expected to fully offset any losses associated with project construction. Wetlands within the proposed diversion corridor will not be subject to the regular disking/plowing for agricultural production to which the majority of the existing wetland resources are subject. The replacement of wetland functions lost will be done within the same watershed as the impacts, adequately addressing some of the needs of the watershed. An adaptive management and mitigation plan has also been included (Attachment 6 of the FEIS). This plan discusses the wetland mitigation, costs, and monitoring that will be conducted post project to ensure the success of the mitigation.

C-80 Adverse Impacts to Fish and Wildlife
The diversion channel will create numerous problems for multiple tributaries and wildlife and aquatic species. The Final EIS must address the negative impacts to all tributaries and the specific adversities facing wildlife and aquatic life. A plan to mitigate these adversities must be identified and mitigation costs must be included in the Final EIS.

Response:
The adverse impacts to fish and wildlife due to the project are addressed in Chapter 5 of the FEIS. A mitigation plan, including costs and is provided in Attachment 6 of the FEIS.

C-81 Ecological Benefits to Fish and Wildlife
The diversion channel will offer no ecological benefits and will almost certainly have large negative impacts on the region's fish and wildlife and their habitats.

Response:
The diversion channel will be designed with a low flow channel that will pass all flows from the Rush River and the Lower Rush River to the Red River. This low flow channel will be designed with sinuosity that will provide some habitat for the aquatic species that exist within the Rush and Lower Rush Rivers. The channel would be planted with native wetland species on the bottom and the fringe of the side slopes of the channel, with the remainder of the side slopes being planted as a prairie swale type community. Appropriate native seed mixes may be those developed for ditch/swales, sedge/wet meadow or wetland fringe. A buffer strip of 50 to several hundred feet on either side of the diversion channel up to the embankment top would help limit encroachment from agricultural activities and would provide filtering of surface runoff into the diversion channel wetlands.

C-82 Inadequate Analysis
The Corps failed to give a hard look at all reasonable alternatives and did not provide sufficient explanation for the choices made. The Corps did not take a hard look at the southern alignment. The Corps fails to consider all "reasonable" alternatives and "the existence of a viable but unexamined alternative renders an [EIS] inadequate." Friends of the Boundary Waters Wilderness v. Dombeck, 164 F.3d 1115, 1128 (8th Cir. 1999).

Response:
The Corps considered a range of alternatives as described in Appendix O of the SDEIS. Alternatives that provide environmental benefits, such as wetlands and grassland restoration, were evaluated. Sections 8.4.2 and 8.4.3 of Appendix O contain more information on wetlands and grassland restoration measures. Section 8.4.4.3 of Appendix O describes the alternative scenarios for the LPP diversion, including the southern alignment.

C-83 Mitigation Costs for Oxbow
The mitigation costs for Oxbow have not been adequately estimated and will be much higher than the non-federal sponsors can afford to pay. In fact, the total costs for Oxbow buyouts and mitigation may be five times higher than estimated by the Corps, and this makes a southern

alignment less expensive than the proposed LPP. The costs of mitigation are grossly underrepresented, and the SDEIS is similarly inadequate.

Response:
The estimates used to calculate the costs of buyouts in all areas were a gross estimate of costs. A gross estimate is the standard process used in developing potential cost during the feasibility portion of a project. Gross estimates are based on general land sales values in the last 12 months along with local market sale values of other similar properties. With this estimated value a 25% contingency fee was added.

C-84 Cumulative Effects
The analysis of cumulative effects is inadequate, particularly given the size and scope of this proposed project.

Response:
The cumulative effects section complies with the requirements of NEPA.

C-85 LPP and Water Resources Development Act (WRDA)
The Water Resources Development Act obligates the Corps to select the National Economic Development plan, unless it can demonstrate an "overriding" issue to support selection of the LPP. Because of the shift in the articulation of the project's purpose, the LPP is not a feasible selection under WRDA.

Response:
As discussed in Section 2.8 of the FEIS, Federal policy (not any of the existing Water Resources Development Acts) requires the Corps to identify a plan that maximizes net national economic development benefits. Federal policy also allows the Assistant Secretary of the Army (Civil Works) to recommend a different plan based on other concerns. The rationale for selecting the locally preferred plan over the National Economic Development plan is described in Section 3.9 of the FEIS.

C-86 Consolidated versus Distributed Upstream Storage
The Corps dismissed distributed upstream storage as a standalone alternative, and then used that as a justification to fully dismiss distributed storage as a potential feature in a combined plan. None of the reasons cited in the SDElS for elimination of distributed storage include adverse or beneficial environmental effects. The current proposed plan incorporates consolidated storage, but an adequate comparison between and evaluation of consolidated and distributed storage was not performed. The Corps determined that the diversion channel is necessary, but cannot function as a standalone plan; the desired outcomes can only be achieved in combination with storage. The analysis of the type and location of storage is lacking in the analysis. The Corps needs to consider (1) a North Dakota diversion with distributed storage; (2) a Minnesota diversion with distributed storage; and (3) a Minnesota diversion with the currently proposed consolidated storage.

Response:
Section 8.4.3 of Appendix O of the FEIS discusses the use of both staging and distributed storage in combination with diversion channels. Neither staging nor distributed storage were found to be economically justified when combined with the Minnesota diversion alternatives. Upstream staging is included in the locally preferred plan because the non-federal sponsors chose to use that method to minimize downstream impacts. The greatest benefits of storage are realized immediately downstream of the storage site, so consolidated storage immediately upstream of the North Dakota diversion is a more effective and cost-effective way to reduce downstream impacts than distributed storage is.

The environmental effects of storage are addressed in and Section 3.7.5 of the FEIS and also in Section 8.4.3 of Appendix O of the FEIS. Flood storage, if operated carefully, could provide environmental benefits, though to a smaller degree than restoration projects. Adverse environmental impacts of storage include increased inundation over large areas of land because flood storage impoundments would be designed to allow maximum water storage. To implement the effective storage upstream equal to the 200,000 acre feet in the storage and staging areas would require many sites, which would result in greater impacts to more people, property, agriculture, and the environment. The upstream staging and storage is more implementable from a logistical perspective, will have greater reliability, and will have less overall impacts than distributed storage.

Section 8.4.3.5 of Appendix O of the FEIS describes combinations of Minnesota diversions and flood storage and Section 8.4.3.4 describes Minnesota diversions with staging.

C-87 Bank Stability
The duration of bankfull conditions will be longer under the LPP and the SDEIS provides no support for the conclusion that soil strength conditions would not be substantially changed. The FEIS must provide support for the conclusion that soil strength conditions would not be substantially changed under the LPP.

Response:
Bank failures are extremely common throughout the Red River valley, especially on the outside bends of most rivers. Conditions that most often trigger or exacerbate existing slides are drought conditions, where water elevations are reduced to levels below those that have occurred for many previous weeks, months or even years. The Corps does not dispute that increased durations of water elevations might contribute towards increased bank instability; however, this would most likely occur at the outer face of the lower bank. A modeling analysis could be completed to further assess changes to bank stability under the selected plan. However, there are many variables that influence bank stability, including soil types, precipitation, vegetation presence and type, bank loading, riparian land use, current velocities, changes in water elevation, and several other factors. The modeling analysis of bank stability would be greatly influenced based on what assumptions are made for these many variables. Any modeled changes in stability of the outer face of the lower bank would likely be extremely small, and likely within the error and uncertainty of the model. In addition, the stability of a larger portion of the lower bank and the upper bank would not likely be affected by a small increase in duration of bankfull conditions.

Hydraulic modeling for the selected plan suggests that water above bankfull might occur for about 4.5 days without project, compared to 11.5 days with project for a 10-percent chance event. While this difference could exacerbate slides on the outer face on the lower bank, it would be difficult to reliably model or measure the small incremental difference in bank failure rates for with- and without project conditions. Our conclusions for risks to soil strength conditions, bank stability and failure are based on professional judgment which has developed over several decades of project work in the Red River basin. Section 5.2.1.1.3 of the FEIS describes the effect of upstream staging on upstream geomorphology.

C-88 Fish Passage at the Red River Control Structure
Additional minimization measures must be provided to facilitate fish passage across a larger range of flows through the Red River control structure (i.e. additional fish passage channels) and included in the Record of Decision. Post-operation monitoring over time will indicate if additional mitigation is necessary and assurances must be provided upfront.

Response:
The LPP includes up to eight fish passage channels to provide fish passage at the Red River control structure from the time the project begins to operate, up to approximately 30,000 cfs (as measured at Fargo). The FEIS outlines adaptive management and future mitigation funding. This includes the options available for funding future mitigation.

C-89 Wetland Impacts and Wetland Mitigation
The FEIS must discuss how wetland mitigation will replace functions and values lost at the impacted sites. The FEIS must also discuss the potential for channel bottom wetlands to be influenced by non-native plant species and associated functional decline. This discussion must be in context of Corps mitigation policy. A description of whether perpetual easements or other protections will be placed on the replacement sites should also be provided.

Response:
Wetland areas resulting within the proposed diversion channel were analyzed using the Minnesota Routine Assessment Methodology for Evaluating Wetland Functions (MnRAM), Version 3.3. Based on the design of the diversion channel, a base flow is assumed within the channel bottom in most years, resulting in flow-through/riverine shallow marsh wetlands within the lowest portions and behind the periodic grade controls and fresh wet meadow wetlands dominating the remaining area below the upland slope. Wetland areas will be planted with native seed mixes appropriate for the intended plant communities and managed for invasive species such as reed canarygrass (*Phalaris arundinaceae*) and purple loosestrife (*Lythrum salicaria*).

When overall wetland functions are considered the wetland development associated with the LPP is expected to fully offset any losses associated with project construction. Wetlands within the proposed diversion corridor will not be subject to the regular disking/plowing for agricultural production to which the majority of the existing wetland resources are subject. The replacement of wetland functions lost will be done within the same watershed as the impacts, adequately addressing some of the needs of the watershed.

The wetlands within the diversion corridor are expected to provide at least a "Moderate" level of functionality for *Maintenance of Hydrologic Regime*, *Flood/Stormwater/Attenuation*, *Downstream Water Quality*, *Maintenance of Wetland Water Quality* and *Aesthetics/Recreation/Education/Cultural* functions and values. Of course, the intent of the project itself is for flood damage attenuation, and the standing vegetation will provide for uptake of nutrients as well as longer retention of floodwaters than unvegetated conditions. The base flow in the channel will provide for sustained maintenance of hydrology within the corridor as well as to downstream resources, except in periods of extreme drought. The corridor will be visible from many public vantage points, providing an aesthetic improvement with the native vegetation and a naturalized meandering stream channel.

