APPENDIX 5

Devils Lake, North Dakota

Final
Integrated Planning Report
and
Environmental Impact Statement

Summary and Comments and Corps Responses

APPENDIX 5

DEVILS LAKE, NORTH DAKOTA

FINAL INTEGRATED PLANNING REPORT AND EIS

Responses to Comments

The comments received on the Draft Integrated Planning Report and Environmental Impact Statement are provided in Appendix 4. Approximately 300 pages of comments from 43 commenters were received. To best manage the responses to these comments, the Corps has tried to capture the intent of the various comments by subject matter and then provide a single response when this summarized comment was similar to other commenters. The comments have been separated into these categories:

A – Comments on the evaluation process
B – Questions and comments on study inadequacies
C – Page specific comments
D – Comments on conclusions

For each of the summarized comments, the commenter is identified in parentheses, according to the following legend:

EPA – Environmental Protection Agency
DOI – Department of the Interior (key contributors include the Bureau of Indian Affairs, U.S. Fish and Wildlife Service, and Bureau of Reclamation)
CA – Canada (includes comments from Environment Canada, Fisheries and Oceans Canada, and Manitoba Conservation)
ND – State of North Dakota (includes comments from the State Water Commission, Department of Health, and Game and Fish Department)
MN – State of Minnesota (includes comments from the Department of Natural Resources, Pollution Control Agency, and Department of Health)
MO – State of Missouri (comments from the Department of Natural Resources)
NWF – National Wildlife Federation
SC – Sierra Club (comments from Dacotah Chapter and Clean Water Campaign-Columbia, MO)
AS – Audubon Society
PSS – People to Save the Sheyenne
SLA – Spirit Lake Alliance
MCEA – Minnesota Center for Environmental Advocacy
PCOA – Peterson Coulee Outlet Association
PVWC – Pembina Valley Water Cooperative
PC – Private Citizens/Individuals

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Comments on the Study and Evaluation Process

A-1: Clean Water Act, Section 404(b)(1) Guidelines Evaluation

The 404(b)(1) evaluation is too narrow in scope and should consider the effects associated with the operation of an outlet in determining compliance of the proposed action with the Section 404(b)(1) Guidelines. EPA feels that the effects associated with outlet operation are secondary impacts that should be fully discussed in the evaluation and considered in determining compliance. (EPA, DOI)

Response:

The Corps believes that environmental effects associated with outlet operation should be and are fully discussed in the EIS. A proper interpretation of 40 C.F.R. 230.11(h)(1) is that the Section 404(b)(1) Guidelines do not require operational impacts of the outlet plan to be considered as part of the 404(b)(1) analysis itself. 40 C.F.R. 230.11(h)(1) provides, in part, that "Information about secondary effects on aquatic ecosystems *shall be considered prior to the time final section 404 action is taken by the permitting authorities***".** (emphasis added) The EIS considers operational impacts, and this consideration is prior to the time final section 404 action will be taken. 40 C.F.R. 230.11(h) contains the only references to evaluation of secondary impacts in the guidelines and it imposes no requirement to evaluate those effects as part of the 404(b)(1) analysis, but specifically provides that such analysis may be done (at any time) "prior to the time final section 404 action is taken". Therefore, the EIS, as written, is fully compliant with the requirement to consider secondary effects on aquatic ecosystems of the outlet discharge. The Corps and Army decision-makers for the outlet proposal will fully consider the information on secondary environmental effects of outlet operation before taking action under CWA Section 404 to authorize any discharges of dredged or fill material associated with proposed construction of the outlet.

Nevertheless, the Corps' evaluation of operational impacts of an outlet (see Chapter 6) leads to the conclusion that, even when those operational impacts are included within the 404(b)(1) analysis itself, the outlet project, and all proposed discharges of dredged or fill material associated with its construction, will comply with the 404(b)(1) guidelines. The issue of compliance with water quality standards promulgated by the State of North Dakota is a matter that properly lies with the State of North Dakota. The State of North Dakota, while not having made a final permit decision, has suggested that the project (including operation) will meet applicable State water quality standards. If the State of Minnesota were to raise objections regarding possible effects of the outlet's operation on downstream water quality in Minnesota, that matter would likely be addressed by the EPA and the affected States pursuant to the provisions of CWA Section 401(a)(2) and corresponding regulations. With respect to impacts due to water quantity to be discharged by the outlet during its operation, mitigation proposed in the EIS (see Chapters 5 and 6) will alleviate any adverse impacts.

This concern was added to Chapter 1 as an unresolved issue.

A-2: Clean Water Act, Section 401/402 Permitting, Tribal Jurisdiction

The applicability of Section 402 to water transfers is questioned, and early discussions with appropriate agencies regarding the Clean Water Act is encouraged. Has the consensus policy, which requires Spirit Lake Nation consent to any extension of State jurisdiction over environmental planning projects within the defined treaty boundaries, been protected in the interest of the Tribe by the Federal Government? (EPA, SLA)

Response:

Compliance with the Clean Water Act is being pursued to facilitate review of the project in case construction of an outlet is initiated. The Corps has applied to the North Dakota Department of Health for Section 401 water quality certification in accordance with the Clean Water Act. The permit process is still ongoing. However, the Department of Health has indicated that they will provide Section 401 water quality certification for the construction of the outlet with the condition that the operation plan meet downstream water quality concerns (3 July telephone conversation and 12 July 2002 letter from the ND Department of Health). The Department also indicated that, based on the model results, the outlet would not violate any North Dakota numerical water quality standards (North Dakota does not have a TDS standard for the Sheyenne or Red Rivers). The EPA has indicated that North Dakota would coordinate with the State of Minnesota and expects that no permit would be issued if it would cause a violation of North Dakota or Minnesota water quality standards (19 July 2002 letter from EPA). North Dakota is required to coordinate with downstream interests if interstate waters are affected. The antidegradation portion of the standards requires a hearing prior to issuing a permit. Coordination with downstream interests will be conducted by the North Dakota Department of Health.

The North Dakota State Water Commission (NDSWC) has indicated that it would be the local sponsor for any outlet plan from Devils Lake to the Sheyenne River. As the local sponsor, the NDSWC would be responsible for compliance with Section 402 of the Clean Water Act and for obtaining a National Pollutant Discharge Elimination System (NPDES) permit. The local sponsor has applied for a Section 402 (NPDES) permit. The Department of Health is currently processing the permit.

Some controversy is associated with the location of the western boundary of the Spirit Lake Indian Reservation. The Bureau of Indian Affairs and the Spirit Lake Tribe feel the Reservation includes the lakebed, the Peterson Coulee area, and the upper Sheyenne River where Peterson Coulee enters the Sheyenne River. They contend that the south boundary goes to the south bank of the Sheyenne River. The State of North Dakota has made a legal determination that the west boundary does not include the entire Peterson Coulee alignment. Regarding Clean Water Act Section 404 activities, the North Dakota Department of Health has jurisdiction over all non-tribal lands, and the Environmental Protection Agency (EPA) has review authority on tribal lands. Depending on which boundary is accepted, some project features may pass though the reservation. The present design does not include any features on tribal trust or allotment lands, except flowage easements. Funds for this purpose have been included in the project cost estimate. EPA has indicated that the State of North Dakota has Clean Water Act authority for the Pelican Lake outlet plan.

A-3: Appropriateness of Tiering

The Corps' use of tiering to identify and quantify mitigation needs is inappropriate. EPA believes that reasonably foreseeable water quality and other impacts of the outlet alternatives are essential to a reasoned choice among alternatives and must be included in the EIS. Some commenters felt that deferring analyses and decisions (post-project monitoring) until after the Final EIS does not comply with NEPA. (EPA, NWF, MCEA, MN, one PC).

Response:

The Corps agrees with the general concepts put forth by the EPA. However, the key is in determining what are "reasonably foreseeable" impacts. While the potential changes in water quality on the Sheyenne and Red Rivers have been partially modeled, only limited baseline and modeling efforts have been possible for many resource categories. Because of the high degree of uncertainty associated with the specific occurrence/timing/magnitude of potential impacts, it would be unreasonable to assume that the specific effects of an outlet can be quantified at this time. A mitigation plan (including structural features and monitoring) that alleviates the effects of an outlet and allows for the recovery of the system after operation ceases is recommended. The monitoring plan includes an adaptive approach based on developing management indicators as recommended by the EPA to evaluate the effectiveness of the mitigation features and to pursue modifications as needed. An interagency organization would be established to make the detailed operation and mitigation decisions required. Compliance with the Clean Water Act, as it relates to the effects associated with outlet operation, would be required and would require the approval of variances. Coordination may be required to resolve issues related to compliance with the Boundary Waters Treaty and any remaining concerns associated with the risk of biota transfer, assuming outlet operation with a sand filtration system. Should construction of an outlet be initiated, additional National Environmental Policy Act (NEPA) documentation may be required to address any future changes in project design, operation, or mitigation.

Tiering is appropriate under the circumstances. Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.28 allow for tiering when the sequence of statements or analysis is "From an environmental impact statement on a specific action at an early stage…to a subsequent statement or analysis at a later stage (such as a more detailed operating plan and detailed design of the Dry Lake feature)." The current EIS identifies the potential environmental risks and costs associated with the proposed alternatives for the public and decision-makers, fully discloses issues of concern and data deficiencies, and outlines what needs to be done prior to and during operation to ensure that potential impacts are alleviated. It is the Corps' determination that tiering is appropriate and allows for a timely decision as to whether or not the construction of an outlet should proceed.

This concern was added to Chapter 1 as an unresolved issue.

A-4: Fully Developed Operating Plan and Mitigation Plan Needed Prior to Any Decision

Particular concerns over the lack of information regarding specific water quality impacts and appropriate mitigation measures, the incomplete development and/or analysis of potential alternatives that do not include an outlet, and postponing identification and evaluation of all environmental impacts until after an outlet is actually constructed and operating is contrary to the intent of NEPA. An outlet operating plan needs to be developed prior to any decision on proceeding that will assure attainment of all downstream standards. The recommended Long-term Monitoring is not a mitigation plan, but rather a plan to determine whether mitigation is possible. Unless there is a proposal to minimize the potential adverse impacts, the project would not comply with the CEQ Guidelines of 40 CFR 230.10(d). Deferring important analyses and decisions until after the Final EIS is issued does not comply with NEPA and its regulations. What assurances are there that the monitoring will be funded and undertaken and that any mitigation features would be implemented? (EPA, CA, ND, MN, NWF, AS, DOI)

Response:

Alternatives other than an outlet are identified and carried into the final analysis. These include future without project conditions (continuation of infrastructure protection measures), expanded infrastructure protection, and upper basin storage. The mitigation proposal has been revised. Features to alleviate effects to aquatic resources have been added. These include erosion protection, by-pass channels for aquatic mitigation, identification of land acquisition sites for impacts to riparian lands, plantings, fencing, and monitoring. A sand filter has been added to address the potential for biota transfer. The potential impacts of the operation of an outlet and mitigation needs are identified and included in the total project cost. Long-term monitoring is also recommended to evaluate the effectiveness of mitigation features and identify any additional effects due to the uncertainty regarding timing, location, and occurrence of potential impacts.

The general framework for an operating plan is included in the report and analyzed. A specific operating plan will be developed when any restrictions on permits are identified, coordination with Canada is completed, and compliance with the Boundary Waters Treaty is determined. In addition, operation would probably change over time as downstream and in-lake effects are identified. As a disclosure document, the Report/EIS presents the effects of the operation of an outlet. The outlet is designed to minimize downstream effects by meeting constraints for channel capacity and water quality. The resulting effectiveness and effects of the outlet are based on these constraints.

40 CFR 230.10 guidelines applies to Section 404(b)(1), restrictions on discharge and is addressed in Appendix 1 of the Report. A mitigation proposal is identified in the Report and includes over $30 million in cultural and natural resource mitigation. Long-term monitoring is proposed to evaluate the effectiveness of the mitigation measures and help identify if modifications to the mitigation measures are needed. Should construction of an outlet be initiated, additional National Environmental Policy Act (NEPA) documentation may be required to address any future changes in project design, operation, or mitigation. The information presented in the Report is adequate to make decisions regarding an outlet, and is, therefore, in compliance with NEPA. See responses

to comments A-1 on Clean Water Act 404(b)(1) Guidelines, comment A-2 on 401/402 Permitting, and comment A-3 on Appropriateness of Tiering.

Costs for the implementation of the mitigation features and for the first 14 years of monitoring (4 years of baseline collection and 10 years of operation) are included in the total project cost. Operation and management cost and any further monitoring and mitigation for years 15 through 50 would be the responsibility of the local sponsor. An interagency organization would be established to make the detailed operation and mitigation decisions required. No costs are included for agency participation in the long-term monitoring, interpretation of the long-term monitoring results, or implementation of any additional mitigation features that may be identified through the long-term monitoring. Therefore, the cost of operating the project could change.

A-5: EU3 Rating and Need for a Revised Draft EIS

EPA has rated the Preliminarily Selected Outlet Plan alternative as "environmentally unsatisfactory" (EU) on the basis of the significant long-term, adverse environmental impacts from the construction of the proposed outlet and its subsequent operations. Also, based on significant concerns over the adequacy of the DEIS, the document has been rated as "inadequate" (3). Because of the inadequate analysis provided by the DEIS, the Report should be revised and made available as a Revised DEIS. The DEIS is procedurally faulty, conceptually flawed, technically deficient and legally defective. The inadequacies are so fundamental and the deficiencies are so pervasive that the Corps has no recourse under the law except to withdraw the DEIS and begin the NEPA process anew. (EPA, NWF)

Response:

The Corps conducted additional studies in response to comments received on the draft IPR/EIS related to water quality, biota transfer, infrastructure protection, upper basin storage, mitigation, real estate, social analysis, and economics. The results of these studies are described in the final IPR/EIS. The acquisition of additional information did not change the results. Pursuant to 40 CFR Section 1503.4(a), the Corps has appropriately enhanced and improved the analysis that was in the DEIS. Consistent with 40 CFR Section 1502.9(a), the DEIS contained sufficient information to conduct a meaningful analysis. The additional analysis, particularly that information relating to mitigation, is sufficient for purposes of making adequate reasoned decisions. See "Forty Most Asked Questions Concerning CEQ's NEPA Regulations", 46 Federal Register 18026, No. 29b (1981). Therefore, a revised Draft Report will not be issued. See responses to comment A-3 on Appropriateness of Tiering, comment A-4 on Operating Plan and Mitigation, comment B-6 on Downstream Mitigation Costs, comment D-7 on Sheyenne River Impacts, and comment B-2 on Biota Transfer.

