Missouri River
Master Water Control Manual
Review and Update

Final

Environmental Impact Statement

Volume VI: Appendix D, RDEIS Comments and Responses, Part 1

U.S. Army Corps
of Engineers
Northwestern Division

March 2004

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Acronyms and Abbreviations

AOP	Annual Operating Plan
ARPA	Archeological Resources Protection Act
BA	Biological Assessment
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BiOp	Biological Opinion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic foot per second
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CWCP	current Water Control Plan
DEIS	Draft Environmental Impact Statement
DRM	Daily Routing Model
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
GIS	Geographic Information System
GP	Gavins Point
GWh	gigawatt-hour
HC	Hydrologic Engineering Center
HQUSACE	Corps Headquarters
kcfs	thousand cubic feet per second
MAF	million acre-feet
MAPP	Mid-Continent Area Power Pool
Master Manual	Missouri River Master Water Control Manual
MBSC	Missouri Basin Survey Commission
MCP	Modified Conservation Plan
MRBA	Missouri River Basin Association
MRRIC	Missouri River Recovery Implementation Committee
MRRIP	Missouri River Recovery Implementation Program
msl	mean sea level
MW	megawatt
MWh	megawatt-hours
NAGPRA	Native American Grave Protection and Repatriation Act
NAS	National Academy of Sciences
NED	National Economic Development
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service

NRCS	Natural Resources and Conservation Service
O&M	operation and maintenance
PA	Preferred Alternative
PDEIS	Preliminary Draft Environmental Impact Statement
PRDEIS	Preliminary Revised Draft Environmental Impact Statement
RDEIS	Revised Draft Environmental Impact Statement
RED	Regional Economic Development
RHM	Reservoir Habitat Model
ROD	Record of Decision
ROR	run of river
RPA	Reasonable and Prudent Alternative
SEIS	Supplemental Environmental Impact Statement
Study	Master Water Control Manual Review and Update
TMDL	Total Maximum Daily Load
TVA	Tennessee Valley Authority
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
WAPA	Western Area Power Administration
WCSC	Waterborne Commerce Statistical Center
WRDA	Water Resources Development Act
WSRA	Wild and Scenic Rivers Act

Glossary

Deposition-The process of laying down sediments after a transportation process (sedimentation).

Drawdown-The distance that the water surface of a reservoir is lowered from a given elevation as water is released from the reservoir. Also refers to the act of lowering reservoir levels.

Drought Conservation-Reduction of releases from the Mainstem Reservoir System to conserve water in the reservoirs for authorized project purposes.

Endangered-A plant or animal species that is in danger of extinction throughout all, or a significant portion, of its range. The U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) designates endangered species.

Erosion-The wearing away of a land surface or river channel by water, wind, ice, gravity, or other geological activities.

Eutrophication−The build-up of nutrients in a water body that promotes excessive algal growth.

Flat Release−Constant release of water from Gavins Point Dam to meet a prescribed release requirement (flat release for endangered species during the summer) or a subsequent minimum flow requirement downstream (navigation target requirements from May through August).

Floodplain Connectivity−Flooding of lands along the river to flush nutrients, an aquatic food source, into the river. Historically, flood flows in the spring caused this to happen on a fairly regular basis.

Habitat-The environment occupied by individuals of a particular species, population, or community.

Levee-A dike or embankment that protects land from flooding.

Lower River−The segment of the Missouri River that extends from Gavins Point Dam to the mouth of the river near St. Louis.

Mainstem Reservoir System-The portion of the Missouri River from the headwaters of Fort Peck Lake to Gavins Point Dam that includes the six large dams and their reservoirs.

Master Manual-The document that describes the Mainstem Reservoir System, including its Water Control Plan. The document establishes operational policy for the multiple project purposes of flood control, hydropower, water supply, water quality, irrigation, navigation, recreation, and fish and wildlife.

Navigation Season-The period of time that flow support is provided to serve navigation on the Lower River from Sioux City to the mouth near St. Louis. The length of a normal navigation season is 8 months (April 1 through December 1).

Navigation Service-The release of water from the Mainstem Reservoir System necessary to maintain 8 to 9 feet of water depth in the navigation channel between Sioux City and St. Louis.

Permanent Pool-The minimum water level necessary to allow the hydropower plants to operate and provide minimum service to recreation and fish and wildlife. The permanent pool also provides reserved space for sediment storage.

Release of Water-The controlled discharge of water from a reservoir to serve one or more authorized purposes.

Reservoir-An artificial body of surface water retained by a dam.

Riparian Habitat-The area adjacent to a stream channel, a reservoir, or wetland that supports the growth of woody vegetation that is not adapted for life in saturated soil conditions.

Run of River-Flows that are basically uncontrolled.

Sedimentation-The process of deposition of sediment.

Shallow Water Habitat–Areas along the river that are less than 5 feet deep, flowing at no more than 2.5 feet per second.

Spawning Cue–River conditions that prompt fish to spawn. For the pallid sturgeon and other native river fish, a spring rise on the Lower River may prompt spawning.

Tailwater-The river reach immediately downstream from a dam.

Threatened-Legal status afforded to a plant or animal species likely to become endangered within the foreseeable future throughout all or a significant portion of its range, as determined by the USFWS or the NMFS.

Upper Reservoirs-The three most upstream Missouri River reservoirs formed by Fort Peck Dam, Garrison Dam, and Oahe Dam.