The wetlands will likely provide a "High" level of function for *Shoreline Protection*, situated as they are along the base flow channel. The naturalized vegetation, left untouched except for management of invasive and woody species, will maintain the streambanks by preventing erosion during the periods of high flow expected within the diversion corridor. Other "High" levels of function provided by the diversion channel wetlands include *Maintenance of Characteristic Wildlife Habitat Structure* and *Maintenance of Characteristic Fish Habitat*. Each of these functions would be enhanced by the standing vegetation and the uninterrupted wildlife corridor provided within the diversion corridor. Only the function of *Maintenance of Characteristic Amphibian Habitat* would be provided at a "Low" level, due to the direct connection to fish habitat from area rivers.

C-90 Indirect Impacts
Indirect impacts are likely, and increased drainage is likely in the form of tile or surface drains. This may impact wetlands very near the project area. The FEIS must provide an analysis of the potential impacts that operation of the alternative will have on wetlands and mitigation must be provided for all impacts.

Response:
A detailed wetland analysis has been done for the LPP, FCP and ND35K. A summary of this analysis can be found in Chapter 5 of the FEIS, and the more detailed analysis is located in the Appendix F. Direct and indirect impacts to wetlands will be mitigated and wetland functions have been incorporated into the design plan. Attachment 6 of the FEIS contains an adaptive management and mitigation plan. This plan discusses the wetland mitigation, costs, and monitoring that will be conducted post project to ensure the success of the mitigation.

C-91 Catastrophic Failure Risk
The FEIS should include an analysis of control structure catastrophic failure risk and provide loss of life estimates in the event of catastrophic failure.

Response:
An analysis looking at catastrophic failure of the tentatively selected plan (LPP) and a loss of life analysis has been done and included in the Final Environmental Impact Statement (Section 3.10.4 and Appendix D of the FEIS).

C-92 Adaptive Management Plan
A mutually agreed upon mitigation and adaptive management plan containing the specific criteria, indicators, thresholds, response actions, costs, and assurances should be required as part of the Record of Decision. Minnesota Department of Natural Resources permits will include similar mitigation provisions.

Response:
A mitigation and adaptive management section has been written and coordinated with the partners and is included as Attachment 6 in the FEIS.

C-93 Impacts to Groundwater
What are the impacts to groundwater? Groundwater will seep into the diversion channel during non-flood events and shallow groundwater in the area is known to contain nitrate-N, total dissolved solids, and trace metals.

Response:
All water well locations have been identified from the Minnesota Department of Health (MDH) or North Dakota State Water Commission websites. Any wells within the proposed diversion footprint will be abandoned per Minnesota or North Dakota state guidelines. As part of the design process the Corps is currently undertaking a study to better define aerial extent and determine phreatic surface of aquifers along the alignments. The final design will incorporate any feasible measures to mitigate or eliminate impacts to the groundwater table. If necessary, long term monitoring of regional aquifers likely would be the responsibility of the non-federal sponsors as part of Operation and Maintenance.

While it is likely that the shallow groundwater in the project vicinity has elevated concentrations of nitrates, dissolved solids, and trace metals, this is true in any intensely agricultural area. It is also likely that some seepage into the proposed diversion channel will occur between flood events; however, seepage is expected to be minimal due to the relatively impermeable nature of the natural soils commonly found in the Red River Valley.

The valley floor is covered with an extensive network of relatively deep drainage ditches. The diversion channel bottom will be planted with wetland species that would be of similar or higher quality to the existing ditches, and therefore the diversion channel should not have a noticeable additional impact on groundwater.

C-94 Crossings over West Fargo Diversion
With the currently proposed alignment, three of the crossings over the existing West Fargo diversion will be lost, further disrupting access and transportation. This will affect emergency vehicles and school bus routes.

Response:
Bridges will be constructed at a minimum of every three miles to cross the proposed diversion channel. There will be four bridges over the channel in West Fargo with the currently proposed alignment; these bridges will provide access for emergency vehicles, school bus routes, and

more. More information on the impacts to bridges and other infrastructure, along with a map detailing the location of bridges, can be found in section 5.2.3.1.4 of the FEIS. Sections 3.8.3 and 3.8.4 of Appendix C of the FEIS contains additional details about impacts to rural and public infrastructure.

C-95 Increased Costs of Homes in Fargo-Moorhead
How will displaced home owners from the upstream staging area be able to afford homes in Fargo-Moorhead, since certainly the increased demand from the many displaced people will increase home costs.

Response:
It is not anticipated that the selected plan will result in substantial changes to home costs. Not all of the displaced people are likely to relocate to Fargo-Moorhead, and not all of the displaced home owners will move at the same time. Given the size of Fargo-Moorhead, any increase demand would likely be negligible.

C-96 Impacts in Northern Richland County
The northern tier of Richland County has been a strong growth area, and this area will be severely affected by flooding as a result of the diversion.

Response:
The 1-percent chance flood stage at Highway 46 on the north side of Walcott Township is expected to increase one foot or less. Impacts would gradually decrease southward to nearly zero feet at Richland County Road 2.

C-97 Impacts of Potential Channel Enlargements
There is a potential for channel enlargement due to the increased duration and frequency of bankfull and higher events. Since channel forming flows are a function of the product of sediment transport rate and flow frequency, changes to either could have adverse consequences for riparian vegetation, channel stability, sediment, and habitat.

Response:
Potential impacts to geomorphology, which includes changes to channel stability and dimensions, have been characterized within the FEIS (Section 5.2.1.1).

C-98 Fish Passage and Impacts on Spawning
Implementation of the LPP will result in no fish passage from the upstream end of the diversion channel into the Red River. Fish that are on a spawning migration and swim the 36 miles to the upper end of the diversion channel will either drop their eggs in the bypass channel where they are not likely to survive; reabsorb the eggs due to lack of suitable spawning habitat; or, and this is unlikely to happen, travel 36 miles back downstream to the Red River, and then migrate 57 miles upstream in the Red River to the bypass channels. Fish passage should be added to allow fish passage out of the diversion channel.

Response:
As outlined in Chapter 5 the FEIS, it is likely that some fish will be drawn into the diversion channel during project operations. However, the number that would migrate to the upper end of the diversion channel is uncertain. The diversion channel is approximately 36 miles long. During coordination for this project, the Minnesota Department of Natural Resources identified that through their experiences, fish movement is substantially impeded within and through long, channelized river segments and ditches. Thus, there remains uncertainty with how many fish might actually migrate to the upper end of the flood diversion channel.

The project team has evaluated the potential for fish passage at the upper end of the diversion channel. Given the many constraints with project design, a fish bypass channel at this location would likely be expensive, potentially on the order of $10 million or more for this specific feature. Given the high cost, and the uncertainty with how many fish might actually migrate up the diversion channel during project operation, the most appropriate way to address this issue is through adaptive management. This impact will be evaluated to better assess what, when and how many fish migrate up the diversion channel during project operations. Once the impact is better understood, mitigation can be proposed, if appropriate. This could include fish passage at the upper end of the diversion channel; improved fish passage at a nearby dam, or some other action. Potential mitigation would need to be balanced with the significance of the impact and cost of potential mitigation measures. These discussions would be held amongst the Adaptive Management Team.

C-99 Wetland Impacts for Various Alternatives
There is no analysis of wetland impacts that would be induced by operation of the various alternatives.

Response:
The wetland analysis provided in section 5.2.1.5 discusses the impacts to wetlands caused by the diversion channel alternatives. The operation of the project was considered in this analysis; no appreciable impacts to wetlands would occur due to operation of the project.

C-100 Zebra Mussels
The Final EIS should acknowledge that there may be some colonization of zebra mussels on the bypass structure which may require periodic cleaning to ensure the gates remain operational.

Response:
The FEIS has been updated to address potential presence of zebra mussels at project structures. See Section 5.2.1 of the FEIS for further details.

C-101 Impacts to Birds
The SDEIS lacks an assessment of impacts to Bald Eagles and Water Cranes.

Response:
The report addresses the impacts to Bald Eagles and Whooping Cranes in section 5.2.1.9 Endangered Species and subsection 5.2.1.9.1 Federal Species.

C-102 Bird Strike Assessment
The SDEIS lacks a "bird strike" assessment for Hector International Airport.

Response:
The selected plan will not appreciably change the migration patterns of migratory birds. This issue was discussed with the U.S. Fish and Wildlife Service and it concurs with this assessment. Also, according to the Federal Aviation Administration's Advisory Circular 150/5200-33B Hazardous Wildlife Attractants On or Near Airports, the agency recommends a distance of five miles between the edge of an airport and any hazardous wildlife attractant. The closest the proposed diversion channel would get to Hector International Airport property is slightly over 6 miles.

C-103 Carbon Footprint
The SDEIS lacks carbon footprint impact studies related to increased farm transportation distances and to the destruction of trees.

Response:
Impacts related to loss of trees have been addressed and these impacts will be mitigated. Further discussion of mitigation for trees can be found in Chapter 5 of the FEIS. Transportation impacts are addressed in Section 5.2.3.1.4 of the FEIS and in Appendix C. A lifecycle carbon assessment is not required as a component of this report, and would not be essential to the reasoned choice among alternatives.

C-104 Road Hazards
The SDEIS lacks an assessment of the hazards related to raising I-29 and an assessment of I-29 detour routes.

Response:
Diversion crossings and transportation impacts are discussed in Section 5.2.3.1.4 of the FEIS as well as Appendix C (Economics). An assessment of the I-29 detour routes is beyond the scope of the FEIS.

C-105 Wolverton Creek
Page 150 the DEIS dismisses the aquatic habitat value of smaller tributary streams, including Wolverton Creek, without justification. Page 271 the DEIS identifies fish passage in Wolverton Creek as being impassible during periods of operation, yet provides no measures to avoid or mitigation this impact.

Response:
The FEIS includes discussions for Wolverton Creek, including specific impacts, in Sections 5.2.1.1, 5.2.1.7, 5.2.1.7.1.5, and 5.2.1.7.5.5 of the FEIS.

Potential impacts to connectivity are identified for Wolverton Creek. It is unclear if this impact is substantial enough to warrant additional mitigation beyond what has already been proposed in the FEIS. As such, no mitigation specific for Wolverton Creek connectivity has been included.

The Corps is considering options to minimize all connectivity impacts through reducing the frequency the project would operate. Potential impacts to connectivity also will be evaluated following project construction. If substantial impacts are identified to connectivity at Wolverton Creek, mitigation measures would be considered. Fish passage features at the Wolverton Creek control structure could be expensive to construct, and would need to be balanced with the observed impacts.