A-6: Purpose and Need Statement

The COE expanded its Purpose and Need Statement in response to the urging of the North Dakota Congressional Delegation, and this strongly biases the analysis toward selection of an outlet. (MN, NWF)

Response:
In December 2000, a Revised Notice of Intent was issued, which expanded the purpose and need for the study. The Corps determined that the Purpose and Need was too limited and that downstream effects that could occur due to a natural overflow needed to be addressed. An outlet is one of the few alternatives that have the potential to address this need. Upper basin storage addresses it to some degree. The identification of a need in the Purpose and Need statement does not mean that an alternative has to be selected that addresses that need if it is not possible to identify an acceptable solution. The conclusion may be that it is not possible to address that specific need. Therefore, it does not necessarily bias the analysis toward selection of an outlet. It is up to the decision-makers to determine which alternative is in the best overall public interest after weighing the options and associated effects.

A-7: Scoping Process
The DEIS is based on a flawed scoping process that discouraged and frustrated public participation (NWF). The Report fails to address issues identified during the scoping process (MCEA). Specifically, MCEA felt that the Report did not adequately address drainage or issues with respect to the Boundary Waters Treaty.
Response:
The scoping process followed CEQ and Corps guidance on public involvement and scoping. The Corps chose to hold public meetings, request written comments, publish scoping documents and newsletters, establish an ftp site for the review of scopes of work and draft reports, and establish a technical work group consisting of State and Federal agencies to help identify issues and needed studies. The Corps also issued a contract for a tribal liaison to facilitate coordination with the Spirit Lake Tribe. Many comments were received after the scoping meetings and were included in the published scoping documents. The scoping process was not flawed and was conducted in compliance with regulations.

Coordination with respect to the Boundary Waters Treaty is being handled by the State Department. Section 207 of Public Law 107-206 authorized the Corps to provide funds to the United States Section of the IJC for the purpose of conducting investigations, undertaking studies and preparing reports in connection with a Reference to the IJC under Article IX of the BWT for an emergency outlet for Devils Lake, North Dakota. Pursuant to that authority the Corps transferred funds in the amount of $500,000 to the International Joint Commission's U.S. Section in September 2002.

A-8: Least Environmentally Damaging Practicable Alternative
Determination of the Least Environmentally Damaging Practicable Alternative needs to be further addressed. (EPA)
Response:
The least environmentally damaging plan is identified in Chapter 6 of the Report.

A-9: State's Proposed Temporary Outlet

Given North Dakota's commitment to proceed with its outlet, the construction and operation of a State outlet should be considered a reasonably foreseeable action and evaluated in the DEIS. (EPA, MO, CA, NWF)

Response:

There is controversy over including the North Dakota temporary outlet in the future without-project conditions. North Dakota has pursued design and construction of a temporary outlet because it feels that construction of a permanent outlet will, at best, occur years into the future and something needs to be implemented soon. North Dakota completed much of the design for an outlet along the Peterson Coulee route, has also initiated construction of an access road and site preparation at the pump station area, and has approved funding for the Peterson Coulee channel portion of the outlet. There is a high probability for delay or suspension of the plan due to possible litigation and permitting issues. Therefore, the Corps is not including this outlet in the future without-project conditions analysis. However, to address concerns associated with the uncertainty of the implementation of a temporary outlet, a sensitivity analysis was completed that assumes the temporary outlet is constructed and operated. The analysis included a discussion of the potential effect of the temporary outlet on lake levels, and how it would affect the economic feasibility of the Pelican Lake outlet alternative.

The analysis provides ample information for the decision makers to assess the effect of the proposed temporary outlet. See Chapter 5 of the Report for a discussion of this sensitivity analysis.

A-10: Missouri River Inlet

The Corps should evaluate the cumulative impacts from a proposed Missouri River inlet to Devils Lake. There is a need to assess impacts of foreseeable future projects, including impacts that cannot be mitigated. This needs to include visions for stabilizing water levels in Devils Lake (i.e., an inlet, water supply systems, etc.). (EPA, CA, MO, NWF, MCEA, PCOA, PSS, Private Citizen)

Response:

An inlet to stabilize Devils Lake is not viewed as a reasonably foreseeable project feature. Public Law 105-62 specifically addresses an inlet and reads "Provided further that no funds made available under this Act or any other Act for any fiscal year may be used by the Secretary of the Army to carry out the portion of the feasibility study of the Devils Lake Basin, ND, authorized under the Energy and Water Development Appropriations Act, 1993 (P.L. 102-377), that addresses the needs of the area for stabilized lake levels through inlet controls, or to otherwise study any facility or carry out any activity that would transfer water from the Missouri River Basin into Devils Lake." The cumulative effects of reasonably foreseeable actions, such as water supply and other flood damage reduction measures, are addressed in the cumulative effects discussion.

In a letter dated 19 July 2002, the EPA indicated that they would defer to the Corps on whether the inlet should be evaluated as a reasonably foreseeable action.

A-11: Report to Congress

We have questions about the procedures and decisions that are under way or pending on this project. We recommend that the COE provide a procedure whereby Minnesota State agencies can comment on the report to Congress prior to its transmittal. (MN)

Response:

The Final Integrated Planning Report and Environmental Impact Statement is intended to serve as the report to Congress. There is a 30-day comment period following public release of this document.

A-12: Comment Period Too Short

The comment period should have been longer due to the complexity and length of the document. (PCOA)

Response:

The 45-day comment period is the minimum required by CEQ guidelines. A number of agencies requested extension of the comment period. A notice extending the comment period for an additional 15 days was sent to the entire mailing list.

Study and Evaluation Inadequacies

B-1: Impacts on Water Quality

There are long-term and significant exceedances of North Dakota and Minnesota water quality standards for TDS and sulfate, and the report does not provide any information about the potential for exceedances of standards for chlorides, salinity, specific conductance, sodium, and narrative standards for aquatic life. The Preliminarily Selected Plan (300-cfs Pelican Lake outlet) forecasts a violation of Minnesota water quality standards and the Clean Water Act. The water quality model may underestimate peak concentrations by as much as 40 percent and major WQ issues, such as mercury, phosphorus, and nitrogen, have not been assessed in sufficient detail. The Corps should develop an operating plan that will assure attainment of all downstream standards. (EPA, DOI, MN, CA, PSS).

Response:

Several revisions have been included in the EIS addressing exceedences of North Dakota and Minnesota water quality standards including the addition of summary tables presenting comprehensive lists of standards and objectives and potential effects. Sections on sodium, chlorides, hardness, and mercury have also been added. The sections on sodium and chloride present modeled estimates of downstream concentrations showing that the North Dakota Antidegradation Review process would be triggered, but that State standards would not be exceeded. The section on hardness presents modeled estimates showing that Minnesota's standard for hardness on the Red River of the North would be exceeded most of the time in the base condition and that outlet operations would add to the magnitude of those exceedences. There are no North Dakota standards for hardness, but expected increased concentrations would be high enough to trigger the Antidegradation Review process. State water quality standards and international objectives for salinity or specific conductance are not applicable to the Sheyenne River or Red River of the North.

The Corps concurs that the water quality model cannot estimate short-term peak concentrations. As explained in Appendix A (p. A-68), the model was calibrated so as to reproduce TDS values as closely as possible to the historic median values. Concentration extremes in the historic record were largely caused by unmeasured and transient local loading conditions. Most of the tributary and diffusive source loadings in the HEC-5Q model are represented by monthly mean values, which effectively attenuate the peaks. The analysis of effects was based on comparing the *modeled* base condition with the *modeled* operational condition, both of which use the same local loading assumptions. It would be incorrect to conclude from this, however, that the magnitude of the concentration peaks in the operational scenarios was understated. The local sources that contribute to high peaks include tributaries such as the Bois de Sioux, the Tongue, and the Forest Rivers, and ungaged sources with waters higher in salinity than Pelican Lake or West Bay Devils Lake. The presence of outlet water would more likely reduce extreme peaks by dilution rather than add to them. However, an outlet does extend the duration and frequency of exceedences and does increase concentrations.

Mercury effects were not discussed in the DEIS because the results of a field study were not available in time. The Final Report/EIS includes a discussion of the mercury issues based on a draft U.S. Geological Survey (USGS) reconnaissance report. The study describes the occurrence of toxic methylmercury and other forms of mercury in an upper basin wetland, within the Devils Lake chain of lakes, along the Sheyenne River including Lake Ashtabula, and along the Red River of the North. The data indicate that Lake Ashtabula captures and retains in its sediment most of the mercury loading from upstream sources. Under outlet operating conditions, these sources would include Devils Lake. The data do not support conclusions regarding bioaccumulation of toxic mercury in fish as it may relate to Devils Lake outlet operations.

The analysis of phosphorus and nitrogen effects presented in the DEIS provides information on expected concentration and loading changes in the downstream reaches represented by the HEC-5Q model. It is the type of information that is minimally required to begin the Section 402 permitting process. In implementing that process, and considering that the expected nutrient increases would exceed the antidegradation significance thresholds, the State of North Dakota Department of Health would decide whether additional site-specific or reach-specific analysis might be needed.

Discussions with Canada resulted in a mutual agreement that a bathtub type model would not provide any additional information and would not be worth conducting. The sand filter feature would help address some issues associated with nutrients by minimizing the downstream transport of biota and other organic matter from Devils Lake.

Without treatment of the discharge water, it is not possible to design an effective outlet that will assure attainment of all downstream water quality standards. We have analyzed the cost of treatment and have determined the treatment is not practicable due to the excessive associated costs.

B-2: Biota Transfer/Invasive Species Evaluation and Compliance with EO 13112
The Draft Report does not provide sufficient information on the risks of downstream biota transfer and does not describe how an outlet would be consistent with Executive Order 13112. In addition, the potential effects associated with a Missouri River inlet need to be considered in the evaluation. (EPA, CA, NWF, MN, MO, PSS, PCOA, SC, one PC)

Response:

A literature search and assessment of the potential for biota transfer have been conducted. The results of that assessment are presented in the Report, along with supporting documentation. The conclusion, based on literature review, is that there appears to be limited potential for an outlet to transfer new biota to downstream habitats. The species found in Devils Lake generally have widespread distribution, have little chance of transfer, or have numerous means of transfer available to them. Because of the changing habitats in Devils Lake it is possible that additional species could become established. One of the conclusions of the biota study was the lack of information or comparable information between Devils Lake and downstream habitats needed to be addressed. The Corps conducted a study to help determine if fish in Devils Lake or the Red River basin contained any viruses or pathogens of concern. The study revealed the presence of the bacterial agent that causes bacterial kidney disease in fish in both systems, although none of the fish had any external or internal clinical signs indicative of the disease. No viral or parasitic pathogens were found in the sampled fish.

The EIS has been revised to include a discussion regarding compliance with Executive Order 13112 on Invasive Species. Based on available information, Devils Lake does not contain any Minnesota or North Dakota listed exotic species. Based on additional analyses performed in response to the draft IPR/EIS, features have been added to an outlet plan to address biota transfer/invasive species. These features include a sand filter, a long-term monitoring plan, and a rapid response protocol. Long-term monitoring includes surveys for biota. Therefore, if long-term monitoring identifies that operation results in the spread or introduction of invasive species, a procedure to deal with that occurrence would be implemented. Therefore, the study is considered to be in compliance with the Executive Order.

See response A-10 relaed to a Missouri River Inlet.

B-3: Environmental Justice Analysis
The Draft Report lacked an in-depth Environmental Justice analysis, such as the need for additional discussion and analysis of disproportionate impacts to low-income populations, health and risk factors, significance of subsistence hunting and fishing by Tribal members, and the Federal Government's trust responsibilities. The Report fails to identify environmental injustices to the Spirit Lake Nation. There is limited discussion on the disproportionate impacts of an outlet on sovereign interests. Environmental justice incorporates the disproportionate impact analysis on communities of color subjected to State or Federal political decisions. Throughout the EIS report, the environmental injustice of potential outlet projects affecting Tribal homelands and the quality of life for

some reason is narrow in scope in that it unintentionally omits many cultural factors and conflates the variety of overlapping influences that produce them. (EPA, SLA)

Response:

Further studies have been conducted on environmental justice. The results are included in the Chapter 6 of the Main Report.

B-4: Natural Overflow Impacts are Understated

The Draft Report generally downplays the risk of an overflow and/or erosion of a natural outlet. (ND)

Response:

The effects of a natural overflow would be more short-term and drastic due to the magnitude of the event. The outlet operation would be of longer duration and the effects are more long-term and subtle, especially as related to some of the terrestrial and aquatic resources. The maximum overflow rate could vary from an estimated 550 cfs to 6,000 cfs for the wet future scenario, depending on the extent of erosion at the overflow area. As a point of comparison, the peak discharge on the Sheyenne River at Valley City occurred in April 1996, with a flow rate of 5,250 cfs. Assuming the greater extent of erosion, it is estimated that approximately 940,000 yd^3 of material could be carried into the Sheyenne River, causing significant changes to the channel. The impacts from erosion, siltation, and flooding are much greater when a full extent of erosion is assumed for the overflow event. It is assumed for the most likely future without-project conditions that measures would be taken at the location of the natural overflow to minimize erosion. Therefore, analysis in the IPR/EIS focuses primarily on this assumption.

B-5: Upper Basin Storage Benefits are Overstated

The Draft Report overstates the benefits of the upper basin storage while downplaying the benefits of the outlet. (ND)

Response:

The same evaluation criteria are applied to each alternative in an objective manner. Each alternative is evaluated by its ability to prevent flooding damage either by reducing future lake levels (as with an outlet or Upper Basin Storage) or by providing protection against floodwaters (as with Expanded Infrastructure Protection).

Local economic and social impacts are also considered as part of the alternatives evaluation process. The potential indirect losses to the local economy are identified as a possible adverse effect of Upper Basin Storage, but effects on employment and regional growth are not expected to be significant.

B-6: Downstream Mitigation Costs are Understated

The estimated mitigation costs in the Draft Report significantly underestimate the downstream costs and needed mitigation. Some commenters identified that the cost estimates do not fully consider impacts to Lake Ashtabula. (EPA, CA, ND, MN, MO, NWF, SC, AS, PSS)

Response:
Additional analysis was conducted related to mitigation and monitoring. Mitigation features were added to the proposed plan and monitoring has been further defined. Costs for the features have been included in the total project cost. Monitoring costs performing inventories, establishing baselines, and the first 10 years of operation are also included as a project cost.

Operation and maintenance costs (monitoring and any identified mitigation) past year 14 are the responsibility of the local sponsor. It is possible that monitoring and evaluation could identify that total restoration of the system is needed and desirable after the outlet ceases operation. This cost is not included in the analysis and could be millions of dollars. An interagency task force would have to be established to develop, manage, and coordinate the long-term monitoring and future mitigation program. No costs are included for agency participation in the long-term monitoring, interpretation of the long-term monitoring studies, or implementation of any potential mitigation features identified through the long-term monitoring.

Potential impacts to aquatic resources in Lake Ashtabula are identified and a revised description provided in Chapter 6. Limited impacts to Lake Ashtabula are anticipated; therefore, specific mitigation features and costs were not identified. Mitigation features and costs have been revised and are discussed in Chapter 5 of the Report.

B-7: Project Costs
Under the "wet future scenario" even with the outlet, an additional $300-$400 million would still have to be invested in infrastructure protection measures, bringing the total cost of this alternative to $425-$525 million. (NWF)
Response:
When formulating the project alternatives, the Most Likely Future Without Project, or assumed base condition, was the continuation of emergency measures. It is recognized that if wet future conditions prevail, the lake will likely continue to rise, with or without an outlet. The extent of rise would be reduced with an outlet, but not prevented. Therefore, emergency infrastructure flood protection measures would continue to be required, but to a lesser extent with an outlet.

B-8: Further Evaluate Natural Outlet Protection
The Corps should fully evaluate an alternative to raise and otherwise protect the natural outlet. (EPA)
Response:
The general purpose of the economic analysis is to equitably evaluate and screen alternatives recognizing both the existence of data gaps and the constraints of time and budget. The alternative to raise and protect the natural outlet was compared on equal footing with the other alternatives. This is discussed in Chapter 5 of the Report.

B-9: Further Analysis of Impacts in Canada

All potential impacts on Canada's and Manitoba's environment and natural resources must be fully analyzed (per CEQ guidance of 1997). (CA, PVWC)

Response:

An analysis of trans-boundary effects was based on the effects observed at the border. This determination was extended into Canada. A sand filter is included as a project feature to address biota transfer. One area that has the potential for impacts in Canada and Lake Winnipeg is nutrient loading. The sand filter would also help reduce the potential for nutrient loading by removing particulate nitrogen and phosphorus. Any additional loading may be contrary to any efforts in Canada to reduce nutrients entering Lake Winnipeg. In discussions with Canada there was mutual agreement that a bathtub model would provide little additional information and not worth conducting. In comment letters submitted by Manitoba Conservation, Environment Canada Transboundary Water Unit, and the EPA, they state that the operation of the proposed outlet is not in compliance with the Boundary Waters Treaty. However, a final determination on compliance with the Boundary Waters Treaty has not yet been made; this decision will be finalized through coordination between the State Department and Canada.

B-10: Lowhead Dams on Upper Sheyenne River

Lowhead dams on the upper Sheyenne River are not addressed within the document. A survey of current dams is also suggested, since some are in need of repair and may affect the efficiency of water conveyance, fish passage, and safety concerns (ND).

Response:

The North Dakota State Water Commission maintains a list of all low-head dams on the Sheyenne River. Plans for all low-head dams on the Sheyenne River were obtained from NDSWC and surveys by the Corps of Engineers in 1940. NDSWC, USGS, local governments and their engineers, were consulted to determine which dams were still in place and to verify elevations. Some of the low-head dams had already washed out and one had been bypassed by river meandering. All of the low-head dams are now included in the hydraulic model. The selected outlet would have maximum flows on the Sheyenne River of 600 cfs at Peterson Coulee. At 600 cfs the low-head dams are inundated and should not hinder fish passage.

There are 14 low-head, weir type dams on the Sheyenne River between the insertion point of the outlet and the Red River. The low-head dams should not pose a dam safety threat in the sense of dam failure, sending a surge of water downstream, but at times they may be dangerous for persons or livestock with respect to drowning. The drowning hazard caused by the "roller effect" on the downstream side of most of the low-head dams is already a problem during higher flows and would likely be worse due to the outlet because of the longer duration of higher flows. To mitigate safety concerns created by the larger "roller", 10 dams would be modified by placing rock fill on their downstream side at a slope of four on one. These 10 dams would be all of the dams between the insertion point and the City of Lisbon, North Dakota, that do not currently have sloping faces on their downstream side. There are three dams in the lower Sheyenne River near West Fargo, North Dakota, that would not be included because they are far enough downstream from the outlet that the flow increase would be minor and higher flows are

mitigated by the presence of the Horace to West Fargo Diversion. In addition to the rock fill in the river below the dam, it is assumed that some riprap erosion protection would be added to the abutments on each side of the dam to control erosion created by the additional flows from the outlet.

B-11: Data Gaps

Studies have indicated that there are gaps in the data, and more information needs to be collected on water quality, upper basin storage, fish pathogens, biota of Devils Lake, and the Sheyenne and Red Rivers. Additional studies would probably not justify the project. The Report does not adequately consider the environmental impacts of the Pelican Lake outlet. (EPA, CA, MCEA)

Response:

According to CEQ guidelines (40CFR Section 1502.22), if there is incomplete or unavailable information, the agency shall make it clear that information is lacking. The Report presents that information. It identifies data gaps for biota, habitat, and upper basin storage and states that long-term monitoring would be needed to further quantify impacts. The Guidelines also states that if costs to obtain information are exorbitant or means to obtain it are unknown, the agency shall present that information. It would cost millions of dollars and take many years to collect the information identified in study reports and in comments provided on the draft Report. The Report also states that there is an inability to fully quantify certain impacts. In accordance with the guidelines, the EIS shall include the agency's evaluation of such impacts based upon theoretical approaches or methods generally accepted in the scientific community. To the extent practicable, the Report identifies the types and magnitude of impacts associated with the construction and operation of an outlet. Additional studies are also included in the collection of baseline information prior to outlet operation. A proposed mitigation plan is presented in the Report. The Corps feels that the Report is prepared in accordance with CEQ guidelines.

The Corps has conducted additional studies as discussed in response to comments A-4, A-5, and B-2.

It is the Corps opinion that further modeling would not result in a significant change in the identification of the potential effects, or change the recommendation of the Report.

B-12: Clear Definition of an Emergency Outlet

There should be a clear definition of an emergency outlet. This should be expressed in terms of operation. (DOI)

Response:

The framework for an outlet operating plan has been revised and includes a sulfate constraint of 300 mg/l and a drawdown elevation of 1443. The operating plan is expected to be further refined (through the coordination of an outlet operation committee composed of local, State, and Federal interests). The need for additional NEPA documentation through a tiered process is possible if additional changes are considered.

B-13: Downstream Water Treatment Costs

The Downstream Surface Water Users Study documents that the downstream surface water systems will require capital improvements in the $10- to $20-million range to maintain their finished water quality if an outlet is built. Why are these costs not included in each of the outlet alternative construction costs? Where did the water treatment plant upgrade capital construction cost data in Table 1 originate? Brine disposal for ion removal in Phase II systems can be a significant operation and maintenance cost and should be included in the costs presented. (DOI)

Response:

In the Downstream Surface Water Users (DSWU) Study, it was assumed that Phase II capital improvements would be required only in the unconstrained outlet scenarios. For constrained outlet scenarios, it was determined that all of the downstream water treatment facilities have existing plant capacity to meet water-softening (Phase I) objectives; thus, only the marginal operation and maintenance cost for softening was estimated. Table 1 does not contain construction cost data. The commenter may be referring to Table 3 in the Draft Report, Volume 1. The construction cost data are from the USEPA document "Estimation of Small System Water Treatment Costs." It was assumed in the DSWU study that the least-cost option for brine disposal would be discharge to sanitary sewers. The operation and maintenance costs were developed on a per-pound-of-TDS-removed basis and reflect, but do not break out, the cost of brine disposal.

B-14: No-Action Alternative

Is continued infrastructure protection part of No Action? (DOI)

Response:

The base condition (future without project) assumes that the types of emergency measures currently being pursued in the project area would continue to be implemented as necessary as the lake continues to rise. This includes continued infrastructure protection, which is considered to be the most likely future without the proposed project. As a separate sensitivity analysis, the cost-effectiveness of the alternatives was evaluated assuming no implementation of emergency measures as the base.

B-15: Other Pertinent Water Quality Variables

We request the Corps review (within current EIS/ROD schedule) pertinent water quality variables in Pelican Lake, the Sheyenne River, and major tributaries to determine if any substance is more limiting than sulfates, chlorides, or TDS. (ND)

Response:

Sulfate is the only parameter that was found to be limited by a numerical standard at the point of insertion for discharges up to 300 cfs from a west-end outlet. The Final Report/ EIS now includes a more comprehensive summary of operational effects with respect to North Dakota and Minnesota numerical standards and numerical International Joint Commission objectives. The summary also identifies water quality changes that would invoke the North Dakota Antidegradation procedures.

B-16: Real-time Monitoring for Specific Conductance and Flow

In order to assure full information is available to regulatory agencies, and the public, we suggest that real-time monitoring for specific conductance and flow be included. (ND)

Response:

Concur. Real-time conductance and flow data available on the Internet would provide key information for water control operations, regulatory agency oversight, and downstream water users. Such monitoring would be recommended for inclusion as a feature in the operation plan, should an outlet be proposed for implementation.

B-17: Uneven Treatment of Hydrology and Ecological Analysis for the Wet Scenario

The DEIS does not address the ecological implications (both positive and negative) of the wet scenario to the same extent as the analysis of flood damage impacts. For example, as the lake rises, the economic value of its fish and wildlife resources increases because of its increasingly complex shoreline and favorable deep water/littoral zone ratio. (MN)

Response:

The relationships among lake level/recreation/fishery were identified in the Report. An economic evaluation was not conducted. The level that the lake eventually reaches is about 3 ft lower with an outlet, and it reaches that elevation about 3 years later under the wet scenario. The difference in the fishery and economic return between these two conditions is probably small. This would have a negligible effect on the economic analysis. See Appendix A and the USGS Report 02-4042 on Simulation of an outlet from Devils Lake for more information on in-lake water quality.

B-18: Nutrient Loading

The EIS must address the impact of additional phosphorus loading from a constructed outlet on the Red River of the North and the additional resources that will need to be expended. (MN)

Response:

There is no reason to expect that additional phosphorus loading, per se, would cause any environmental changes in the Red River of the North. It is intuitive that a change in the concentration of phosphorus could elicit a trophic response in the river. However, the HEC-5Q phosphorus routing indicates that the phosphorus concentration in the Red River of the North would typically be less than the base condition during the summer months (see Appendix A, Plate 10I).

B-19: Water Supply Impacts

The City of East Grand Forks has expressed an interest in using the Red River of the North in the future and has concerns over the future river water quality. (MN)

Response:

The water quality studies and downstream water users studies have not shown that the Red River of the North would be rendered unusable as a municipal water supply source by operations of a Pelican Lake outlet. The Federal Clean Water Act provides regulatory protection against human activities that would cause degradation of beneficial uses.

B-20: Pelican Lake Outlet

By choosing the Pelican Lake outlet alternative under the Wet Future Scenario, COE dramatically increased the scope of environmental impacts needing to be addressed. However, COE did not follow through and make the necessary thorough evaluation of environmental impacts if the outlet were to be built. (PSS)

Response:

Do not concur. Many studies were conducted to determine the effects of an outlet. These studies are referenced in the Report and summarized. It is true that some of the analyses were conducted on outlets from West Bay. The Corps made some decisions that the effects of a Pelican Lake outlet could approximate the water quality effects of a 300-cfs outlet and the flow effects of a 480-cfs outlet. It is felt that additional work would not change the recommendation.

B-21: Land Values

COE put a $400.00/acre value on all lands that have been or would be inundated under the Future Wet Scenario. Given that mean values for Benson and Ramsey County were estimated to be $320.00 and $390.00 per acre, respectively (page 5-19), and the Devils Lake lands contain a much higher percentage of wetland and waterlogged pastureland, valuations are grossly inflated resulting in too high a benefit being claimed for the outlet alternative. Land values are inflated. (PSS, NWF)

Response:

In 1999, the Corps completed a Gross Appraisal on the then current Peterson Coulee outlet alignment. For that document, current land sales in Benson County were used to determine the value of lands that would be purchased for the project. It concluded that fee cropland values were $400.00 per acre, plus 25 percent for contingencies. Since land that is inundated is equivalent to a fee take, use of the fee value for land is appropriate.