C-106 Induced Development
The Corps did not include the environmental impacts of induced development from changes to the regulatory floodplain. The Corps did not explain how it would minimize impacts on flood plains, including induced development

Response:
The future without project condition indicates that Fargo will continue to grow at a rapid rate. There will be no impacts based on induced growth because the area will grow with or without the project.

C-107 Wetland Fill
The Corps provides only conclusory statements on the type of wetland fill and its chemical constituency, while insisting only minor, short-term environmental impacts will result from the project.

Response:
The analysis is appropriate for the planning stage of the project. Only clean fill free of contaminants will be used in the project.

C-108 Environmental Impacts Upstream
No environmental impact statement has been prepared that addresses impacts to upstream communities.

Response:
Impacts to upstream communities are included throughout the FEIS.

C-109 Impacts to West Fargo Diversion
Will there be a lessening of protection from the West Fargo diversion during construction of the proposed project? Erosion in the West Fargo diversion could increase significantly due to the project.

Response:
The level of flood risk reduction from the West Fargo diversion will not be impacted during construction of the selected plan. Once the proposed diversion is constructed, the West Fargo diversion will only receive minimal flows, which should result in less threat of erosion to the West Fargo diversion. The end result of the selected plan will be a great level of flood risk reduction for the community of West Fargo.

C-110 Water Velocity and Impacts to Fish
The SDEIS does not address how changing the velocity of water in the diversion channel might affect certain fish species.

Response:
The SDEIS and FEIS discuss velocities within the diversion channel as it relates to upstream fish migration at Section 5.2.1.7.5.1.

C-111 Integrity of Highway 17
The Corps did not address the integrity of Cass County Highway 17, including the costs and level of protection it will provide.

Response:
County Highway 17 will not be used as the north/south tie-back levee. A levee will be constructed along the highway and that levee will be designed and constructed to the proper engineering and Corps standards. The elevation of the levee will be set at the same elevation as the 0.2-percent chance flood event for the staging area which is approximately elevation 923.

C-112 Deposition
The rate of deposition of very fine materials is often very high in localized areas. The dam and reservoir would be expected to accelerate these conditions and increase river bank height which is often associated with increased bank erosion. Changes in plant communities and subsequent functional declines can also be expected.

Response:
The data collected by the USGS during the last spring flood in 2011 confirms the estimates presented in the SDEIS, which were based on data collected by the USGS during the spring flood in 2010. We agree that a completely uniform distribution of sediment deposition over the entire flood pool would not be expected, but we also conclude that deviations from such average sediment deposition rates will not be substantial. If the conservative estimate presented in the FEIS (conservative because it is assumed that all incoming sediment from upstream would settle in the flood pool) would be off by one to two orders of magnitude in some localized areas, the sedimentation rates in such areas would be 2-3 inches, which is well within the expected range of sedimentation driven by natural processes during large flood events in a complex riverine system where sediment transport is dominated by very fine material (silts and clays) mobilized in suspension. There are two additional reasons for concluding that localized deposition is unlikely to occur to the extent of creating impacts on the river geomorphology. The first one relates to flow velocities, which under existing conditions are already very low across most of the floodplain, which reflects the flat topography of the Red River valley and its relatively wide active floodplain. Flow velocities in the flood pool when the diversion project goes into operation will be equally low (not zero), hence we do not anticipate important changes in erosion and sedimentation processes in the floodplain. The second reason relates to the existence of five low-head dams between Christine and Fargo, which do not show appreciable sedimentation, and

these dams represent a more tangible and effective blockage to sediment mobilization through the main stem than the control structures will represent. To summarize, sediment deposition upstream of the project would not be so substantial or widespread as to result in meaningful increases or changes in bank heights, bank erosion, or plant communities. Additional information can be found in Section 5.2.1.1.3 of the FEIS.

C-113 Sheyenne River Flow
The LPP has a problem with water flow, in that the Sheyenne River in the last three years has followed Highway 46, County 14, and County 16 to return to the Wild Rice as its emergency spillway. Currently nothing in the project plans addresses that.

Response:
Local drainage issues along the entire diversion channel will be addressed in detail during the design and implementation phase. The project will be designed to minimize impacts to tributaries, especially for smaller, more frequent flood events. The design goal is to not change the one-percent chance floodplain outside of the diversion. See Section 5.2.1.4 of the FEIS for general discussion. Preliminary details regarding drainage along the Sheyenne/Drain 14/Maple/Rush corridor can be found in Attachment 5, Appendix C (Section C.2.10, Section 2.16.8, and Exhibit 3 figures), and in Attachment 5, Appendix F (Section F2.2 and Exhibit F). The analysis presented in Attachment 5 will be refined during the design phase to minimize changes to the one-percent chance floodplain outside of the diversion.

C-114 Water Quality
The design of the LPP will prevent water from following its normal course and refreshing the water in the wetlands, affecting water quality.

Response:
Water quality is discussed in Section 5.2.1.3.2 of the FEIS. The proposed diversion channel would likely have temporary minor impacts on surface water quality. Once the construction has been completed, water quality would likely return to pre-project conditions. To minimize impacts to water quality, a Storm Water Pollution Prevention Plan would be prepared and Best Management Practices as provided by the Environmental Protection Agency would be used.

C-115 American Widgeon
The American Widgeon and other waterfowl have lost over 50% of their wetland habitat to crop production in the prairie pothole region. The prairie pothole region is known as North America's "Duck Factory," and this habitat is being lost. A solution must be developed that will not drain wetlands that Widgeons and other waterfowl depend on.

Response:
The construction of the diversion channel will impact wetlands; however, most of the impacted wetlands are farmed wetlands. The direct and indirect loss of wetlands and wetland habitat due to the project will be offset by the creation of wetlands and wetland habitat. Environmental mitigation actions for impacts from the footprint of the project are based on the concept of offsetting habitat value losses associated with construction.. Section 5.5 of the FEIS contains a

detailed analysis of the mitigation measures and additional mitigation discussion is included in Attachment 6 of the FEIS.

5.0 Comment Category D: Modeling Technical

D-1 Tributary River Flows
How will the tributary flows be impacted? Water will back up on the tributary rivers as it does on the Sheyenne River now. Flooding will occur because of these water backup issues on the tributary rivers.

Response:
The project will be designed to minimize impacts to tributaries, especially for smaller, more frequent flood events. The design goal is to not change the one-percent chance floodplain outside of the diversion. See Section 5.2.1.4 of the FEIS for general discussion. Preliminary details regarding drainage along the Sheyenne/Drain 14/Maple/Rush corridor can be found in Attachment 5, Appendix C (Section C.2.10, Section 2.16.8, and Exhibit 3 figures), and in Attachment 5, Appendix F (Section F2.2 and Exhibit F). The analysis presented in Attachment 5 will be refined during the design phase to minimize changes to the one-percent chance floodplain outside of the diversion.

D-2 Channel Dimensions
What is the width of the channel at ground level and the width of the channel at the bottom of the channel where the channel enters the Red River on the north end of the diversion? What is the depth of the channel from ground level to the bottom of the channel?

Response:
This portion of the channel is shown on Drawing CS403 in Appendix K of the FEIS. The diversion channel downstream of the outlet structure is 250 feet wide at the bottom, approximately 700 feet wide at existing ground level and approximately 32 feet deep.

D-3 Levee Elevation
What is the elevation of the dike from the beginning to the end?

Response:
The typical tieback levee elevation is 928.0 (NAVD 88). The soil disposal piles adjacent to the diversion channel vary from zero to 15 feet above existing ground. Refer to the drawings in Appendix K of the FEIS for additional details.

D-4 Flooding Outside Protected Area
The Maple River Aqueduct will only take a two year event and then spill over into the diversion. How far will the Maple River back up when it cannot flow into the diversion because it is full?

Response:
The goal is to not cause any additional flooding from the Sheyenne, Maple, and Rush rivers, Drain 14, or local flows that will be affected by the LPP or ND35K. For many areas flooding will be reduced since the design water surface profile in the LPP diversion will be lower than it is

in the existing Horace to West Fargo and West Fargo diversions. However, to preserve existing floodplains the inlets to the diversion will not be designed to reduce flooding for the 1-percent chance flows from the Sheyenne, Maple, and Rush rivers, Drain 14, or local drainage areas (for these events the goal is to maintain the existing condition). The current design presented in the FEIS does not completely meet the goals stated above, and does have areas where flooding is worse than the existing condition. Resolving the issue of increased flood stages will be relatively easy in some areas and more of a challenge in others. Details regarding drainage along the Sheyenne/Drain 14/Maple/Rush corridor can be found in Attachment 5, Appendix C (Section C.2.10, Section 2.16.8, and Exhibit 3 figures), and in Attachment 5, Appendix F (Section F2.2 and Exhibit F).

D-5 Ice and Bridges
When spring snow-melt causes high water, the water rises against the Toll Bridge at 12 Ave N and the North Broadway Bridge in Fargo. These bridges are sometimes submerged by water and snow and ice debris piled up against these two bridges and delayed the flow of water out of the Metro area. Why should the diversion be considered when these flow restrictions remain in place?

Response:
A study to better understand potential scenarios involving bridges and an ice study is currently underway (comment and response D-7 below contain further discussion on this study). In addition, the proposed diversion channel would result in reduced flows through the Metro area; with the flow reduction, these bridges would not be such constriction points. Ice impacts are discussed in Section 3.10.4 of the FEIS.

D-6 Ditches
Water backing up on the Red River will impede the efficiency of judicial ditches. Water will back up onto the land that is benefited by these ditches, actually making them useless. Will growers be compensated now that these ditches are useless?

Response:
The ditches will continue to function as they do now during non-flood times. Most flood events that would require operation of the project are expected to occur in March and April when crops have not yet been planted. Impacts outside the defined staging area will be assessed to determine whether any compensation is required under the Fifth Amendment to the U. S. Constitution.

D-7 Ice
Has ice flow been considered? The effect of ice and debris on project operation and performance must be considered as part of the project.

Response:
The effect of ice on project operation and performance is being studied by the Ice Engineering Group at the Corps' Cold Regions Research and Engineering Laboratory (CRREL). Preliminary research and review of historical data indicates that the peak accumulated freezing degree days (AFDD) and maximum ice thickness occurred within a period of 15 days before to 40 days after

the time of peak water stage. On average, the peak water stage occurred 10 days after the time of calculated maximum ice thickness. The small difference in days between AFDD peak and stage peak indicates that the ice deterioration period is very short on the Red River of the North at Fargo.

For the known flood years of 2001, 2009 and 2010, the unified degree-day method (UDDM) predicted ice-out at Fargo before the time of peak water stage is in agreement with observations. The UDDM results do agree with the observations that, for many years, particularly ones with floods, ice-out occurs before or during the peak water stage event.

Addition research and modeling will be addressed through study efforts during the design and implementation phase. The effort includes study of ice at the gated structures, ice in the diversion channel, and the effect of lower flows on ice in the benefited area. The effort also includes the study of similar flood risk management projects under ice conditions (e.g. Winnipeg diversion). Further discussion of ice impacts can be found in Section 3.10.4 of the FEIS. See Appendix B of the FEIS for the draft ice study report from CRREL.

D-8 Basin Wide Maps
Is there a 500 year map of Eastern ND showing how the state and the Red River basin will flood with the diversion and without the diversion? There must be a due diligence of all the rivers at the 500 year flood stage.

Response:
Attachment 5, General Report, Figures 15 through 22 show the difference in flooding extent for the 10-percent chance (10-yr), 2-percent chance (50-yr), 1-percent chance (100-yr), and 0.2-percent chance (500-yr) flood events. Closer views of the river downstream of Fargo-Moorhead can be found in Attachment 5, Appendix C, Exhibit 4. Where red is not seen, the existing condition extent of flooding is equal to or greater than the LPP extent of flooding. Except for the storage and staging areas upstream of the diversion, the extent of flooding is very similar for existing conditions and the LPP. The additional areas flooded upstream of the diversion are due to water being staged so that downstream impacts are minimized.

D-9 Simultaneous Flooding
What is the impact of simultaneous flooding on the Sheyenne River west of Horace Road?

Response:
For the case of high flow conditions on the Sheyenne River while peak flooding is occurring on the Red and Wild Rice Rivers, the capacity of the proposed diversion channel is such that flooding along the Sheyenne River will be no worse than it is under existing conditions. Breakout flows from the Sheyenne River that enter the Wild Rice River basin under existing conditions will be directed to the diversion channel via a new ditch. The exact location and design and location of this ditch have yet to be determined, but it is known that the ditch can be designed to function without inducing additional flooding. More information can be found in Appendix B of the FEIS.

D-10 Additional Drainage Analysis
Richland County Water Resource Board requested analysis of impacts to legal drains in the northern end of Richland County, analysis of impacts on the Wild Rice, Sheyenne, and Red Rivers in Richland County, and analysis on natural drainage systems in Richland County.

Response:
Additional drainage analysis has been conducted and this information can be found in Appendix B of the FEIS. The diversion will be designed to minimize impacts to local drainage. Where the channel intersects existing legal drains, the channel will be designed to accept flow from the drain. In areas between drains, ditches adjacent to the channel will be used to convey drainage to a place where it can enter the diversion channel. Section 3.7.2 of the FEIS includes a figure depicting the channel profile; this chart indicates when flows in the diversion are below existing ground level, flows will enter the diversion. If flows in the diversion are above existing ground level, flows from local drainage will not enter the diversion. Drainage in the summer will likely not be impacted as summer flood events are significantly smaller than spring flood events.

D-11 Structures at Tributaries
The intercept structures for the rivers crossing the diversion are unproven and have not been used elsewhere in the world.

Response:
Aqueducts similar to those proposed have been built throughout the world since Roman times. The Magdeburg Water Bridge over the Elbe River in Germany is a recent example, and several aqueducts were constructed in the 1800's as part of the Chesapeake and Ohio Canal along the Potomac River in the U.S. The proposed conceptual design for the Fargo-Moorhead Metro project is complicated, but not fundamentally unique.

D-12 Ottertail Flooding
What happens with the increased flow of water into the Ottertail River that drains into the Red River? With a diversion on the south end and a dam on the north end and the Red flowing north, isn't it possible that even more flooding will occur?

Response:
The selected plan would have no noticeable impacts on the Otter Tail River. Hydraulic models developed in the feasibility study show stage impacts near Abercrombie, North Dakota of less than two inches for all flood events analyzed. Impacts would decrease upstream of Abercrombie.

D-13 Flood Plain
With regard to the higher flood plain numbers that the Corps is using as part of the cost/benefit justification, do these higher numbers apply only to Fargo proper and areas south or to the whole valley region? If the Corps is successful in convincing FEMA that these numbers are accurate for Fargo, won't the resulting effect be to raise the flood elevation for the valley at large?

Response:
The Corps higher numbers are based on the best available historic information and the Corps Expert Opinion Elicitation (EOE) panel recommendations. However, the Corps has also completed a traditional period of record analysis using the best available data. It is possible that FEMA could make adjustments to the floodplain without the project in place; however, the Corps cannot speculate on the timing of any potential FEMA floodplain revisions.

D-14 White Rock Dam
If the diversion is constructed, how will the operation be coordinated with discharges from White Rock dam?

Response:
At this time, White Rock Dam operations are primarily determined by conditions at Wahpeton, North Dakota and Breckenridge, Minnesota. Flood risk reduction measures are currently being built in Wahpeton-Breckenridge; after those measures are complete, the operation plan for White Rock Dam may be adjusted to maximize its benefits. The potential to coordinate operation of White Rock Dam with the selected plan will be explored during the design and implementation phases.

D-15 Tributary Flow Models
The city of Kindred requested that tributary flow models be completed to assess the exact impact of coincidental flow events on the tributaries.

Response:
The modeling conducted in this study considered both peak and coincidental flows on the Red River and the tributaries. Details of the hydrologic and hydraulic analyses are in Appendix A and Appendix B of the FEIS, respectively. The selected plan is not expected to increase flood stages on the Sheyenne River at Kindred, North Dakota under any event.

D-16 Hydrology
Consistent hydrology should be used. If the wet-dry period analysis is used it should be submitted to FEMA for review and acceptance.

Response:
A summary of the hydrologic analyses carried out in support of the Fargo-Moorhead Feasibility Study is provided as Appendix A of the FEIS. Appendix A is composed of 7 parts. The Appendix includes an executive summary that provides an overview of the hydrological analysis carried out and describes where within the Appendix certain aspects of analysis can be found. Each portion of the appendix also includes a preface describing what information is contained in that particular part of Appendix A.

A panel of experts was convened for an Expert Opinion Elicitation (EOE) in order to address non-homogeneity within the observed hydroclimatic data within the basin. EOE panel members recommended splitting the hydrologic record into a wet period and a dry period. This

recommendation was approved by the USACE Hydrology Review Committee and was adopted for analysis. The rational for doing this can be found in Appendix A-1.

A statistical test (known as the Pettitt test), was used to determine the break point between the wet and dry periods. The procedure involves performing a non-parametric hypothesis test on the difference between sample means for streamflow data in order to identify the break point. An explanation of how the Pettitt Test was applied to streamflow data collected at Fargo, ND can be found in Appendix A-1c on page 5. The results of the Pettitt test for the Fargo streamflow record are shown in Figure 3 of Appendix A-1c. The results support using year 1941 as the break point between the dry and wet periods. The resulting discharge-frequency curves for the full period-of-record for unregulated flows and the wet and dry periods are shown in Figure 4 on page 9 of Appendix A-1c.

The wet period (year 0) hydrology was used consistently in the analysis and design for all aspects of the diversion channel alternatives. The appropriate flood frequency description for any future year is a combination of the dry and wet frequency curves that respects the likelihood of each condition. The year 0 (100% wet) hydrology, year 25 (80% wet, 20% dry) hydrology and year 50 (65% wet, 35% dry) hydrology was used in the economic analysis of the alternatives. Explanations describing how the flow-frequency curves were combined in order to be more representative of future conditions can be found on page 25 of Appendix A-1c. The year 25 and 50 hydrology scenarios were used in the economic analysis to incorporate the possibility that the current wet trend could become dryer in the future. The year 0 hydrology was used to assess environmental and social impacts due to the diversion channel alternatives including downstream impacts. Analysis of the traditional full period-of-record hydrology is shown in Appendix A-1a, but the period of record analysis described in Appendix A-1a was not adopted for either design or economics and is presented for information only.

D-17 Models for County Road 17
Models need to be developed for the flows from the spillway along Cass County 17.

Response:
As the project progresses into the design phase additional modeling will be conducted. Based on the current design, water from the staging area will not exceed the elevation of the spillway for events of up to the 0.2-percent chance event.

6.0 Comment Category E: Page Specific Comments

E-1 Federal/Non-Federal Responsibility
Where are the figures that show what the Corps would be responsible for and what the city of Fargo would be responsible for?

Response:
Project cost sharing is discussed in Section 3.14 of the FEIS.

E-2 Section 6 Correction
In Section 6 of the EIS, the document states the Resource Agency Team includes the North Dakota Game, Fish and Parks (NDGFP). This should be corrected to the North Dakota Game and Fish Department (NDGFD) in this Section and anywhere else it appears in the document.

Response:
Concur and correction has been made.

E-3 Section 1.5.3.16
Some of the dams mentioned were constructed through the NRCS (SCS). This includes the three dams located on tributaries of the lower portion of the Maple River, and the three dams on the Elm River.

Response:
Noted.

E-4 Section 2.7, Planning Constraints
The planning constraint related to EO 11988 should be reworded or additional clarification should be added.

Response:
The planning constraints were set early in the planning process and the constraint as worded is an accurate reflection of the constraint. Discussions on EO 11988 are included throughout the main report and in Appendix O, Plan Formulation.

E-5 Section 3.14.4
A Sovereign Lands Permit is required through North Dakota's Office of the State Engineer, not through the North Dakota State Water Commission. Please note that a construction permit would also be required from the Office of the State Engineer.

Response:
Concur. FEIS includes corrected information. The non-federal sponsors will be responsible for obtaining both the Sovereign Lands Permit and the construction permit from the North Dakota Office of the State Engineer prior to construction.

E-6 Executive Summary
In this section it states that the St. Paul District Engineer recommends the North Dakota East 20,000 cfs diversion channel with upstream staging and storage. It should very clearly state that this is the LPP. Then, throughout the document, there are several sections where the channel capacity of other alternatives is provided in their respective discussions, but not always for the LPP. This makes it less clear to the reader that the LPP is now a 20,000 cfs diversion alternative with upstream staging and storage.

Response:
Comment noted and suggested changes have been incorporated into the Executive Summary of the FEIS.

E-7 Environmental Justice Mapping
The legend and alternative labels on the environmental justice maps on pages 319-330 of the SDEIS should be corrected. The labels do not identify mapping for the SDEIS LPP and the cross hatching for "induced flooding" looks like it may be for the existing flooding data layer for some areas. It may be useful to show both the existing floodplain and the induced flooding on these maps.

Response:
Comment noted. The maps have been updated and included with changes in Chapter 5 of the FEIS.