The inundated lands cover Benson, Ramsey, and Nelson Counties. The per-acre market value used in the Integrated Planning Report for Benson County was the lowest value of the three counties. Using the approved Gross Appraisal value for land acquisitions in Benson County should not understate or significantly overstate the land costs.

The value of $400.00 per acre is used to calculate cropland damage benefits for any alternative that would reduce lake levels, whether it is an outlet or upper basin storage. Since the same value is used for each alternative, the comparison of alternatives is equitable.

B-22: Cumulative Impacts to the Devils Lake Fishery

Why are cumulative impacts of the Pelican Lake Outlet alternative ignored? If the lake is pulled down 5-6 ft to reach 1441.7 as currently sought by draining the lake, it will markedly hasten the date when salt concentrations in the lake increase to where fish production and fish growth are seriously impacted. (PSS, p. 9)

Response:

The target elevation for drawdown has been revised to no lower than 1443. Aquatic impacts to Devils Lake have not been ignored and are described in the Report. The effect on Devils Lake would depend on the future climatic conditions. As discussed in Chapter 6

of the Report, if the wet scenario prevails, the lake would increase in salinity over the without-project conditions but not to a level greater than the conditions that existed in the early 1990's and would have limited effect on the fishery. If the outlet operates and dry climatic conditions occur in the future, the lake would reach higher TDS levels sooner than without-project conditions or conditions that exist currently. Depending on future climatic conditions, the outlet may or may not have a significant effect on the eventual salinity or TDS concentrations. As stated in the Report, if dry conditions prevail, then the fishery could decline and eventually be lost sooner than if no outlet was constructed. Also see Response to Comment B-17. See Appendix A and the USGS Report 02-4042 on Simulation of an outlet from Devils Lake for more information on in-lake water quality.

B-23: Who Owns the Inundated Lands?

Who owns the 93,400 acres of land that have been inundated since 1992? (How much is in public ownership and under what agencies?) (PSS)

Response:

The Devils Lake Basin Joint Water Resource Board developed information on land use of the inundated lands. They show that 294.7 acres of park and refuge land have been inundated. They also show 5,833.8 acres of land in a category labeled 'other,' which includes woodlands, wetlands, and non-deed reservation land. The Board developed land use from a study of aerial photos and maps from several sources. Ownership of the lands studied was not identified. Information on how much of the inundated lands is in public ownership and under which agencies does not appear to have been developed by any agency or group.

The inundated lands are subject to the doctrines of submergence and reliction. Relicted land is land that was covered with water, but which is uncovered by the imperceptible recession of the water. When relicted lands are created, the riparian owners take title to those lands and are not accountable for the gain. Submergence is the converse of reliction and involves an imperceptible rise in water level so that land formerly free of water becomes submerged; in such a case, title to submerged lands reverts to the government and the loss is uncompensated.

Lands that have been relicted, then are submerged, and then become relicted again, are retained by the original property owners. If the property taxes were not paid, the land could fall under the county tax forfeit statutes. When riparian lands are submerged, they become the property of the government, for as long as they are submerged. When the lake waters recede, the original property owner retains the upland ownership. The upland owners can indicate their intent to continue ownership of the submerged lands by paying taxes on the lands. As the waters recede from the riparian lands, the ownerships are restored as they were before being submerged.

The boundary of the ownership of the upland and the submerged lands is the ordinary high water mark, although, through North Dakota State law, the upland owner has some rights to the ordinary low water mark. The ordinary high water mark of Devils Lake is ambulatory. This means that this mark will move with the lake. If it becomes higher, the government owns a larger bed. If it becomes lower, the government owns a smaller bed.

The ordinary high water mark is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; the destruction of terrestrial vegetation; or the presence of litter or debris. It can also be described as the border of land that the water occupies sufficiently long and continuously to wrest it from vegetation, and destroy its value for agricultural purposes. It is the land upon which the waters have visibly asserted their dominion, and does not extend to or include that upon which grasses, shrubs, and trees grow, though covered by great annual rises.

B-24: Riprap

Riprapping of the Sheyenne, which currently is among the most beautiful rivers in the north-central United States, will eliminate the very values that have caused the river to be designated as a Scenic Byway. (PSS, p. 12)

Response:

Riprap is proposed as an alternative to protect cultural sites from erosion and to minimize the effects on the aquatic resources. Riprapping the identified cultural sites would cover about 10 miles of the 400-mile Sheyenne River. It should have no effect on the Scenic Byway designation.

B-25: Causes of Rising Water Levels

The Report fails to adequately consider the causes of the rising lake levels. The analysis does not address the changes in land use and loss of wetlands. The DEIS analysis of the causes of the fluctuating water levels is wholly inadequate. Natural weather cycles, changes in surrounding land use, drainage of wetlands and other natural water storage features in the drainage basin, and climate-changing emissions of carbon dioxide are among the many factors causing the lake levels to rise and that warrant further study. (MCEA)

Response:

The Report identifies that the major cause of the rising lake levels is a change in the climate; namely, increased precipitation over the last 10 years. The Report also states that changes in land use and wetland drainage contribute to the rising lake levels but have not been the major cause.

The Report addresses these factors to some extent in Appendix A and in the USGS report entitled, "Simulation of a Proposed Emergency Outlet from Devils Lake, North Dakota." Appendix A summarizes and references more detailed work done by others as part of the Devils Lake Study. The reviewers are encouraged to read these references for more detail.

The cause of the recent rise in lake levels is covered in some detail by the Utah Water Research Laboratory in their report entitled, "Dramatic Fluctuations of Devils Lake, North Dakota: Climate Connections and Forecasts," by Connely K. Baldwin and Upamanu Lall, 2002. The following are excerpts from their conclusions:

1) *The recent trend in the Devils Lake volume is likely a consequence of changes in the seasonality of annual rainfall, and may be determined to a great degree*

by increases in summer and fall precipitations, that are associated with corresponding changes in the atmospheric circulation for those seasons, that are manifested as decreases in the regional atmospheric pressure.

2) *These changes in atmospheric circulation and regional precipitation have large spatial structure and are not likely due to increases in local convection and moisture recycling related to local conditions. There is some evidence that a combination of factors related to Pacific and Atlantic ocean-atmosphere oscillations is important. The summer-fall precipitation in the large region that exhibits the consistent precipitation anomaly structure for the wet and dry periods for Devils Lake is influenced to some extent by features such as the night-time low-level jet, the Southwest monsoon, and northern frontal systems that bring ocean moisture to the region. These transient features are not directly reflected in the monthly atmospheric data that we analyzed, and to which we had access. Consequently, the correlative analyses used climate indices and atmospheric pressure time series are inferential and diagnostic, rather than causal. It may be useful to pursue more direct investigations to better pin down the climate mechanisms responsible.*

3) *The spectral signature of the series analyzed reveals that while there are well separated, narrow band interannual, and interdecadal oscillatory components shared between the Devils Lake and the climate indices, their expression is rather time dependent and the recent record of the Devils Lake is manifested as a singularity in the system where the dominant frequencies of interest, both for the lake and for the climate indices (NINO3, PDO, and NAO) are concurrently at anomalous levels, their interaction (i.e., cross-ocean factors) is important in determining the local precipitation and lake response. This combination of factors and the lake's state does not have an analog in the 1905-1999 record.*

4) *A question that has been brought up in the climatic context of Devils Lake has been the possibility that a changed climate due to increased carbon dioxide (CO_2) in the atmosphere may be responsible for the changes in the precipitation and in the lake volume. Such questions are invariably difficult to answer given the limitations of numerical models of the Earth's climate and the limited time history over which such assessments can be done. Investigations to study such an attribution were not directly pursued. However, given the longer, paleoclimatic context for the region and for other lakes such as the Great Salt Lake, it is evident that the type of conditions being currently experienced have occurred in the past (see for instance the marker (X) in Figure 1 of this document) prior to the notion of anthropogenic climate change. Consequently, such questions can be answered in a useful way only through investigation of climatic mechanisms, i.e. modes of the ocean-atmosphere system, that would lead to anomalous moisture transport to the region, and to investigate whether the frequency of such modes is likely to*

undergo changes over time, in particular due to anthropogenic forcing. If changes in the frequency of such events are indicated, then the relative risk of such occurrences is likely to increase. It was noted that the regime residence time and regularity/duration of switching of the low-frequency climate conditions indicated by the climate indices used have varied quite a bit over the historical period. Whether such variations occur in the natural climate or whether they are forced by greenhouse effects is difficult to diagnose, given that current coupled ocean-atmosphere models do not adequately reproduce these low-frequency modes. However, there are indications from several such modes of the increased incidence of El Niño-like conditions under a warming scenario, which may in turn translate into positive summer/fall precipitations in the region as indicated by the correlations identified here. However, the models are unable to define the nature of the PDO/NAO variations that have longer time scales and may be just as important for the region. Indeed, the persistent nature of the current event would likely be linked to the more slowly varying ocean states (PDO, NAO) than the tropical Pacific (El Niño).

In addition, a recent paper entitled, "Decade-Scale Precipitation Increase in Great Plains at end of 20th Century," by Jurgen D. Garbrecht and Frederic E. Rossel, January/February 2002 *ASCE Journal of Hydrologic Engineering*, associated the rise of Devils Lake to be related to large-scale climatic events. More specifically, they found that the 1990-1999 mean annual precipitation was significantly higher than the 1895-1989 mean and that the north and northwestern portions of the Great Plains have experienced a moderate increase in precipitation over the last decade of the 20th century. The increase in annual precipitation was found to be distributed in the summer and fall.

This is consistent with the NDUSGS findings that the July-December precipitation for 1980-1999 was statistically significantly different from the period 1950-1979. More analysis coverage on this topic can be found in "Climatology, Hydrology, and Simulation of an Emergency Outlet, Devils Lake Basin, North Dakota," USGS Water-Resources Investigations Report 00-4174, August 2000, and "Impacts of Regional Climate Variability in the Red River of the North Basin," University of North Dakota Regional Weather Information Center Report No. 2000-1, by Leon F. Osborne.

B-26: Further Consideration of Upper Basin Storage

The Corps did not conduct a full analysis of alternatives. There were insufficient efforts explore to avoid passing the problem downstream. The Draft Report fails to address wetland drainage and its contribution to the rise of the lake and underestimates the potential for wetland restoration. The environmental and economic benefits and costs for Upper Basin Management were not fully evaluated. Analysis of the upper basin storage option is incomplete and confounded by a number of significant flaws, including underestimating available storage and failing to scientifically determine benefits through a detailed, basin-wide water balance. Need a wetland restoration plan. The West study indicates that additional studies could be done to refine the analysis; these studies need to be conducted to adequately evaluate the alternative. Upper basin storage is the best solution and should be implemented. The Report does not describe the effect of past

actions such as land use changes and drainage on lake levels. Drainage controls should be evaluated and should be implemented to control runoff to the lake. (EPA, CA, DOI, MN, MO, NWF, TWS, PSS, eight PCs)

Response:

The IPR/EIS and U.S. Fish and Wildlife Service Coordination Act Report (Appendix 2) discuss wetlands and upper basin storage. Corps responses to Fish and Wildlife Service suggestions for drainage controls and a moratorium on future drainage are described in Chapter 8 of the Report. The West Report identified depressions and their storage capability. That information was used to evaluate the effects of depression storage on lake levels. That analysis gives an indication of the effects of drainage and the ability of depressional storage to reduce inflow to the lake.

Many agencies and groups have stated that the solution to the problem of rising lake levels is to prevent the water from entering the lake. These groups feel that upper basin storage, closing drains, and placing a moratorium on future drainage is the best alternative. Others feel that no more water can be stored in the upper basin or that past drainage is not the cause of the problem and would be of little benefit. The volume of depressions and their effect on lake levels was evaluated as an alternative. Depression storage does result in less runoff entering the lake and does have an effect on antecedent conditions, which affects the amount of runoff in any particular year. The data indicate that about 62 percent of the available storage capacity can be achieved with restoration of 13 percent of the depressions. If upper basin storage were pursued, additional studies would be needed to determine the most cost-effective and acceptable locations for storing water.

The discussion of Upper Basin Storage has been expanded to include use of the water for irrigation and land management practices. Also, see response to Comment B-25.

B-27: Wetlands and Wetland Drainage

There is no discussion of the numbers and acreages of the different types of wetlands originally in the Devils Lake basin; no discussion of the numbers, acreages, and types of the wetlands that have been drained and their flood capacity; and no discussion of the contribution of that drainage to the rise in Devils Lake. The U.S. Fish and Wildlife Service estimates at least 189,000 acres of drained wetlands in the upper basin. The flawed West Consultant Report estimate of about 92,400 acres of possibly drained wetlands needs to be revisited and refined. (NWF, PC)

Response:

It is not pertinent to discuss the numbers and acreages of the different types of wetlands originally in the Devils Lake basin, nor of the numbers, acreages, and types of wetlands that have been drained and their flood capacity. This is not an inventory type of study. What is pertinent is what exists now and what can be restored as a viable alternative that will ultimately benefit flood damage reduction within the Devils Lake basin. It is reasonable to conclude that the sudden rise in lake levels from 1992 to the present was not due to some corresponding sudden drainage of wetlands.

The 189,000-acres estimate was based on a sample and extrapolated to the entire basin and may not be correct, either. The Corps does not agree that the West Report is flawed. It is probably the most detailed and accurate evaluation that has been conducted on the entire basin. Other studies, including the one conducted by the U.S. Fish and Wildlife Service, did a detailed study on one watershed and extrapolated the results to the entire basin. The West Study looked at topographic maps, aerial photography, and National Wetlands Inventory data for each watershed in the basin. The West study identifies that field analysis was not conducted and that results could be improved by additional work. This does not mean the study was flawed. The Corps believes that the analysis was adequate for a general evaluation of the alternative and comparison to other alternatives. If upper basin storage is pursued, the Corps has stated that additional work would be needed to identify which depressions should be used for storage. Depression storage studies of the upper basin have been conducted by the Corps, North Dakota State Water Commission, U.S. Fish and Wildlife Service, and Bureau of Reclamation using different methods. All have reached different conclusions on the number of drained wetlands and available storage.