E-8 Inconsistent Mitigation Ratio
The mitigation ratio for forested areas was reported as 1:1 in the draft report on "Fish and Wildlife Coordination Act" (Attachment 2 of the SDEIS), while the "Discussion of Habitat Loss, Mitigation Needs and Adaptive Management" (Attachment 6) recommends a 2:1 replacement ratio.

Response:
A mitigation ratio of 1:1 replacement for impacted forested areas was recommended by the Fish and Wildlife Service in its Fish and Wildlife Service Coordination Act Report. However, the agency team decided that a detailed HEP analysis should be used to determine the mitigation ratio. The results of this analysis showed that a 2:1 ratio is more appropriate.

E-9 Inconsistent Mitigation Plan and Channel Design
Appendix K shows the channel design and illustrates a trapezoidal channel with a hardened pilot channel. This is inconsistent with the mitigation plan described in Section 5.5.2.3 of the SDEIS which describes the creation of wetlands in a low flow channel. The mitigation features should be formally incorporated into the design. In addition, it should be clarified if there will be enough water to sustain the wetlands mitigation throughout the diversion channel and where the water sources will come from.

Response:
The drawing showing the blow up of the diversion channel in Appendix K was incorrect and has been replaced with the correct drawing that shows the rip rap ends at the toe of the diversion channel bottom. This drawing is in Appendix K C501. Water in the low flow channel will consist of existing drains, some ground water flow, and from precipitation.

E-10 Self Mitigation
Page 53 and page 361 of the SDEIS discuss wetland creation and passive mitigation, the process is described as "self mitigation" and suggests that the diversion channel will eventually develop sufficient wetlands to offset wetland losses. Inclusion of weeding and planting of appropriate wetland species in the design plans and costs is recommended. This will restore wetland values more quickly and reduce the potential for invasive species.

Response:
Planting of appropriate wetland species for either wet meadow or shallow marsh will be recommended and included in the plans and specifications of the project; see Attachment 6, Section 3.3, and Section 5.5.2.3 of the main report. The Operations and Management requirement will include invasive species control to ensure that the plant species that dominate the wetlands are native plant species.

E-11 Prior Reports
The 1996 Federal Tier 1/State Generic EIS titled "Environmental Impact Study of Flood Control Impoundments in Northwestern Minnesota" should be included in Section 1.5.1 of the FEIS.

Response:
Comment noted and the document has been added to list of prior reports in Section 1.5.1 of the FEIS.

E-12 Farmland Analysis
The Farmland analysis in Section 5.2.3.2.7 of the SDEIS did not include farming operations in the staging area.

Response:
Impacts to farmland and food supply are discussed in Section 5.2.3.2.7 of the FEIS, including impacts to farmland in the staging and storage areas.

E-13 Page Specific
Page 151 the current revised lake sturgeon stocking rates are 8,000 fingerlings and 200,000 fry.

Response:
Comment noted and the FEIS has been updated with this information.

E-14 Page Specific
Pages 137&161&163 Christine and Hickson dam modifications are now under construction, not in the planning phase as stated in the SDEIS.

Response:
Comment noted and the FEIS has been updated with this information.

E-15 Page Specific
Page 234 the SDEIS indicates that the 4,450 acre storage area will provide wetland functions after project construction. The FEIS should indicate if this site is needed in addition to the channel bottom wetlands, and if it is needed and planned the suitability of the site in providing wetlands should be discussed in the analysis. Specifically, since topography, drainage, and soils provide the guidance for restoration, each should be considered and described in the FEIS.

Response:
The 4,450 acres of storage area will provide some wetland functions, most likely similar to the farmed wetlands that will be lost. However, these acreages are not needed to mitigate for the loss of wetlands from the project.

7.0 Comment Category F: Coordination of Permits

F-1 Required Permits for the Project
Any construction that impacts highway right-of-ways will require coordination with the Department of Transportation District Engineer to obtain appropriate permits and risk management documents. A construction permit and Sovereign Lands permits would be required from the North Dakota Office of the State Engineer.

Response:
The Corps, the non-federal sponsors, or the construction contractors will obtain all applicable construction permits, Sovereign Lands permits and applicable permits from the DOT to address impacts to highway right-of-ways. Coordination with appropriate agencies is ongoing and will continue as impacts are identified and clearly laid out during design.

F-2 Clean Water Act (CWA) 404(b)(1)
The information provided in the Clean Water Act (CWA) 404(b)(1) analysis does not fully support the conclusion that the LPP alternative (the tentatively selected preferred alternative) is the least environmentally damaging practicable alternative (LEDPA). This alternative impacts substantially more wetlands and riparian areas than the FCP alternative.

Response:
As described in the Clean Water Act (CWA) 404(b)(1) analysis, the FCP is not a practicable alternative to the North Dakota diversion with upstream storage and staging (LPP). During the course of the planning process, it became evident that local stakeholders strongly desired measures to reduce flood risk for the entire Metropolitan area, including the risks from the Red River of the North, as well as the Sheyenne, Wild Rice (ND), Maple, Rush, and Lower Rush rivers. For the DEIS, the non-federal sponsors identified the ND35K plan as a locally preferred plan (LPP) that would reduce flood risk for the both the Red and the five tributaries. Upon further study of the ND35K plan, the Corps determined that it would have widespread impacts to infrastructure downstream and current modeling demonstrates that mitigation for these impacts is not logistically practicable. Therefore, the ND35K plan will not be pursued as an alternative. Following further study of possible alternatives, the non-federal sponsors identified a 20,000 cfs diversion along the North Dakota East alignment, along with upstream storage and staging, as a locally preferred plan (LPP) that would reduce flood risk for both the Red River and the five tributaries. The LPP provides flood stage reductions to a greater geographic area and for approximately 6,250 additional citizens than does the FCP. It achieves this result by reducing flood risk from the Sheyenne River and its tributaries in addition to the Wild Rice (ND) and Red rivers. This added level of risk reduction is not available from the FCP; the FCP is not a practicable alternative to achieve the overall project purpose of reducing flood risk from both the Red River and the five North Dakota tributaries.

F-3 Local Sponsor Comments
The cities of Fargo and Moorhead, the Local Sponsors of the proposed project, support the conclusions of the Preliminary Clean Water Act Section 404(b)(1).

Response:
Noted.

F-4 Practicable Alternatives
Neither the local project sponsors nor the Corps has conducted a meaningful evaluation of practicable alternatives required by the Clean Water Action Section 404(b)(1) or its implementing regulations.

Response:
As described in the Chapter 3 and Appendix O of the FEIS, alternatives for the project have been thoroughly evaluated. For example, upstream retention and storage were eliminated as standalone alternatives in Phase 2, Screening #1, but were expressly retained as alternatives for inclusion in possible combination plans with diversion channels or levees (Section 3.4.6 of the FEIS). As described in Section 8.4 of Appendix O of the FEIS, the Corps considered 384 different combinations of measures during Phase 4. The screening results from previous phases of the study were still valid, meaning diversion channels are the only feasible stand-alone alternatives to address catastrophic floods through the Fargo-Moorhead area. Ultimately, upstream retention and storage were included in the revised LPP to minimize downstream flooding.

F-5 Overall Project Purpose
The articulation of "overall project purpose" in the Clean Water Act Section 404(b)(1) evaluation is a material departure from the purpose identified in the SDEIS. The new articulation of overall project purpose renders all comparable plans involving Minnesota diversions, including the NED plan and the FCP, impracticable for achieving the overall project purpose.

Response:
The purpose and need for an Environmental Impact Statement is a different concept from the overall project purpose for the Clean Water Act 404(b)(1) evaluation. As described in the 404(b)(1) evaluation, the purpose and need for the Feasibility Study and Environmental Impact Statement was established prior to commencement of the study. At that time, a broad purpose and need was identified that would facilitate study of the flooding problems in the Metropolitan area and possible alternatives to manage the risk from the floods. The geographic scope of analysis in the scoping document for the NEPA process included the tributaries. As study of the flooding problems progressed, it became evident that flooding from the five tributaries significantly contributed to the problems experienced in the Metropolitan area. In order to achieve comprehensive flood risk management, a project that would address flooding on the five tributaries was needed. Providing protection from these additional sources within the basin is a legitimate purpose for the project, and is a project outcome the non-federal sponsors of the project strongly support. The Corps is required to take account of the non-federal sponsors' desired outcomes in defining the overall project purpose in the context of the 404(b)(1) evaluation. It is not inconsistent to define the overall project purpose in the 404(b)(1) evaluation differently, and more specifically, than the purpose and need for the project in the NEPA analysis based on a consideration of the non-federal sponsors desired outcomes for the project.

This approach is consistent with the Corps Standard Operating Procedures, which explain that the overall project purpose for the 404(b)(1) evaluation must consider the needs of project sponsors. Therefore, the overall project purpose for the Clean Water Act evaluation includes addressing flooding from the five tributaries, and alternatives failing to meet this purpose are not practicable. In summary, the purpose and need for the Feasibility Study and Environmental Impact Statement was a broad statement intended to facilitate study of the problem. The overall project purpose for the Clean Water Act is informed by that study and is therefore refined based on what was learned.

F-6 Minnesota State EIS Process

The Minnesota Department of Natural Resources (MnDNR) recommends that that permit-level analysis be compiled and provided concurrently with the state EIS process. If it is the Corps' goal to produce a federal EIS which can be used as a state EIS, the permit-level analysis must be included in the federal EIS. A final design report (together with plans and specifications) must be submitted concurrently with the State environmental review process. If the proposer wishes to proceed with a state EIS before permit-level analysis can be provided, the proponent must contact DNR's Public Waters Work Program to discuss options under which the proponent can consent to exceed new goals for issuing permits.

Response:

The Corps recognizes the need for a Minnesota State EIS for this project and has been coordinating with the Minnesota Department of Natural Resources and project sponsors for the development of this EIS. There have been meetings to discuss the project details, scoping of the project, and timing to start the state process. During this coordination, the parties agreed to initiate the state process when the Final EIS was released to the public. The non-federal sponsors will work with the DNR to complete the State EIS and determine an appropriate course of action to address the state's 30-day deadline for issuance of permits following final approval of the environmental impact statement (MN Stat. §116D.04(3a)).

F-7 404(b)(1) Analysis

Recommendation that there be a paragraph addressing costs, logistics, and existing technology for each alternative in the 404(b)(1) analysis.

Response:

The Corps has addressed why the logistics of the ND35K plan render the plan impracticable and has included the required and appropriate analyses in the 404(b)(1) evaluation.

8.0 Comment Category G: Project Management

G-1 Project Cost Sharing and Operation and Maintenance
We need to be clear about the future costs of this project, these costs will be placed on future generations. Maintenance costs could exceed $3 million per year. Who, and at what cost, is going to maintain the project forever including the required bridges over the diversion channel? The local sponsors should assure funding is available for unidentified impacts or project modifications.

Response:
The non-federal sponsors must enter into a Project Partnership Agreement with the Corps of Engineers to construct the Project. This agreement sets the required cost sharing of the Project between the non-federal sponsors and the federal government and requires that the non-federal sponsors be solely responsible for the Operation and Maintenance of the Project. The sponsors are responsible for financing their local share and operation and maintenance costs. It is currently anticipated that the non-federal sponsors will be the cities of Fargo and Moorhead. Mitigation required during project construction will be cost-shared. Mitigation required after the project is constructed and being operated and maintained by the non-federal sponsors will be the responsibility of the non-federal sponsors.

G-2 Cost Effectiveness of Diversion
The diversion would have been operated 21 times out of the last 109 years. At a cost of $2 billion for the diversion this does not seem cost effective.

Response:
Although the project would have been operated only 21 times out of the last 109 years, the majority of the times it would have been operated would have occurred in the past two decades. The area is currently in wet cycle and for this reason the project would have been operated more frequently in recent years. Furthermore, the economic analysis in the FEIS considers the statistical probability of events larger than any historic event that would cause catastrophic damages to the Fargo-Moorhead area. When the expected damages from potential future flood events are compare to the costs, the project is cost-effective.

G-3 Projects Cause Flooding
There was no flooding this spring until the Corps opened the flood gates at Baldhill. For weeks roads and fields were underwater.

Response:
Baldhill Dam and Lake Ashtabula do not cause flooding. Baldhill Dam and Lake Ashtabula provide water storage for flood control and water supply on the Sheyenne River, but when the volume of water flowing into the reservoir exceeds its capacity, the Corps must let water out. The dam was modified in 2004 to raise the floodgates 5 feet. These modifications to Baldhill

dam were implemented specifically for flood control purposes and to reduce flood damages for communities downstream of the dam.

G-4 Project Costs
The costs have gone up, and will keep going up. Additional mitigation and other cost increases are not factored in; the costs of the project will continue to rise. Some comments suggested the project costs will soon exceed $2 billion. There are many costs that are not yet accounted for. This plan is too expensive. The upstream and downstream impacts will cost millions and Fargo and Moorhead will not be able to come up with the funds necessary for the mitigation costs. The sales tax in Fargo will not even cover maintenance, much less mitigation.

Response:
The cost estimates presented in the FEIS reflect the expected costs to construct the features described in the report. Contingencies are included to account for the risks and uncertainties associated with the current level of design detail. The potential exists for both cost increases and cost savings as details are developed during the design phase. Costs are generally presented at the October 2011 price level; for budgeting purposes the project cost will continue to be updated to reflect actual inflation that is experienced during the design and implementation phases. The non-federal sponsors are responsible for providing the non-federal share of project funds; the FEIS does not need to identify how the non-federal funds will be obtained.

G-5 Mitigation for Impacts
Some comments urged the Corps to consider participation in the cost of mitigation efforts for people impacted by the project. One comment requested that the final report include a recommendation for specific funding for mitigation in each impacted community.

Response:
The Corps is responsible for mitigating environmental impacts caused by the selected plan. Mitigation measures, such as property buyouts, for the people impacted by the project are the responsibility of the non-federal sponsors.

G-6 Timeline for Construction and Operation
The timeline with 2 years until construction begins and 10 until the project operates is too long, we are going to lose steam.

Response:
The proposed timeline is based on reasonable estimates for accomplishing the design and construction associated with the project. The estimated construction completion in 2021 assumes that Congressional authorization is obtained in time to begin construction in 2013 and that neither federal nor non-federal funding is constrained during the entire implementation period.

G-7 Project Purpose
Is this project about flood protection for Fargo, or for expansion of the city?

Response:
The project purpose, as stated in Section 2.5 of the FEIS is "to reduce flood risk, flood damages and flood protection costs related to the flooding in the Fargo-Moorhead Metropolitan Area."

G-8 Project Funding
Will the project be fully funded or funded annually? If annually funded, what happens when Congress cuts off funds? What happens if the local sponsors cannot raise the funds necessary? There is a concern that the project will be started, but not completed due to funding shortfalls.

Response:
The federal portion of the project will be funded annually through the federal appropriations process. The non-federal sponsors will be responsible for generating the funds necessary to pay the non-federal share of project costs. If either federal or non-federal funds are not available, work on the project will cease. The concern noted in the comment is valid.

G-9 West Fargo Horace Diversion
The residents of West Fargo and Horace have already paid for a diversion and are already protected from flooding. Comments asked if these residents would be reimbursed or if they would have to pay for another diversion.

Response:
The existing Sheyenne River diversion is really two diversion projects: the Horace to West Fargo diversion and the West Fargo diversion. The Horace to West Fargo channel reduces flood risk for events up to approximately a 1-percent chance flood on the Sheyenne River. The West Fargo channel is designed for a much larger Sheyenne River flood event. The Fargo-Moorhead Metro diversion would reduce risk in the cities of Horace and West Fargo from Sheyenne River floods more than the current Sheyenne Diversion does, and it will also reduce flood risk from Red River and Wild Rice River flood events, which the existing diversions do not. Non-federal funding for the proposed Fargo-Moorhead Metro diversion is a non-federal responsibility, and the local jurisdictions must determine how that funding will be obtained.

G-10 Fargo Protection to 42 Feet
Fargo has committed to building levees with protection to 42 feet. If that mitigation to 42 feet were included in the plan, the dam could be made significantly smaller and could affect far less wetlands. In addition, the costs of the proposed plan could be significantly reduced.

Response:
The FEIS considered levee alternatives and determined that they would not be as effective or as cost-effective as diversions. The City of Fargo has not indicated to the Corps any intention to build a consistent line of protection to a 42-foot stage. Section 2.3.4 of the FEIS describes the future without project conditions or the no action alternative. This section notes that the metropolitan communities will continue to use best practices and make minor modifications to enhance their overall flood risk management whenever possible. This includes construction of short sections of levees and floodwalls that do not tie into high ground. If a higher flow could be passed safely through Fargo-Moorhead, it would not eliminate the need for the staging and

storage areas during extreme events, but it would reduce the frequency at which those areas would be needed.

G-11 Executive Order 11988
Protecting land south of Fargo for future development is a violation of EO 11988. How can the project go all the way to Hickson, protecting undeveloped land, and be within the guidelines of 11988? The LPP removes additional land from the floodplain compared to the Minnesota alignment, but then the Corps used EO 11988 as an excuse not to consider the southern and western alignments. The Corps inconsistently applied EO 11988; it states it cannot impact downstream communities because of EO 11988, but also states it cannot move the alignment further south to save upstream communities because of EO 11988.

Response:
Executive Order 11988 is discussed in Section 3.8.3.4.5 the main report and in Section 8.5.3.4.5 of Appendix O of the FEIS. Executive Order 11988 prohibits support of floodplain development if there is a practicable alternative. If no practicable alternative exists, then impacts to the floodplain must be minimized. The results of this study have shown that a diversion channel is the alternative that best meets the project purpose (as stated in Section 2.5 of the FEIS) "to reduce flood risk, flood damages and flood protection costs related to the flooding in the Fargo-Moorhead Metropolitan Area." There is not a practicable alternative located outside the floodplain and, as such, EO 11988 requires that impacts to the floodplain be minimized. The diversion alignment of the selected plan removes some land from the floodplain and leaves other areas in the floodplain. Various channel alignments were considered, and the alignment of the proposed diversion channel was selected to address flooding from the five tributaries while also minimizing overall impacts to the floodplain and the environment and at the same time minimizing costs.

G-12 Executive Order 11990
The proposed project would violate EO 11990 by failing to minimize wetland impacts.

Response:
The selected plan does not violate Executive Order 11990; efforts were taken to avoid, minimize and compensate for wetland impacts caused by the selected plan.

G-13 Jurisdiction and Representation
What authority does the Metro Flood Group have to make decision that negatively impact people who did not get to vote on their position? Richland County and others are not represented in the Metro Flood Group and residents of these counties did not elect the Metro Flood Group.

Response:
The Metro Flood Working Group (MFWG) was created to advise the elected bodies of the non-federal study sponsors (the City of Fargo and the City of Moorhead) and also Cass County, ND; Clay County, MN; the Cass County Joint Water Resource Board and the Buffalo-Red River Watershed District. The MFWG makes recommendations to its several elected boards, but it has no authority to make decisions on their behalf.

G-14 Fargo Buyouts versus Upstream Acquisition
The Metro Area Flood Group says that Fargo, like the upstream staging and storage area, has been impacted and paid a price with millions of dollars of home buyouts. But the buyouts in Fargo were voluntary and occurred on properties that regularly flooded, the homes and properties in the upstream area are not regularly subject to flooding and the buyouts are going to be forced.

Response:
Comment noted.

G-15 Project Leadership
We need a new leader at the Corps and a new group to replace the Metro Area Flood Group. The existing leadership is biased and does not fully represent the people and areas that will be impacted by this project. People in areas that will be impacted do not trust the existing project leadership.

Response:
Comment noted.

G-16 Dam versus Diversion
The dam was hidden in the plan; people had no idea that a dam was part of the plan because it was just called a diversion. People had to vote on a sales tax before it was disclosed that the plan included a dam south of town. The Corps and the local sponsors withheld information.

Response:
The project design evolved significantly between May 2010 and March 2011, as described in Sections 3.6 and 3.7 of the FEIS and in Appendix O of the FEIS. It was determined in September 2010 that additional analyses were needed to consider measures that would reduce downstream impacts of the ND35K plan. Hydraulic modeling was developed to assess several alternatives, but no definitive results were available prior to mid-November 2010. Preliminary conceptual results were released on November 18, 2010 at the Metro Flood Work Group meeting, and a Metro Flood Work Group meeting was held on December 9, 2010 at the Bennett Elementary School to share additional details with upstream stakeholders.

G-17 Project Cost Sharing with Cost Overruns
What happens if there is a cost overrun on the project? This isn't due to inflation but instead to unexpected complications building the river structures. How does the cost share work in an event like this? Does the project-cost split between sponsor and Corps apply throughout or is there a different formula used to divide the added cost?

Response:
Cost overruns will be looked at individually. For instance, if there is a cost overrun in the cost of excavation or any feature that is part of the FCP, then some of the costs would be cost shared. If there are cost overruns that are due to errors or features that are not part of the FCP, such as the tributary structures, they will be 100% responsibility of the non-federal sponsors.

G-18 Recreation
The proposed project includes recreation features, described as recreational benefits. How are the recreation benefits calculated?