B-28: Impacts on Bridges and Structures

We have many bridges and other structures on the Sheyenne River. We need to know the impact a Devils Lake outlet would have on these structures. Increased maintenance due to high flows. (Eddy Co.)

Response:

All bridges in the National Bridge Inventory (NBI) in Eddy County were modeled in the hydraulic model. A flow of 600 cfs resulted in a water surface clearance of 3.15 to 14.93 feet at all these bridges. The channel velocity at these bridges ranges from 0.43 fps to 2.36 fps. According to Chow (1959), the maximum non-erodible velocity, for the soil types of the Sheyenne River in Eddy County, is 2.5 fps and possibly higher. This is above the largest channel velocity at NBI bridges in Eddy County of 2.36 fps. In addition, we were unable to locate bridge plans for three NBI bridges in Eddy County, either through Eddy County Road Department, Interstate Engineering the county engineer or the North Dakota Department of Transportation. The previous bridges, built before 1940, were entered into the model instead, as this would be a conservative approach since the newer bridges are larger. One of the bridges modeled using the old plans was the largest channel velocity at a bridge, the next largest channel velocity at a NBI bridge in Eddy County was 1.71 fps. Based on this information we do not expect erosion to occur at NBI bridges in Eddy County, however, these bridges will be monitored while an outlet is in operation and an escrow account will be maintained to provide funds to protect any problem areas. The Sheyenne River Geomorphology Study indicates that the increased erosion on the Sheyenne River due to an outlet from Devils Lake would be low. Changes in the hydrologic cycle due to climate changes would have a much greater impact on Sheyenne River erosion than a Devils Lake outlet.

B-29: Control Structure for Overflow from Stump Lake

A control structure needs to be constructed at Stump Lake for controlling the flow of water from the Stump Lakes if they ever reach the elevation where they will overflow into the Sheyenne River, and costs for this need to be included for the west-end outlets. (PCOA)

Response:

The assumption of measures to minimize erosion at the location of a natural overflow was considered as a feature of the most likely future without the proposed project. Like other emergency infrastructure protection measures that are part of the assumed base condition, the costs are not included as part of the project cost, but are sunk costs common to all alternatives.

B-30: Lake Bed in Contact with Large Aquifer

The effectiveness of any outlet is directly related to whether the lakebed is in contact with a large aquifer. We believe that Devils Lake is in contact with the Spiritwood Aquifer, and that this will make the outlet even less effective. (PCOA)

Response:

The Spiritwood Aquifer does underlie the lake chain, and groundwater in the aquifer can interact with the water in the lakes. According to the State Geologist, Dr. John Bluemle, "…at times this interacting relationship causes Devils Lake to behave in an apparently anomalous manner) rising during drought years, falling during rainy times depending upon whether the groundwater is flowing into or out of the lake from the aquifer." According to a report entitled, "Devils Lake, North Dakota, Groundwater Evaluation," by R. L. Whartman, most of the material comprising the geologic framework has low permeability; thus, water moves very slowly. Therefore, permeability is small enough that it would not be a significant factor on pumping if that were chosen as part of the alternative. This is also supported by the observation that the lake has not risen during the winter even after a dry summer drawdown.

B-31: Outlet Alternatives

Additional outlet alternatives for a number of routes need to be included in the EIS. (PCOA)

Response:

Many outlet alternatives have been considered in past studies, and the Report includes a list of these studies. The initial step of the formulation process was to screen outlet alternatives so that only those options with the greatest opportunity for implementation were considered. The initial screening of 300-cfs outlet plans, which included alternative outlet plans from the West Bay, Pelican Lake, East Devils Lake, and Stump Lake, is presented in Appendix D of the Report with a discussion of essentially all of the alternatives for outlets to the Sheyenne River mentioned in the comment discussed.

Relative to outlet alternatives to the Goose River, these options were screened out from consideration in prior studies. This alternative would require an outlet from the east end of the lake with its associated water quality issues. The channel capacity of the Goose River is considerably less than the Sheyenne River, and an outlet from East Devils Lake

to a location on the Goose River where the channel capacity is at least 300 cfs is estimated to be over 50 miles.

B-32: Outlet to the James River

Why are you not looking at the James River? It is just as close as the Sheyenne River. (PC)

Response:

An outlet to the James River was investigated during the 1988 Devils Lake Basin Feasibility Study and reconsidered again in a January 1999 value engineering initiative. Although an outlet to the James River would eliminate the concerns of impacts in Canada, downstream water quality, potential flooding, channel bank erosion, channel capacity, tribal trust issues, impacts to Arrowwood and Sand Lake National Wildlife Refuges, and high costs were rationale for screening out these alternatives. Therefore, it was not evaluated as part of this study.

B-33: East End Outlet

The Report does not present any constrained east-end outlet alternative because it states that they are not reasonable due to water quality considerations. Our association does not agree. (PCOA)

Response:

East end outlets were discussed in the formulation chapter of the Report.

B-34: Insufficient Evaluation of Alternatives

The Draft Report does not adequately evaluate other alternatives, such as infrastructure protection, upper basin storage, outlet to James River, East end outlet, and raise the natural outlet. This is required under NEPA. The analysis is biased toward an outlet and not the most environmentally and economically sound alternative. The Report fails to consider all reasonable alternatives. (EPA, MN, DOI, CA, MCEA)

Response:

The analysis on infrastructure protection and upper basin storage has been revised and expanded. Many alternatives have been considered in past studies, and this Report placed greatest emphasis on those alternatives that survived earlier screening and had the greatest opportunity for implementation. Specific care was taken during the analysis so as not to have bias for or against any of the alternatives. Given the Congressional directive to undertake preconstruction engineering and design and the associated Environmental Impact Statement for an emergency outlet from Devils Lake to the Sheyenne River, the Report focuses on evaluation of outlet alternatives as one feature of a larger, comprehensive approach to flood damage reduction including infrastructure protection and upper basin storage.

B-35: Land Costs for Upper Basin Storage

The costs that were used for the alternative are given as $1,000 per acre. We believe that this is far too high a cost. (PCOA)

Response:

The $1,000 per acre cost includes the cost to acquire the land (i.e., costs for such items as title insurance, surveys, appraisals, negotiations with landowners, as well as the actual

cost of the land). It also includes some structural measures to create the storage, such as closure structures or impoundment structures. Actual costs will likely deviate from this value, but for planning purposes, the value of $1,000 per acre seems reasonable when considering all costs for implementing a runoff storage plan.

B-36: Dollars Spent Trying to Save Homes and Cottages

Has the Corps ever taken into consideration all the dollars spent by more than 200 people trying to save their homes and cottages? (PC)

Response:

The methodology employed for calculating flood damages assumes that once the lake level reaches 1 ft below ground elevation of the structure (to account for wave action), total loss of the structure is incurred. Total loss is calculated as the depreciated replacement value of the structure. This approach maximizes potential losses to property owners and potential benefits of a project. If we assume that homeowners are effective in preventing flood damage to their homes, benefits of a project will be reduced.

For example, suppose under the without-project condition a homeowner will spend $20,000 to protect a home valued at $100,000 and it is expected that the homeowner will be successful in preventing flood damage. The damage/cost incurred under the without-project condition is the expenditure of $20,000, not the potential damage of $100,000. The benefit, therefore, for a project that prevents the lake from rising to a point where action needs to be taken is the savings of $20,000. The benefit is not the potential damage of $100,000 because, without a project, it is assumed that this damage will not occur anyway, as it is prevented by the expenditure of $20,000. So, as long as the dollar amount spent to save homes is less than the value of the home, the current benefit evaluation methodology will maximize project benefits.

B-37: City of Devils Lake Levee

Does the benefit/cost ratio include the estimated cost of raising and extending the dike system that protects the City of Devils Lake? (PC)

Response:

The most likely future without the proposed project assumes that the continuation of emergency measures currently being pursued in the project would continue to be implemented. This includes the raising and extending of the levee protecting the City of Devils Lake. Like other emergency infrastructure protection measures, which are part of the assumed base condition, the costs are not included as part of the project cost, but are sunk costs common to all alternatives.

B-38: Effects on Devils Lake

Did not consider effects of the outlet on accelerating the lowering of Devils Lake. Did not address the effect on Devils Lake of capturing the freshwater inflow. (DOI, PSS)

Response:

The effects of the outlet on accelerating the lowering of Devils Lake are addressed in Appendix A and also in the USGS report entitled, "Simulation of a Proposed Emergency Outlet from Devils Lake, North Dakota." Also, see response to Comment B-22.

B-39: Geodetic Control Monuments
Should identify if any geodetic control monuments would be affected. If so, the project cost should include the cost of any monument relocations. (NOAA)
Response:
No National Geodetic Survey monuments are located within the limits of the Pelican Lake outlet alignment.

Detailed Report Comments

C-1: Page 2-1 and Figure 3
Beginning on line 7, "When Devils Lake…" is misleading. (CA)
Response:
Concur: The sentence has been modified as follows: "Devils Lake is usually a closed basin but under extreme high water conditions flows first to Stump Lake and then to the Sheyenne River, thus contributing flow to the Red River."

C-2: Page 2-9 and elsewhere
It is inconceivable that erosion protection would not be provided at the natural outlet should a natural overflow event be imminent, with or without an artificial outlet. This comparison is invalid and should be deleted from discussion within the Report. (CA)
Response:
The assumption of measures to minimize erosion at the location of a natural overflow was considered as a feature of the most likely future without the proposed project. The sensitivity analysis to evaluate the effect of this assumption was done primarily in response to concerns brought up during the scoping process. The sensitivity analysis is considered essential in helping to understand the range of potential risk at the natural overflow with and without erosion protection and has not been deleted from the Report.

C-3: Page 3-4
The statements in the third paragraph attempting to provide context for use of the 1980-1999 period are misleading and unsubstantiated. (CA)
Response:
It is well-known among climatologists that the period 1900 to 1940 was anomalous relative to the last millennium.

The following quotation is from a paper by Jose Salas and Duane Boes, entitled, "Shifting Level Modeling of Hydrologic Series," *Advances in Water Resources*, 1980, Volume 3, June.

> In this regard it is worth referring to Lamb, where he commented on the above mentioned Hurst finding and arguments of high and low groupings and said 'most evidence at my disposal indicates that the large scale circulation of winds over the world, which determines prevailing weather patterns, has passed some climax – some very long-term maximum of vigour – in the first 40 years of this century…and since 1950 has got increasingly to patterns more like the nineteenth century, and earlier, than to anything that occurred between 1900 and the 1930s.

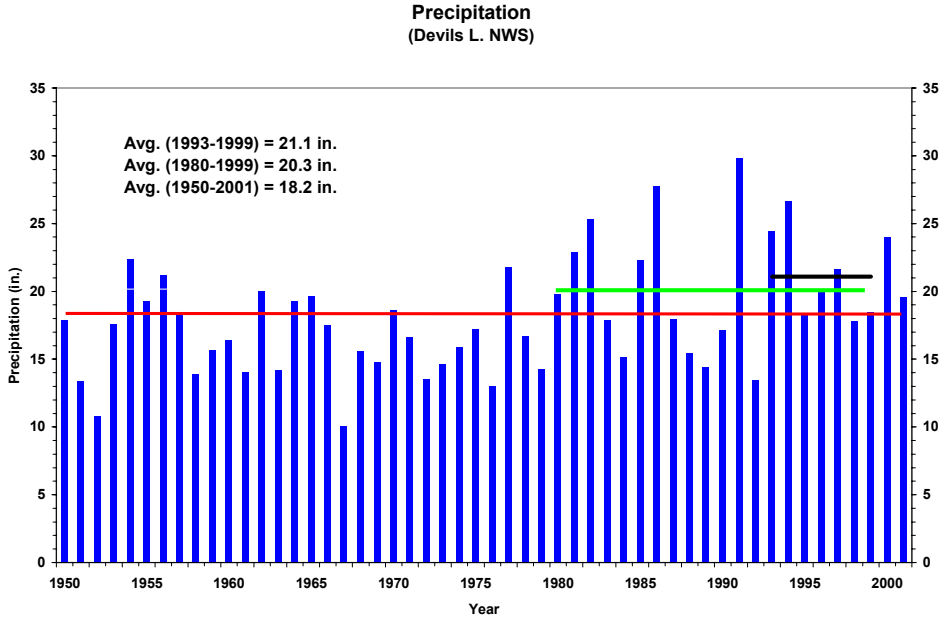
…By now, the distribution of ocean surface temperatures in the Atlantic has returned to what it was right back in the period 1780-1850… I think that this means that the probability statistics of the period 1900-1950 are liable to be misleading, and those of the nineteenth century may be a better guide to current and future frequencies…'

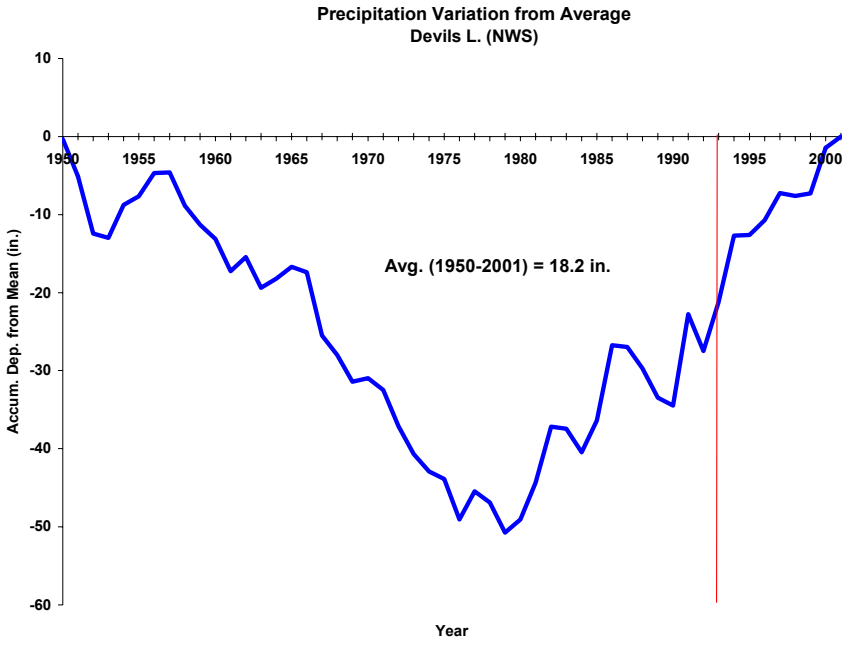
Lamb, H.H. Discussion on the paper 'A Method of Simulating Time Series Occurring in Nature,' Proc. Reser. Yield Symp., Water Research Association, England, 1965, D1.7-D1.8.