Response:
Recreation features are generally included in flood risk management projects because they provide additional economic benefits to the local communities at relatively small cost. More information about recreational benefits can be found in Appendix M of the FEIS. Section 1.12.6 and Table 7 of Appendix M describe annual recreation benefits.

G-19 Non-Federal Sponsors
What happens if Moorhead steps down as a project sponsor or backs out of the project?

Response:
The project can continue as long as there is at least one eligible non-federal sponsor that is interested and capable of fulfilling the obligations of a Project Partnership Agreement.

G-20 Avoided Costs
What are the project's projected avoided costs resulting from the channel decreasing from 35K to 20K with the upstream staging and storage?

Response:
The cost to construct the 20K diversion is approximately $100 million less than the cost to construct the 35K diversion.

G-21 Potential Project Backlog
Are there other Corps projects pending funding? When will this project begin construction in light of any Corps backlog projects?

Response:
It is impossible to predict with any certainty when construction will begin. Several Congressionally authorized Corps projects are available to receive federal funding. Congress normally provides funding for Corps projects in the annual Energy and Water Development Appropriations Acts. The timing and availability of funding for this project will depend on both the Administration's budgeting priorities and the willingness of Congress to fund Corps projects.

G-22 Itemized Funding
What is the breakdown of funding for this project? Do those that benefit most fund most of the project?

Response:
The funding breakdown between federal and non-federal sources is shown in Section 3.14 of the FEIS. The distribution of costs between the non-federal sponsors must be negotiated between the non-federal sponsors and will not be defined in the FEIS.

G-23 Statewide Protection
This project protects too few people; only Fargo and Moorhead are benefited and the rest of the state remains at risk for flooding. The Red River Basin 20/20 Retention Plan provides statewide protection and needs to be built.

Response:
Statewide protection is not the purpose of this project. The project purpose, as stated in Section 2.5 of the FEIS is "to reduce flood risk, flood damages and flood protection costs related to the flooding in the Fargo-Moorhead Metropolitan Area."

G-24 Compatibility with Existing Plans
The FEIS must fully describe any potential conflicts with land use plans, policies or controls.

Response:
The FEIS is in compliance with existing local policies and approaches regarding flood risk reduction. The Corps is a key partner in development of the Red River Basin planning efforts, including coordination with the Red River Basin Commission on the development of a long term basin plan. There are a number of technical papers that have been developed in the basin which list many various measures that could be used to address the flooding problems in the basin, one of those solutions listed is the use of diversions to reduce flood damages.

The LPP has been coordinated with a number of local, state, and federal agencies including the State of Minnesota, State of North Dakota, and FEMA to ensure that the LPP can be implemented and will be able to comply with all current regulations and policies.

G-25 Expedite Project
Each year that passes without a project in place exposes the region to unacceptably high risk of catastrophic loss. Cass County urges the Corps to continue moving the project forward in the most expeditious manner possible.

Response:
Comment noted. As stated in the response to question G-6, the proposed timeline is based on reasonable estimates for accomplishing the design and construction associated with the project. The estimated construction completion in 2021 assumes that Congressional authorization is obtained in time to begin construction in 2013 and that neither federal nor non-federal funding is constrained during the entire implementation period.

G-26 Conditional Letter of Map Revision
An increase in the 1% flood stage is not allowed unless authorized through a Conditional Letter of Map Revision (CLOMR). All impacts to structures must be mitigated. The stage increase must not exceed 0.5 feet unless there are floodway easements and concurrence of the local community. Without mitigation of all existing structures the project does not meet Executive Order 11988. Mitigation costs are not included in the economic analyses.

Response:
The Corps has been working closely with FEMA, the State of Minnesota, and the State of North Dakota to ensure that the project as proposed will be provided with a CLOMR. The proposed mitigation should be sufficient to comply with all current regulations. The Corps will continue to coordinate with the agencies as this project progresses.

G-27 Impacts to Other Communities
The SDEIS is deficient because it omits analysis of the probability that the LPP, once implemented, will effectively preclude further large-scale funding for flood protection to communities outside of the Fargo- Moorhead metro, and the effects such a lack of funding may have on such communities.

Response:
The probability of potential funding for the selected plan or other projects is a political issue that cannot be quantified. The Corps is not required to speculate on such issues.

G-28 Upstream Participation
Upstream communities should have been included in project planning; no mention of this omission is included in the report.

Response:
Significant public participation was included as the project progressed, including a number of public meetings, media contacts, and publications of reports as indicated in Section 6 of the main report, Appendix O, and Appendix Q. As indicated in the report, upstream impacts were not anticipated until it was determined that there were large downstream impacts. The upstream communities were engaged through public meetings on December 9, 2010 at Bennett Elementary School, March 30, 2011 at Kindred High School, May 3, 2011 (Wilkin and Richland County Commission Meeting), May 3, 2011 (Comstock Community Meeting), and May 24, 2011 at Kindred High School.

G-29 Non-Federal Funding
Local sponsors' ability and willingness to pay for their share is uncertain.

Response:
The non-federal sponsors have completed the necessary financial self-certifications to complete the feasibility report and enter into a Design Agreement. These certifications indicate that they are financially capable of moving forward with the selected plan. Additional financial certifications will be necessary prior to beginning construction.

G-30 Technical Literature
The SDEIS failed to consider or mention Technical Paper 11, the RRBC Progress Report, other substantial technical literature, and the flow reduction policy of the Red River Watershed Management Board.

Response:
The FEIS references a number of reports and technical information related to the project, and both Technical Paper 11 and the RRBC Progress Report were considered. These specific documents are not authoritative stand alone reports, but are part of a larger set of documents; as such, these documents were not appropriate for individual reference in the FEIS. Furthermore, both Technical Paper 11 and the RRBC Progress Report acknowledge that local measures, including diversion channels, may be appropriate flood risk management features.

G-31 Southside Project
The SDEIS should have considered the Southside Project as a connected action.

Response:
Section 5.3.1 of Appendix O states that the Southside project was not included, as that project was put on hold indefinitely pending the outcome of this study. The Southside project is also addressed in Section 2.3.4 of the FEIS in the description of future without project conditions. Consistent with guidance found in IWR 88-R-2, National Economic Development Procedures Manual - Urban Flood Damage, it is assumed that the Southside project is not in place for the future without-project condition. The Southside study will resume only if no federal project is recommended to address flooding in the area south of Fargo (as stated in Section 1.5.2.2 of the FEIS).

G-32 Diversion Channel Combined with Storage
If the diversion channel were designed to take advantage of the additional, natural flood attenuation provided by the flood plain, rather than closing it behind spoil levees, less new storage would be required and a smaller diversion channel could be planned. Alternatively, moving the diversion structure further north would allow storage in naturally flood prone areas of the flood plain – again reducing the requirement for new storage.

Response:
Various channel alignments were considered, and the alignment of the proposed diversion channel was selected to address flooding from the five tributaries while also minimizing overall impacts to the floodplain and the environment and at the same time minimizing costs.. The diversion alignment was located to keep flood water out of the Rose Creek watershed by capturing overland flows south of Fargo and to stay south and west of the existing Sheyenne River Diversion control structure at Horace, N.D. The diversion outlet was located downstream of the mouth of the Sheyenne River to maintain natural drainage within the benefitted area.

G-33 Controversy
The Corps did not adequately consider the controversy associated with the project**.**

Response:
Controversy related to the project is discussed in Section 5.3 of the FEIS. All members of the public, including agencies and private individuals, have been invited to comment on the project and express any and all concerns. All comments, including those related to concerns and controversy, from the public are documented in Appendix R and Appendix T. The Corps has

considered the controversy associated with the project and responses to all public comments are included in Appendix S and Appendix U of the FEIS.

G-34 North Dakota Diversion with Upstream Staging and Storage
The proposed plan presented in the SDEIS (the North Dakota diversion with upstream staging and storage) incorporates radically new features constituting it in effect an entirely new project, requiring a new NEPA alternatives analysis.

Response:
The plan proposed in the SDEIS and FEIS consists of the same basic measures that were analyzed in the DEIS: levees, diversion channels, hydraulic structures and flood storage areas. The proposed plan combines these measures to achieve the stated planning objectives and address specific impacts that emerged during the planning process. A notice of intent to prepare a Supplemental EIS was published in the *Federal Register* on December 27, 2010, and comments on the scope of that effort were accepted until January 26, 2011.

G-35 LPP is Inadequately Described
The SDEIS is deficient in that the LPP is inadequately described. No description is provided as to how the LPP would operate under flood conditions, or of the safety issues its flood water retention and staging components may pose, or of how these safety issues will be addressed in project design or operation.

Response:
The LPP and its operation are fully described in Section 3.13 of the FEIS. Safety and potential loss of life associated with a failure of the system are discussed in Section 3.10 of the FEIS and in the Levee Breach and Loss of Life Analysis Report attached to Appendix D of the FEIS.

G-36 Alternatives
Where a project's purpose and need engages a broad, regional problem, the agency has a duty under NEPA to go beyond its own jurisdictional boundaries and its own regulations in the formulation of reasonable alternatives.

Response:
The purpose and need of the project are captured in the project's primary planning objective, which is to reduce flood risk to the entire Fargo-Moorhead Metro area. Analysis of alternatives and measures was not constrained by the Corps jurisdiction. Section 8.4.3 of Appendix O of the FEIS addresses the array of all measures and combinations of measures. This section of the appendix describes how alternatives and combined alternatives are evaluated, compared and screened. Some measures from Phase 3 were re-visited and some new measures were introduced; all measures and combinations of measures were considered.

G-37 Rejection of Upstream Storage
The Corps' rejection of upstream storage alternatives is inadequate under NEPA as failing to set forth the scientific or technical foundation upon which such rejection is based. The Corps has

failed to identify (1) what flood storage opportunities exist in the Red River basin-wide, (2) what their substantial cumulative benefits are, and (3) how they are ineffective in reducing flooding.

Response:
Upstream storage was thoroughly evaluated and assessed as an alternative. The study team and non-federal sponsors gave fair and equal consideration to all alternatives, and determined that upstream storage did not effectively or efficiently address catastrophic flood risk in the Fargo-Moorhead Metro area. Section 3.4.6.2 of the FEIS discusses storage alternatives that exist in the Red River basin and describes the justification for eliminating these as stand-alone alternatives. Distributed flood storage versus upstream staging and storage is discussed in Section 3.7.5 of the FEIS. Additional information related to flood storage can be found in the report referenced in Section 1.5.1.9 of the FEIS.

G-38 Diversion-centric Thinking
The Corps has impermissibly pre-determined a diversion channel to be its primary and favored approach to meet the project's purpose and need.

Response:
The feasibility report documents that a number of alternatives were considered and steps were taken to ensure that previous screenings remained valid. A diversion channel was the only alternative that was effective and cost-effective in reducing flood risk from very large events.