Ronald Kilmartin, "Hydroclimatology – A Needed Cross-Discipline," in ASCE & AMS, Proceedings of the Engineering Conference on Improved Hydrologic Forecasting Why and How, Pacific Grove, CA., 1980:

Actually, considering the strong aberration in global climate that we now know occurred during the comparatively short streamflow sampling period, any probability distributions obtained from the data should be regarded in Bayesian fashion as conditional distributions, contingent on the strong climate aberration that prevailed during sampling. The question is, whether the same mean climate is expected to prevail over the next 50 years and if not, how should we adjust stochastic precipitation and streamflow models to incorporate any nonstationarity?

The following figure compares the periods referenced in the subject paragraph in terms of precipitation. The second figure is a plot of the accumulated departure from the mean for precipitation. The change in slope of the line is consistent with the period in which the USGS identified nonstationarity in the precipitation record.





And, as stated by Jurgen D. Garbrecht and Frederic E. Rossel in "Decade-Scale Precipitation Increase in Great Plains at End of 20th Century," *ASCE Journal of Hydrologic Engineering*, January/February 2002:

> The purpose of presenting these climate variations to the engineering community is to advocate consideration of decade-long precipitation variations in such practical applications as long-term water resources planning, irrigation operations, water conservation strategies, and water storage/supply projections…. Comparatively less attention has been given to multiyear climate cycles or variations, even though it is at the 10-to 15-year time scale that many water resources planning decisions are made. Recognition and consideration of decade-long variations in precipitation are key to the successful development of long-term water resources planning and management strategies. Even though it is difficult at this time to predict future decade-scale variations in precipitation (Barnston et al. 1994; NRC 1998), the long duration of such variations does provide the opportunity to develop adaptive and mitigating strategies and exploit favorable conditions during the time of their existence.

C-4: Page 3-9

It is not clear how water quality modeling was used to generate a base condition under the wet scenario for comparison with the alternatives and why different exceedence frequencies arise when comparing the same base condition with different alternatives. (CA)

Response:

An error was found and corrected in the spreadsheet that generated the exceedence tables on Plate 10C of Appendix A. The change caused a few of the exceedence values to change by 1 percentage point. Also, the base condition exceedence data on Plate 15C are slightly different from the numbers for other wet scenario base conditions because they summarize the first 10 years starting in the year 2006, while the others summarize the first 10 years starting in 2005. When those model runs were made (Plates 15A,B,C), it was thought that adding the Pelican Lake outlet features would cause delay of

construction by 1 year so that outlet operation would not commence until May 2006. That assumption was revised for subsequent runs. The differences shown between with- and without-outlet operation on all of the plots and tables are valid comparisons regardless of the starting dates.

C-5: Page 4-8 (and elsewhere)
The implication that downstream interests may be able to tolerate higher flows and lower water quality associated with an outlet if they are convinced that a natural overflow would occur and impacts would be greater is not correct and should be deleted. (CA)
Response:
The statement is made in the context of an imminent likelihood of a natural overflow, and the associated impacts associated with it.

C-6: Page 4-10 (480 cfs outlet)
Relocation of residential and commercial properties may still be needed. (CA)
Response:
Concur. However, any alternative that reduces the lake stage increase also reduces the number of relocations needed.

C-7: Page 4-11 (Raise natural outlet)
The first sentence is not true for most situations. (CA)
Response:
Concur. The sentence has been revised.

C-8: Page 4-33 (Erosion of natural outlet)
Without a full geotechnical survey, the contention of erosion cannot be supported. (CA)
Current geologic evidence does not support that the outlet has eroded in the past. Erosion of the natural outlet is speculative and has little relevance. (NWF)
Response:
The adopted analysis did not include erosion of the natural outlet as the assumed future without project conditions, but did include it as a sensitivity analysis. In doing the hydraulic computations, Barr Engineering did make use of available geological data for Tolna Coulee.

The evidence is still inconclusive. Sites that were chosen for dating the soils may have missed a buried channel. Test pits may not represent soils across the valley floor. A channel that removed older sediments may exist. A buried outlet channel within, or outside of, the coulee is a possibility – covered by post-glacial alluvial processes.

As glacial till is eroded by water, fines are removed and "Lag Gravel" deposit is left behind. This type of deposit would inhibit erosion of the older sediments. The variables are discharge, sediment load, and gradient. A thick enough layer of gravel could prevent significant erosion during a long-duration event if historic outflows remained relatively low.

The estimated head cutting and degree of erosion seems reasonable. The fact is that, regardless of age, the Quaternary sediments in the coulee(s) are erodible under the right conditions (i.e., groundwater levels, discharge from Stump Lake, gradient, sediment load).

C-9: Page 5-27

There does not appear to have been a sufficiently detailed survey of small fish undertaken with small mesh nets to determine the species not shared by the two basins. (CA)

Response:

On the basis of the literature review and existing information, it was concluded that all of the biota in Devils Lake probably already exist in the Red River basin. Environment Canada indicated in their comments that their conclusion regarding an outlet would remain unchanged with additional studies. Manitoba Conservation concluded that there is sufficient information in the Report to draw their conclusions. Detailed studies to identify all fish and other biota in both the Devils Lake and Red River basins would be prohibitively expensive, would take many years to complete, and would still probably be subject to question. A sand filter has been added as an outlet project feature to alleviate concerns associated with biota transfer.

C-10: Page 5-50

According to Figure 35, outlet operation would generally cease on September 1 rather than November 30. This discrepancy needs to be explained. (CA)

Response:

The figure has been revised. Outlet operation starts on 1 May and ceases on 30 November. The figure is intended just to give an idea of how the outlet might operate during the year.

C-11: Page 5-53

This statement is questioned: "The threshold chloride levels for some aquatic species, such as mussels, would be approached with operation of an outlet; however, no effects are anticipated." (CA)

Response:

The rationale for the statement is as follows. On the basis of a literature review, a level of 100-mg/l chloride was used as a guideline for evaluating effects on unionids. The water quality model shows that chloride levels would reach about 85 mg/l at Cooperstown. Other stations along the Sheyenne River and Red River would have lower maximum chloride levels, such as 60 mg/l at Kindred and 25 mg/l at Grand Forks. On the basis of current information, it does not appear that direct effects on aquatic resources associated with elevated chloride levels would result from outlet operation. However, the Report acknowledges that increased chloride levels may stress some species and, combined with other factors, may contribute to changes in population levels or composition. See the "Water Quality Analysis" in Chapter 5 and Appendix A of the Report.

C-12: Page 5-54

The interactions between fish and freshwater mussels need to be more fully explained and the effect on unionids needs to be more fully addressed. (CA)

Response:

A summary list of potential effects has been added to the Report. The U.S. Fish and Wildlife Service Coordination Act Report (Appendix 2) describes the relationship between fish and mussels. Appendix C contains a more detailed summary of the aquatic analysis report.

C-13: Page 5-56

In addition to the variables that are identified, ammonia must also be considered as an important nitrogen nutrient. (CA)

Response:

Ammonia is one of the several forms of nitrogen, along with organic, inorganic, and gaseous, that occur in the aquatic environment. All of the forms of nitrogen are transient in the environment, and the transformations are driven by numerous interrelated site-specific, and time-dependent physical, chemical, biological, and ecological processes that we do not presume to be able to represent on a system-wide scale with the HEC-5Q. The model does indicate that increased nitrogen and phosphorus concentrations in some reaches would exceed North Dakota's 15-percent Antidegradation threshold on the Sheyenne River. Requirements of the Federal Clean Water Act under Section 402 permitting and the State of North Dakota's Antidegradation Implementation Policy, in particular, might call for additional consideration of site-specific or reach-specific effects and possibly TMDL analysis. It would be impractical and cost-prohibitive to develop and calibrate a model that could track nitrogen in all of its forms through the many and varied reaches and microenvironments in the affected waters.

See response to comment B-1.

C-14: Page 5-62 and Page 5-103

There is a lack on information on a number of fish. For example, baitfish is probably the group that would be introduced to Devils Lake and transferred to downstream recipients. The EIS is incomplete without a complete baseline assessment of small fish in Devils Lake and downstream. (CA)

Response:

See response to Comment C-9 regarding page 5-27 above and Comment B-11 on data gaps. Baitfish could be introduced into any system including Devils Lake or the Red River drainage. A sand filter has been added as an outlet project feature to alleviate concerns associated with biota transfer.

C-15: Page 5-73

The description in the last paragraph understates the potential effects on recreation of both release of striped bass and mercury. (CA)

Response:

Do not concur. Biota transfer studies have concluded that it is unlikely that striped bass are in Devils Lake or would be transferred into the Red River basin. Preliminary mercury

studies were recently completed and they have indicated that it is unlikely that an outlet would provide conditions favorable for mercury methylation. The mercury study is summarized in Chapter 5 of the Report. A sand filter has been added as a project feature to address biota transfer.

C-16: Page 5-86

Canada made a comment regarding the analysis of the wet future scenario that an outlet may not prevent natural overflow. (CA)

Response:

This statement refers to the wet future scenario and is correct. The statement has been revised to more clearly reflect this. An outlet reduces the probability of an overflow from 9.4 to 4.6 percent.

C-17: Page 5-93

A number of assumptions are incorrect or questionable, such as the assumption related to biota transfer. (CA)

Response:

Do not concur. The assumptions are based on the best information and knowledge available at this time. The biota assumption was based on the available information from literature review and a contracted analysis. As stated, the long-term monitoring would include surveys for biota transfer. The long-term monitoring protocol and response plan identifies measures that could be taken in the event new or invasive species are introduced into the Red River drainage. A sand filter has been added as a project feature to address biota transfer.

C-18: Page 5-100

The actions to be implemented should invasive or non-native species be found in Devils Lake need to be identified and factored in the benefit-cost analysis. (CA)

Response:

A potential monitoring protocol and response plans are presented in Chapter 6 and Appendix C of the Report. Long-term monitoring would include surveys for biota transfer. Monitoring costs are included in the benefit/cost ratio, but costs for agency participation or implementation of any future response measures are not and would be the responsibility of the local sponsor.

C-19: Page 5-101

Information on project impacts from mercury release and uptake as part of post-implementation monitoring is needed in the EIS. (CA)

Response:

A discussion of mercury effects was not included in the DEIS because the results of a field study were not available in time. The Final Report/EIS includes a discussion of the mercury issues based on a draft USGS reconnaissance report. The study describes the occurrence of toxic methyl mercury and other forms of mercury in an upper basin wetland, within the Devils Lake chain of lakes, along the Sheyenne River including Lake Ashtabula, and along the Red River of the North. The data indicate that Lake Ashtabula captures and retains in its sediment most of the mercury loading from upstream sources.

Under outlet operating conditions, these sources would include Devils Lake. The data do not support conclusions regarding bioaccumulation of toxic mercury in fish as it may relate to Devils Lake outlet operations.

C-20: Page 6-26 (4th paragraph)
This paragraph suggesting that the stochastic modeling is based on normal climate variability is misleading. (CA)
Response:
The model assumes, for the first 15 years of simulation, that the last 20 years of climate is stationary and that for the remaining years of the simulation the last 50 years is stationary. Sentence will be changed to read, "The stochastic modeling was based on a quasi-stationary assumption of climate."

C-21: Page A-20
Although water balance studies of Devils Lake have been undertaken in the past, more detailed work is needed and should have been undertaken as part of the EIS. (CA)
Response:
A detailed water mass balance study was done. Reference the USGS report: "Simulation of a Proposed Emergency Outlet from Devils Lake, North Dakota," Water-Resources Investigations Report 02-4042.

C-22: Page A-22
There are no findings presented that support the statement that "…immediate protection is required." This statement should be deleted. (CA)
Response:
Road and levee raises are currently taking place within the basin. In addition, there are continued efforts to minimize damage due to high-wind-induced wave runup and setup. The sentence has been revised as follows: "…immediate action is required."

C-23: Page A-69
The progressive deterioration of water quality has not been shown in the modeling but would be expected to result in an increasing frequency of exceedences each additional year of outlet operation. (CA)
Response:
The USGS Devils Lake model, which generates input for the downstream model, does represent progressive water quality conditions for each of the 50-year traces and the wet scenario. Deteriorating conditions in Devils Lake, however, do not always cause more exceedences because, as operations become more constrained by the sulfate limitation at the insertion point, smaller volumes of water are released and are more effectively diluted in the Red River of the North.

C-24: Page A-139
More explanation should be given as to why they are the scenarios that were studied and the relative probabilities of each. (CA)

Response:
These scenarios were selected to cover the full range of elevations (evenly spaced) from the current elevation up to the overflow elevation (focusing on the first 10 to 15 years, which is most important for economics). From these, it can be inferred what elevation the lake would have to reach or exceed in order to have benefits exceed costs. One can also interpolate water quality impacts from each of these conditions with the wet future having the most dilution effect downstream. Downstream damages or benefits were also weighted with these scenarios to be included in the stochastic method used for within-lake economics.

The probability of any scenario or trace occurring exactly in that way is zero; however, weights or percent chance for the ranges that each scenario represents are presented in Appendix A (Table 1, page A-21 and Table 2, page A-44 and a more detailed description begins on page A-40).

C-25: Page A-237
Six recommendations for further work on upper basin storage and identifying depressions were made but there is no discussion of the status of this work. (CA)
Response:
These recommendations for refinement of the analyses are intended for future studies. Current authorizations and level of funding do not permit further work at this time, but if upper basin storage is accepted as a potential feature of work, these studies would be recommended.

C-26: Appendix B
There is no mention of interest during construction in the economic analysis. (CA)
Response:
For the purpose of screening alternatives, interest during construction is not typically calculated. This is considered appropriate because of the approximate nature of the cost estimates used for the comparison of alternatives and the insignificance that interest during construction has on the benefit/cost ratios. The current benefit/cost ratio, based on the updated project cost estimate of $186.5 million, is 1.54 for a wet future scenario, which includes interest during construction.

C-27: Page B-54
In the fourth paragraph, there is a statement that operation and maintenance costs are not included in the analysis. This approach will result in erroneous benefit/cost analyses. (CA)
Response:
The statement refers to operation and maintenance costs for incremental infrastructure measures designed to protect the defined features around Devils Lake. The analysis of benefits of an outlet requires the projection of future actions and estimating costs for protection of local features and residual damages incurred as the lake rises. By reducing the lake rise, benefits of an outlet will be the savings of the costs to provide protection of local features and the reduction of residual flood damage. The analysis of identifying measures that will be implemented to protect the features (i.e., roads, railroads,

communities, etc.), the costs of the protection measures, and the timing of implementation require many assumptions and by necessity is of a reconnaissance level of detail. Given the nature of this analysis, consideration of operation and maintenance costs for these local protection measures may suggest a higher level of accuracy and predictability of future conditions than the analysis warrants.

C-28: Page B-55 and elsewhere
Reference is made to Attachment I.C, which cannot be located. (CA)
Response:
Text has been revised.

C-29: Page B-116
Damages are shown for levels well below the presumed flood protection level of 1454. (CA)
Response:
Comment noted. The table is intended to show estimated damages that have occurred in the past or that have been prevented by local protection measures as the lake has risen.

C-30: Page C-5
There is a need to identify all species that have been stocked in Devils Lake and their current status. (CA)
Response:
Table C-1 lists fish species known to occur in Devils Lake and various portions of the Red River drainage. A footnote has been added to the table indicating that tiger muskie have also been introduced into the Red River drainage, and although striped bass have been introduced into Devils Lake, their continued presence is doubtful.

C-31: Page B-173
The benefit/cost ratio under the wet scenario for the Pelican Lake 300-cfs outlet is shown as 2.51, whereas the main report presents it as 2.63. There are other discrepancies of benefit/cost ratios between this appendix and the main report, as well. (ND)
Response:
Comment noted. The Report has been revised. The correct benefit/cost ratio for the formulation portion of the analysis was 2.51. However, based on added project costs and other revisions following the formulation of alternatives, the actual benefit/cost ratio is now calculated to be 1.54 for the Pelican Lake 300 cfs outlet (wet future scenario).

C-32: Page 4-42
The discussion of operation of a new channel from Dry Lake to Big Coulee should mention that this channel would be used only in years that the outlet is operating. (ND)
Response:
Concur. This sentence has been added.

C-33: Page 5-19
Towner County should be included in the list of counties that contain agricultural land that would be inundated by further rise of Devils Lake. (ND)

Response:
Concur. This page has been revised.

C-34: Page 5-39
The figure of 1,828 people living in the census block group intersected by the Pelican Lake outlet route seems to be rather large. (ND)
Response:
The population of 1,828 is for the Census blocks that are intersected by the outlet route. It includes an area much larger than the property ownership parcels immediately adjacent to the outlet corridor. As the Report indicates, the outlet comprises a small corridor through the blocks, and only a small portion of the entire population of 1,828 would be affected by the outlet.

C-35: Page 5-35
Increases in river stages varying from 0.5 ft to 1.5 ft as a result of the outlet are described. These increases occur when water is in the channel. (ND)
Response:
It is correct that the quoted increases in stage occur when the flow is in the channel because the operation is constrained to channel capacity. The discussion of stage increases in the Report has been revised to make that clearer. If the outlet flow brings the flow in the channel near the 600-cfs channel capacity, it could result in the inundation of some low-lying areas adjacent to the channel or result in increases in groundwater levels. If a storm occurs at the same time the outlet is operating or before it could be turned off, the outlet flow could mean the difference between the storm event remaining in the channel or flowing overbank. Also, see response to Comment D-8.

C-36: Page B-9
The loss of would-be investors who have reservations about starting/relocating businesses in the Devils Lake area for fear of flood-related problems. (ND)
Response:
Comment noted.

C-37: Page B-27
In the last paragraph, the sentence should be stated, "the current consultations with the Canadian Government may apply only to the current emergency situation." (ND)
Response:
Comment noted. The text has been revised.

C-38: Page B-32
Annual maintenance costs should be 1%. (ND)
Response: Comment noted. The Report has been revised.

C-39: Page B-34
Operation and maintenance cost for control structures along Highways 281 and 19 should be 1% of the first cost during the years that the outlet is operating. (ND)

Response:
Comment noted. The Report has been revised.

C-40: Page 5-55 and 5-86
Two paragraphs on these two pages are the sum and substance of what the public, the Congress and other decision-makers are told about the specific environmental impacts of the operation of the proposed outlet in the wet future scenario. (NWF)
Response:
Those paragraphs are a "summary" of the preceding 20 pages. The entire Report is a compilation of many investigations and over 4,000 pages of data. Those reports were put on the District's ftp site at various times during the study and put on a CD that was made available at the public meetings. Those studies are cited in the Report and are available to the public, Congress, and other decision-makers.

Conclusions

D-1: Compliance with the Boundary Waters Treaty
An outlet alternative may have difficulty meeting the objectives and provisions of the Boundary Waters Treaty of 1909; the mechanism to address these critical issues was not clearly described. Conclusion that construction of an artificial outlet cannot be justified on any ground and that operation of an artificial outlet would likely violate the Boundary Waters Treaty of 1909. Draft Report understates the importance of meeting the BWT requirements. Assessments related to compliance with the BWT and consultations with Canada must be completed prior to decision-making and be fully analyzed under NEPA. (EPA, CA)
Response:
The operation of the outlet is dependent on compliance with the Boundary Waters Treaty of 1909 and a determination that the outlet can be operated in conformance with the Treaty must be made prior to a final decision to construct an outlet. The International Red River Board has published water quality objectives for the Red River at the U.S. border. Those objectives are: fecal coliform, 200 colonies/100 ml; chloride, 100 mg/l; sulfate, 250 mg/l; Total Dissolved Solids (TDS), 500 mg/l; and Dissolved Oxygen, not less than 5mg/l. Results of the studies project that if the Pelican Lake outlet were operated at the proposed 300-cfs rate, all of those objectives, except the TDS objective, would be met. Depending on the scenario evaluated (wet or moderate future), the analysis shows that the frequency of exceedence of the TDS objective would increase from a range of 8 to 11 percent to a range of 12 to 16 percent. The decision of whether this increase in the exceedence frequency of the TDS objective, or other impacts of the outlet, would violate the Boundary Waters Treaty is the province of the State Department. Pursuant to Public Law 108-7 and before the project is implemented, the U.S. State Department will need to provide assurances that the project will not violate the Boundary Waters Treaty of 1909. Section 207 of Public Law 107-206 authorized the Corps to provide funds to the United States Section of the IJC for the purpose of conducting investigations, undertaking studies and preparing reports in connection with a Reference to the IJC under Article IX of the BWT for an emergency outlet for Devils Lake, North Dakota. Pursuant to that authority, the Corps transferred funds in the

amount of $500,000 to the International Joint Commission's U.S. Section in September 2002.

D-2: Economic Evaluation (Primary Issue - Use of Scenario for Outlet Justification)
The economic analysis should rely primarily on stochastic, probability-based analysis to predict future flood stages. The scenario-based approach should explain that it is a significant departure from the Corps' typical flood prediction methods. No demonstrated concurrence within the scientific community that supports the basis for the Corps' constructed "wet-future" scenario approach. The Corps' reliance on a "wet scenario" is not defensible. (EPA, DOI, CA, MN, MO, NWF, SC, MCEA, PSS, AS, Five PCs)
Response:
The Devils Lake Report states explicitly and clearly that the scenario approach is not the typical or standard approach used in Corps studies. Although the stochastic method best attains the probability-weighted estimate of expected net benefits, it relies heavily on uncertain knowledge about future climate. In addition, according to the Utah Water Research Laboratory, there is a strong possibility that the stochastic model could underestimate the probability of reaching or exceeding higher (and lower) elevations due to climate shift. According to the National Academy of Sciences, state of the art in analysis under uncertainty includes analysis by scenario and sensitivity.

The wet future is not used to economically justify the outlet alternative. Based on the scenario analyses, indications are, as the costs are now, that if the lake migrates up to an elevation of 1458 within the next 15 years, there would be enough benefits to offset costs (see Figure S-1 in the Summary at the beginning of the Report). The probability of reaching or exceeding this elevation in 15 years is 6.5-percent and in 50 years is 11.6-percent. These probabilities are based on the assumptions that went into the stochastic model. (See the Utah Water Resource paper, "Dramatic Fluctuations of Devils Lake, North Dakota: Climate Connections and Forecasts," by Connely K. Baldwin and Upmanu Lall). The stochastic estimates presented in the Report are based on the best information available considering the current state of knowledge in this field.

In addition, the scenarios were needed to evaluate and incorporate the downstream impacts in the economic analysis. For example, damages that occur downstream due to pumping were accounted for in the benefit-cost ratio as either a disbenefit or a cost, depending on who sustained the damages. (Generally, damages to the general public would be classified as a disbenefit, whereas damages to a government entity would be classified as a cost). It was not possible to simulate all 10,000 traces in the HEC-5Q model in the downstream analysis. Four scenarios were chosen to cover the full range of possible outcomes. The results from these simulations were then weighted with an estimate of the probability of their respective ranges occurring based on frequencies from the stochastic model.

The "Dry," "Moderate 1450," and "Moderate 1455" scenarios were actual traces from the stochastic model. The "Wet" future was not an actual trace but a scenario to represent a continuation of the recent wet period. A scenario that resulted in Devils Lake overflowing to the Sheyenne River was obviously needed to assess the potential damages

that could occur for those events represented in this class. A trace from the stochastic model could have been selected to represent this case or class, and it would have generated similar results. The "Wet" future is one that local interests can relate to from their experience, as opposed to a synthetic stochastic trace. It also, as pointed out in the comments, indicates what it would take climatologically to reach the overflow or runout elevation and how long it would take to get there.

In Public Law 108-7, the Congress has, however, removed the traditional requirements regarding economic justification and provided instead that the justification for the emergency outlet shall be fully described, including the analysis of the benefits and costs.

D-3: Stochastic Analysis is Not a True Measure of Economic Justification
To reduce the risks and uncertainties of the future, the wet scenario should be used to determine the costs and benefits of the project. (ND)
Response:
The stochastic approach is the only method that can produce a probability distribution of net benefits. The Principles and Guidelines state that the "expected" value must be used in the net benefit computation. This would therefore be the mean value of the derived probability distribution. Conversely, the "Wet" future scenario by its very name implies "non-expectation." It is a future that by design would result in benefits that would be higher than average or higher than what would be "expected."

Because of the uncertainty about future lake levels, four future hydrologic scenarios were evaluated, the wet future being one of them, to augment the standard probability-based economic analysis. The purpose was to show how the cost, benefits, and ultimate economic feasibility change for the various alternatives under the assumed scenarios. These results, along with information about the risk and uncertainty related to each alternative under each scenario, have been made available to Washington-level decision-makers as they decide how to address the flooding problem at Devils Lake.

In Public Law 108-7, the Congress has, however, removed the traditional requirements regarding economic justification and provided instead that the justification for the emergency outlet shall be fully described, including the analysis of the benefits and costs.

D-4: Sensitivity of Changes in Annual Precipitation
The apparent effectiveness or need for the Pelican Lake outlet under the Wet Future Scenario would be negated with appreciable change in assumed precipitation from the 1993 – 1999 average. A 1-in. increase in the average annual precipitation under the Wet Scenario in the Devils Lake Basin would bring the lake close to overflow, and a 2-in. increase would overtake the outlet, even if operating at full capacity. A 1-in. decrease in annual precipitation would negate the assumed benefits of an outlet. (NWF)
Response:
The Corps concurs that small changes in climate do have significant effects on the Devils Lake level. A 2-in. increase in average annual precipitation could result in the lake overflowing even with the Pelican Lake outlet. A 1-in. decrease in average annual precipitation would not likely negate the benefits of the outlet. The moderate trace in

which the lake rose to elevation 1455 in 15 years had a benefit-cost ratio of 0.55. From the scenario analysis, it can be concluded that if the lake were to rise above elevation 1458, in 15 years, there would be enough benefits to offset costs for the Pelican Lake outlet.

D-5: Conditions of Construction Authorization

The first four conditions of construction authorization language have not been met (technically sound, economically justified, environmentally acceptable, comply with BWT). (CA)

Response: The Report identifies that not all of the conditions of the authorization legislation can be met. If it is decided to proceed with an outlet based on other factors, such as risk and the uncertainty regarding future lake levels, the need for new authorizing language is expected. It should be noted that the most recent authorizing legislation (Energy and Water Development Appropriations Act, 2003, Division D of PL 108-7), as displayed in Chapter 1 of the report, includes revised language regarding the conditions of construction.