G-39 Email Communication
The Corps' advancing a rationale for eliminating upstream storage in an email sent subsequent to the release of the SDEIS for public comment renders the alternatives analysis in the SDEIS inadequate.

Response:
The information contained in the emails to the Metro Flood Work Group has been included in the FEIS in Sections 3.7.5 and 3.7.6. This information is also included in Appendix Q of the FEIS.

G-40 Community Engagement
The Corps did not visit or talk to anyone in the staging area.

Response:
When it was determined that there would be upstream impacts from the selected plan, the Corps held public meetings to disclose the information to the public; this information is included in Appendix Q. Meeting were held on December 9, 2010 at Bennett Elementary School, March 30, 2011 at Kindred High School, May 3, 2011 (Wilkin and Richland County Commission Meeting), May 3, 2011 (Comstock Community Meeting), and May 24, 2011 at Kindred High School.

G-41 Updated Costs
The cost of the no action plan has not been updated to reflect extensive buyouts performed by Fargo and Moorhead since June 2010.

Response:
The economic analysis of the plan was completed in Phase 3 of this study as indicated in Appendix C, Economics. Although some buyouts that have occurred recently were not included, it would not have a significant impact on the analysis as the number of properties compared to the entire Fargo-Moorhead area is small. In addition, additional growth that has occurred in the area was also not included since the economic analysis was completed.

G-42 Oversight of Operation and Maintenance
The SDEIS does not indicate who will have oversight of Fargo to ensure appropriate operation and maintenance.

Response:
Section 3.13.5 of the FEIS indicates that the non-federal sponsors will be responsible for all operations, maintenance, repair, rehabilitation and replacement (OMRR&R) of project features. The cost share agreement between the Corps and the non-federal sponsors requires the sponsors to operate the project in accordance with the OMRR&R manual provided by the Corps. Additional information related to the operating plan can be found in Appendix B of the FEIS.

9.0 Comment Category H: Miscellaneous

H-1 Various Communities, Agencies, and Individuals Oppose the Diversion
Several comments spoke out in opposition to the proposed diversion channel, including the following communities and entities: Richland County, City of Christine, Pleasant Township, Oxbow Park District, Kindred School District, Normanna Township, City of Kindred, City of Davenport, Davenport Township, Walcott Township, Colfax Township, Richland County Township Officers Association, City of Comstock, Holy Cross Township, Wilkin County Board of Commissioners, the Bakke Homeowners Association, the National Wildlife Federation, and Red River Telephone Company.

Response:
Comment noted.

H-2 Various Communities, Agencies, and Individuals Support the Diversion
Several comments spoke out in support of the proposed diversion channel, including the following communities and entities: Cass County, North Dakota State Water Commission, City of Fargo, and City of Moorhead.

Response:
Comment noted.

H-3 Acceptance of Impacts
Some comments supported the project in spite of the impacts; one stated "If everybody keeps opposing every proposed plan, there will never be a solution. If sacrificing our home prevents other areas from being flooded, it is worth it."

Response:
Comment noted.

H-4 State Historical Society of North Dakota
The State Historical Society of North Dakota has received and reviewed the SDEIS and noted where cultural resource overviews are discussed.

Response:
Comment noted.

H-5 Acquisition of Mitigation Lands
The North Dakota Fish and Game Department prefers that mitigation for riparian forest impacts includes options such as acquisition of mitigation lands. The Department's philosophy is if public dollars are being utilized for the project then the mitigation should be available for public use. The Department would consider entering into a MOU to manage these properties if they are of adequate size and habitat quality.

Response:
Comment noted.

H-6 Funding for Environmental Mitigation
This project will have negative environmental impacts, and some of the negative impacts may not yet be known. The Corps and local sponsors must assure that funding is available for future modifications to the project or additional mitigation to offset all environmental impacts. The Corps and local sponsors must make a solid commitment prior to project construction that all impacts will be mitigated adequately.

Response:
The Adaptive Management Plan outlines the process for mitigation funding. The cost estimate includes costs for mitigating impacts identified in the FEIS. The cost estimate also includes costs for evaluating impacts prior to and following construction, as well as effectiveness of mitigation actions. This monitoring will be required as a part of the Operation and Maintenance plan for the project. Participation and organization of the Adaptive Management Team also would be required of the non-federal sponsors. Should additional impacts be identified through adaptive management, the non-federal sponsors will have several options available to implement additional mitigation. At this time, there cannot be an absolute guarantee that federal funding would be available to resolve any future mitigation issues. However, the non-federal sponsors may elect to implement mitigation on their own, or pursue financial support, including federal funding, to perform additional mitigation. Any future federal funding would be dependent on federal appropriations.

H-7 Concerns With SDEIS
An acceptable environmental study has not been done.

Response:
Comment noted. The Corps considers the FEIS to be an acceptable environmental study.

H-8 North Dakota State
The State of North Dakota is committed to providing funding to cover one half of the non-federal, non-Minnesota share of the project's cost. The state serves in a support role for this effort. The project scope and footprint will be determined by the Corps and local governing entities.

Response:
Comment noted.

H-9 Local and Regional Flood Risk Management
Local and regional flood risk reduction efforts should be fully integrated into the flood diversion channel project, including local and regional efforts to control development in flood prone areas.

Response:
Comment noted; local and regional efforts are described in Appendix P.

H-14 Alternative Compatibility
The SDEIS should have described the compatibility of the alternatives with the decision making process outlined in the Flood Damage Reduction Mediation Agreement and associated TSAC papers.

Response:
The planning process and alternatives considered are fully described in Chapter 3 of the FEIS and in Appendix O. The planning process used throughout the Fargo-Moorhead Metro feasibility study is prescribed by the Corps of Engineers' Planning Guidance Notebook (Engineer Regulation 1105-2-100). The Corps' planning process is compatible with the process laid out in the 1998 Flood Damage Reduction Mediation Agreement, which primarily addressed planning efforts by Minnesota watershed districts in the Red River Basin. Both processes are designed to ensure that all stakeholders can participate in scoping and conducting the study and reviewing and commenting on the study findings prior to making final decisions. The Fargo-Moorhead study team actively coordinated with federal and state agencies, local water resource jurisdictions, the non-federal sponsors and the general public throughout the study. The Fargo-Moorhead study considered a wide range of alternatives, including those described in the Red River Flood Damage Reduction Work Group's Technical and Scientific Advisory Committee (TSAC) technical papers.

H-15 Request for Materials
One comment asked that all the notes and materials from the public meetings be published for the public to read.

Response:
Comment noted. The information presented at all public meetings is included in Appendix Q of the FEIS.

H-16 Past Mistakes
Mismanagement of land and water resources creates problems and can result in catastrophe. Katrina was a disaster because of Corps of Engineers. Don't make the same mistakes in Fargo that were made in Louisiana, the Mississippi Delta and along the Missouri River. Flooding along the Mississippi and Missouri Rivers was caused by the Corps' failed flood control practices. Look at what happened when the Corps drained the Everglades in Florida, it never works out well to mess with nature. The Corps needs to learn from its past mistakes.

Response:
The concerns expressed in this comment are valid and have been noted. The Corps of Engineers has made an explicit commitment to be a learning organization and identifies continuous learning as a key organizational competence.

H-17 Legacy
This project will impact future generations, and could make the world a better place for the future by protecting the environment. The Corps needs to come up with a less damaging and less costly solution, it's not too late to do the right thing and be a steward of natural resources.

Response:
The project purpose, as stated in Section 2.5 of the FEIS is "to reduce flood risk, flood damages and flood protection costs related to the flooding in the Fargo-Moorhead Metropolitan Area." The selected plan would have significant beneficial impact to current residents and future generations in the Metro Area. Public health and safety will be improved by reducing the risk of loss of life and property damage due to flooding. Community stability will be enhanced in the Metro Area. The project would impact future generations, and for the Fargo-Moorhead Metro Area many of those impacts would be positive. Environmental impacts related to the project will be mitigated as described in Chapter 5 and Attachment 6 of the FEIS.

H-18 Extinction
We are living in unprecedented times in terms of climate change and the rate of species facing extinction. Each project and the alternatives that are weighed are key for the survival of numerous species.

Response:
An environmental analysis was conducted and a discussion of those impacts is presented in Chapter 5 of the FEIS. Additionally, a Clean Water Act Section 404(b)(1) evaluation has been prepared and is included with the main report. Two federally-listed endangered species are listed for Cass County; however, the U.S. Fish and Wildlife Service's records do not indicate any individuals of any of these species within the study area.

H-18 Sustainability
A flood management plan must be efficient with money, mindful of wildlife, and use the natural systems that have been sustainable for centuries.

Response:
Seven Environmental Operating Principles were followed during the entire planning process. The first principle relates to sustainability and the selected plan strives to achieve environmental sustainability by incorporating features to facilitate fish passage, minimize impacts to geomorphology, and minimize any other environmental impacts caused by the project. See Section 9.2 of Appendix O of the FEIS for further discussion of the Environmental Operating Principles.

H-19 Isolated Wetlands
The Corps should reassert Clean Water Act Section 404 jurisdiction over isolated wetlands.

Response:
The Supreme Court has ruled that the Corps does not have jurisdiction over isolated wetlands.

H-20 Contractors
The low bidder will get the contract and will cut corners to increase profit.

Response:
The contracting mechanisms for this project have not been determined. Any contractor will be required to comply with the plans and specifications and will be held to strict quality control standards.

H-21 Ecosystem Services
We must move away from rigid, human designed channel structures with their tendency over time to increase serious problems, and refer more to the ecological models seen in nature which perform services that build and maintain the environment. Stop trying to "build your way out of the problem." Stop trying to change nature.

Response:
The study team fully and equally considered a range of alternative, both structural and nonstructural. The study team has found that structural alternatives, such as diversion channels, are more efficient (provide more benefits at less cost) and more effective (reduce flood risk to a greater degree) than non-structural alternatives such as water storage and wetland restoration. While giving full and equal consideration to a range of alternatives, the study team has recommended that the selected plan be carried forward due to its efficiency and effectiveness.

H-22 Interdependence
When making plans it is important to consider other species besides ourselves. Always put the health of our land, water, air, and wildlife first. This, in turn, protects the good health of us all.

Response:
Seven Environmental Operating Principles were followed during the entire planning process. The second principle relates to the interdependence of life and the physical environment. The feasibility study team coordinated extensively with the appropriate environmental agencies in order to proactively consider environmental consequences so that appropriate measures could be included in the project design and as mitigation where necessary. See Section 9.2 of Appendix O of the FEIS for further discussion of the Environmental Operating Principles.