D-6: Fort Totten Reservation Boundary

The correct boundary of the Fort Totten Reservation includes both Devils Lake and the Sheyenne River [and also includes the area of the Pelican Lake outlet]. (DOI) The State contends that the Pelican Lake outlet would not pass through any portion of the Reservation. (ND) The cultural and political boundary issues of the Spirit Lake Nation are fomented by ongoing conflicts with state and federal authorities over lake ownership of the Mni Wakan. (SLA)

Response:

Information originally gathered on the boundaries of the Fort Totten Reservation indicated that the western boundary runs southeast to the Sheyenne River in the vicinity of Highway 281. Included in this information were both the plat books published by the Midland Atlas Company and a December 1977 land ownership status map from the Bureau of Indian Affairs. Information received from the Spirit Lake Nation at a public meeting indicated that the boundary is to the southwest and encompasses the Peterson Coulee outlet route. The Bureau of Indian Affairs (Great Plains Regional Office, Department of the Interior) confirmed this. They supplied a map showing a boundary to the southwest. To the contrary, a copy of the master title plat obtained May 23, 2002, from the Bureau of Land Management (Department of the Interior) indicates the western boundary is to the southeast. The boundaries of reservations are set by treaty and law. The treaty of 1867 set the western boundary as starting at "…the most westerly point of the same [Devils Lake]; thence on a direct line to the nearest point on the Cheyenne River; …" which does not specify southwest or southeast. The State of North Dakota supplied a legal opinion of the boundary and a history of the discussions regarding that boundary over time. This opinion concluded that the boundary line was surveyed erroneously, that the tribe has been compensated for that error and that the boundary line did not change from the survey line. An interesting point, the Spirit Lake Nation's Website shows a map with the same boundary line as the master title plat; i.e., to the southeast.

While it is clear that there is disagreement by and among the Bureau of Indian Affairs, the Bureau of Land Management, and the State of North Dakota over the location of the western reservation boundary, it has been determined by the St. Paul District Office that the boundary advocated by the Bureau of Indian Affairs will be used for the analysis of Tribal effects. Permit jurisdiction for the project is dependent on whether Tribal trust lands or allotted lands are affected. See Comment A-2 on Clean Water Act permitting.

D-7: Sheyenne River Impacts

Impacts to fishery and streambank erosion on the Sheyenne River are significant. Further analysis of downstream aquatic impacts is needed. Impacts to the operation of the Valley City National Fish Hatchery need to be included. Separate in-kind aquatic mitigation is needed for impacts on the Sheyenne River. Higher river levels will jeopardize the 100+-year-old oak savanna forest. (ND, DOI, NWF, EPA, SC, PSS, TWS)

Response:

Impacts to aquatic resources were identified and discussed in the Report. The discussion of potential impacts to Lake Ashtabula and the National Fish Hatchery has been expanded. The project has been modified to alleviate affects associated with project operation and includes erosion protection features to reduce aquatic effects, ramping of flows to minimize aquatic effects, high flow by-pass channels to preserve and help the recovery of the aquatic resource after the outlet ceases operation, a sand filter to address biota transfer, the collection of additional baseline information, and the identification of potential areas for fee title acquisition of riparian lands. Long-term monitoring is proposed to evaluate the effectiveness of the mitigation features, and a potential plan is described in Chapter 6 and Appendix C. Supplemental NEPA documentation would be prepared as needed to address any proposed modifications to the project.

Some of the potential problems at the hatchery result from high flows and the inability to drain the ponds. Baldhill Dam would be operated within its present limits to minimize downstream flooding and should minimize effects on the draining of hatchery ponds. Water quality has not been identified as a significant concern affecting hatchery operation. If long-term monitoring reveals that the operation of an outlet has additional effects on hatchery operations, mitigation measures would be identified and feasible solutions implemented.

Previous studies have indicated that there is a relationship between nutrients/storage ratio/walleye production in Lake Ashtabula. Outlet operation would affect this relationship, possibly decreasing walleye production. Some fish may be passed downstream due to the increased flow and decreased storage time in the reservoir. Mitigation for aquatic impacts has been identified. Mitigation features such as high flow by-pass channels, management of riparian habitat, in-stream structures, or modifications to outlet operation would reduce these impacts.

The oak savanna is located in the uplands farther away from the river and should not be affected by increased river flows or groundwater levels. The flow will be constrained to the channel, and groundwater effects are estimated at about a 0.5-ft increase about 250 ft from the river.

D-8: Induced Flooding Downstream

The proposed outlet will increase flooding problems on either the Red River of the North or the Sheyenne River. (MCF, PC)

Response:

The proposed outlet's operating plan is to constrain the outlet discharge to 600-cfs channel capacity. The minimum 600-cfs capacity occurs at just a few locations upstream of Lake Ashtabula. Otherwise, the capacity is higher. The outlet discharge would be metered so that the combined flow with the outlet would not exceed 600 cfs at the insertion point. After the flow reaches Lake Ashtabula, the flow would be re-regulated according to the standard operating rule curve for the dam. In addition, there is now a 5-foot increase in the flood pool storage that would be available to store this flow in case of high flows downstream. Furthermore, the proposed outlet-operating plan specifies no pumping until 1 May of each year, which is on the recession of the spring runoff event. HEC-5Q simulations modeled these aspects and showed no significant increase in flows downstream above channel capacity including the Red River. Typical with- and without-hydrographs are shown in Appendix A.

Although the project impacts are based on the framework of an operational plan, there may be refinements to that operation, subject to coordination with the operational task force. This plan would identify where channel capacity would be measured and if there are other considerations such as flows at downstream locations such as Valley City or the pool elevation at Baldhill Dam. At 600 cfs, there is some overbank flow and inundation of low-lying areas adjacent to the channel at some locations upstream of Lake Ashtabula. These areas have been preliminarily identified as required for purchase of flowage easements. Funds for this purpose have been included in the project cost estimate.

D-9: Effect on Existing Drainage on the Sheyenne River

Underground drainage for farmland along the Sheyenne River east of Sheldon, North Dakota, is adversely affected when the river is high. Operation of an outlet will affect farm operations on these lands because drainage will be affected. (PC)

Response:

Groundwater wells were installed and have been monitored to better understand these impacts. Additional wells will be installed and monitored as part of an outlet project. Current studies show that generally, the maximum release of 300 cfs into the Sheyenne River would have less than a 0.5-ft increase in groundwater stages from 50 to 300 ft from the river. If this brings the groundwater close enough to the surface to affect normal farming operations, an easement on that land may be required.

D-10: Drains in the Upper Basin

Several commenters indicated that consideration should be given to closing existing drains in the Upper Basin in order to restore lost storage. The NWF commented that a moratorium on additional drainage should be required as part of an outlet plan and discussed in detail in the EIS. NWF also commented that Section 402c of the Water Resources Development Act of 1986 requires the development and completion of a floodplain management plan by non-federal interests that will preserve the level of

protection that is provided by the project and upon which it was justified. NWF argues that by not including a moratorium on additional drainage as part of the outlet plan, the Corps would be in violation of those requirements. (NWF, 2 PCs)

Response:

The Corps concurs that controls on future wetland drainage in the upper basin would improve the effectiveness of other features. The Project Cooperation Agreement (PCA) includes requirements that the non-Federal sponsor comply with requirements of Section 402 of the Water Resources Development Act of 1986, which requires the Non-Federal interest to implement a flood management plan. Whether the sponsor is to maintain the level of protection that is provided by the project to include a moratorium on any new drainage permits in the upper basin will be determined during development of the PCA.

D-11: Water Quality Standards and Antidegradation Review Process

Any increase in constituent concentrations above safe drinking water maximum contaminant levels must be treated to at least that level. It appears that sulfate can exceed 250 mg/L at times, and, therefore, additional treatment or alternate supplies may need to be developed. An NPDES permit cannot be issued if discharge violates state water quality standards. Important part of NPDES permit is antidegradation review process. (ND)

Response:

Concur. See revisions to "Water Quality Considerations" in the Final Report/EIS.

D-12: General Ineffectiveness of an Outlet

There is general ineffectiveness of any outlet in lowering the lake levels. (DOI, NWF)

Response:

The expected effectiveness of various outlet plans is documented in the Report. With the Pelican Lake 300-cfs outlet plan, for a wet future scenario, the lake would go up another 10 ft to elevation 1457.5, which is about 3 ft lower than would occur without an outlet.

D-13: Infrastructure Protection as Preferred Alternative

The most cost-effective solution remains the incremental approach of building protection as necessary and warranted. (MN, MO, NWF)

Response:

The analysis of infrastructure protection has been expanded.

D-14: Corps' Environmental Operating Principles

The DEIS violates each of the Corps of Engineers' recently released "Environmental Operating Principles." (NWF, PC)

Response:

Briefly summarized, the seven Environmental Operating Principles (EOP) are: 1) strive to achieve environmental sustainability, 2) recognize the interdependence of life, 3) seek balance and synergy among human development and natural systems, 4) accept corporate responsibility and accountability for decisions, 5) seek ways and means to assess and mitigate cumulative impacts, 6) build and share scientific, economic, and social knowledge, and 7) respect the views of others interested in Corps activities. The IPR/EIS

alternatives analysis and recommendations are consistent with these principles. The EOP were considered with the wet scenario and the Pelican Lake outlet alternative. Specifically, the Pelican Lake outlet alternative minimizes downstream effects by discharging the freshest water and constraining operation to channel capacity and water quality criteria. The outlet reduces the chances of an overflow, which could cause significant adverse effects to downstream resources. The outlet reduces the probability of these impacts occurring. Mitigation for unavoidable effects has been included to the extent practical to alleviate adverse effects, and long-term monitoring is proposed to evaluate the effectiveness of the proposed features and determine if additional mitigation is needed. The public involvement process has sought the views of others and has considered them in the analysis.

D-15: Justification as an Insurance Policy

Regarding consideration of an outlet as an insurance policy rather than an investment, the outlet neither guarantees that the lake will continue to rise and overflow nor provides compensation if it does; therefore, it should more accurately be viewed as a $125-million lottery ticket with virtually no chance of winning. (NWF, CA)

Response: This comment has been taken into consideration when developing a project recommendation.

D-16: Support of a Natural Overflow

The Spirit Lake Tribe has supported a natural overflow of the lake system into the Sheyenne River. (DOI)

Response:

This comment has been taken into consideration when developing a project recommendation.

D-17: Water Quality Impacts in Devils Lake

The Pelican Lake outlet plan will remove the freshest of the lake inflow to the Sheyenne River, thereby reducing the freshening effect the inflow has on the lake. (DOI)

Response:

Concur, although the effect on Devils Lake would depend on the future climatic conditions. As shown in the Report, if the wet scenario prevails, the lake would increase in salinity over the without-project conditions but not to a level greater than the conditions that exist now. If the outlet operates and dry climatic conditions occur in the future, the lake would reach higher TDS levels sooner than without project conditions or conditions that exist currently. See responses to Comments B-17 and B-22.

D-18: Safe Drinking Water

Any increase in constituent concentrations above safe drinking water maximum contaminant levels must be treated to at least that level. It appears that sulfate can exceed 250 mg/L at times and, therefore, additional treatment or alternate supplies may need to be developed. (ND)

Response:

The Downstream Water Users Study estimated additional municipal water treatment costs for Valley City based on meeting the drinking water standards through the softening

process using existing plant capacity (Phase I model). In the DEIS economic analysis the future annual costs for water treatment for the Pelican Lake outlet alternative reflect the assumption that only Phase I (softening) costs would be incurred (see Table 3 – Alternative Costs). The average annualized Phase I cost for Valley City is about $10,500.

D-19: Outlets are Technically Unsound and Economically Unjustified
Based on the ineffectiveness of an outlet to reduce the chance of a significant overflow event and the sensitivity of the effectiveness/benefits of an outlet to changes in precipitation in the assumed wet scenario, the outlet should be considered technically unsound and economically unjustified.

The stochastic analysis demonstrates the proposed Pelican Lake outlet would do little to reduce chances of the most serious damages that could result from an overflow. Under the stochastic analysis, an outlet would reduce the chance of an overflow from 9.4 percent to 4.1 percent, but would only reduce the chance of an overflow event with a flow of at least 300 cfs from 4 percent to 2 percent. The 1-percent chance that Devils Lake would reach elevation 1463 remains unchanged. Therefore, the outlet would do virtually nothing to prevent the most serious damages that could result from an overflow of Devils Lake at elevation 1463. (NWF)
Response:
The quoted frequency numbers were gleaned from the Economic Section, Appendix B, Table 11. They were rounded off in this table. So the probability that the lake would reach or exceed elevation 1463.0 is 1 percent without the Pelican Lake outlet and 0.5 percent with the outlet.

D-20: Outlet Should be Built Soon
The Draft EIS demonstrates that an outlet from Pelican Lake should be built as soon as possible for the citizens of the Devils Lake region, and the citizens that live downstream along the Sheyenne and Red Rivers. (ND)
Response:
Comment noted. Will take into consideration.

D-21: Effectiveness of an Outlet
An outlet is ineffective, would not meet the expectations of the community, and may cause the operation of the outlet to change from that described in the Draft Report and result in more severe downstream effects. (DOI)
Response:
Comment noted. Will take into consideration.

D-22: Outlet is Not Justified and Results in Significant Impacts
The Draft Report/EIS demonstrates that an outlet is not justified. There are significant adverse effects, limited effectiveness, and unquantified impacts. (CA, MO, EPA, NWF, SC, MCEA, PSS, PCOA, MCF, SLA, TWS, PCs)
Response:
Comment noted. Will take into consideration.