Water Control Plan-A detailed plan outlining the guidelines for operation of the Mainstem Reservoir System that is contained in the Master Manual.

Wetland Habitat-Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support vegetation adapted for life in saturated soil conditions.

Appendix D, RDEIS Comments and Responses, Part 1

1. INTRODUCTION TO COMMENTS AND RESPONSES APPENDIX

This Revised Draft Environmental Impact Statement (RDEIS) Comments and Response Document, Appendix D to the Missouri River Master Water Control Manual Review and Update Final Environmental Impact Statement (FEIS), is organized into four parts contained in the final four volumes of the FEIS (Volumes VI, VII, VII, and IX). Part 1 (Volume VI) contains an overview of the RDEIS public comment process, a summary of the pubic comments received, and responses to all public comments. Part 2 (Volume VII) contains copies of RDEIS comment documents (letters, postcards, petitions, e-mails, faxes, etc.) from Federal agencies, Tribal groups, State agencies, local agencies, non-governmental organizations, and businesses. Part 3 (Volume VIII) contains copies of RDEIS comment documents from private citizens. Part 4 (Volume IX) contains copies of the RDEIS public hearing transcripts.

Users of this appendix should be able to find the comment document or transcript and associated responses they are interested in by first checking for the correct volume that contains the comment document category they are interested in (Federal agencies, Tribal groups, State agencies, local agencies, non-governmental organizations, businesses, private citizens, and transcripts). Then, a summary table appears for each section (group) of comment documents within a volume, followed by the actual comment documents for that group. Each summary table lists the sender (or transcript) and notes the numbers of the responses to identified comments that are contained in that comment document (or transcript). All responses are contained in Section 4.0 of Appendix D, Part 1 (Volume VI).

2. OVERVIEW OF THE PUBLIC COMMENT PROCESS

A 6-month public comment period followed publication of the RDEIS in August 2001. The Corps hosted workshops and hearings throughout the Missouri River basin, including Tribal reservations, and some Mississippi River locations. In addition to public comments recorded in transcripts during these public hearings, nearly 54,000 public comment documents were received via mail, fax, e-mail, and hand-delivery. The Corps evaluated each comment document received and reviewed comments recorded in hearing transcripts so that issues of concern could be identified, grouped, and considered by technical experts. Issues raised through the comment/response process were used in the development of the FEIS. Responses to public comments identified in the comment documents and transcripts are provided in Section 4.0 of Part 1 of Appendix D (Volume VI).

3. SUMMARY OF PUBLIC COMMENTS RECEIVED

In addition to the oral comments provided at the public hearings, the nearly 54,000 comment documents received came from the following groups of interested parties:

- Federal Agencies
- Tribal Groups
- State Agencies
- Local Agencies
- Non-Governmental Organizations
- Businesses
- Private Citizens.

Table D1-1 shows the volume and section numbers where each category of comment document can be found

Table D1-1. Location of RDEIS comment documents.

Category	Volume Number	Section Number
Federal Agencies	VII (Appendix D, Part 2)	4
Tribal Groups	VII (Appendix D, Part 2)	5
State Agencies	VII (Appendix D, Part 2)	6
Local Agencies	VII (Appendix D, Part 2)	7
Non-Governmental Organizations	VII (Appendix D, Part 2)	8
Businesses	VII (Appendix D, Part 2)	9
Private Citizens—Form Comment Documents	VIII (Appendix D, Part 3)	4
Private Citizens—George Washington University Student Papers	VIII (Appendix D, Part 3)	5
Private Citizens—Unique Comment Documents on Official Comment Form	VIII (Appendix D, Part 3)	6
Private Citizens—Unique Comment Documents on Comment Post Card	VIII (Appendix D, Part 3)	7
Private Citizens—Unique Comment Documents	VIII (Appendix D, Part 3)	8
Public Hearing Transcripts	IX (Appendix D, Part 4)	4-23

This volume (Appendix D, Part 1) contains all the responses to comments coded on comment documents received regarding the RDEIS.

4. RESPONSES TO RDEIS COMMENTS

The Corps evaluated each comment document received and reviewed comments recorded in hearing transcripts so that issues of concern could be identified, grouped, and considered by technical experts. Issues raised through the comment/response process were used in the development of the FEIS. Responses to the issues raised are presented by subject in the following subsections:

4.1 FORM COMMENT DOCUMENTS RESPONSES

C02

The Corps' PA reflects the need for changes in the operation of the Mainstem Reservoir System. The Corps believes that the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The PA was developed in consideration of impacts to both upstream and downstream key uses and resources. The Corps believes the PA represents a balanced approach to operation of the Mainstem Reservoir System.

In conjunction with the PA, the Corps has proposed MRRIP, guided by an overall adaptive management strategy. MRRIP includes habitat restoration and creation, increased pallid sturgeon propagation support, population assessment, a strong research monitoring and evaluation program, flow tests, and MRRIC that includes diverse stakeholder representation. MRRIC would provide recommendations to the Federal agencies regarding recovery measures. Both MRRIP and MRRIC are consistent with NAS recommendations in the January 2002 report entitled *The Missouri River, Exploring the Prospects for Recovery*. Release changes from Gavins Point Dam and Fort Peck Dam were not included in the PA.

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

C03

The U.S. Army Corps of Engineers' (Corps') Preferred Alternative (PA) reflects the need for changes in the operation of the Mainstem Reservoir System. The Corps believes that the PA evaluated in the Final Environmental Impact Statement (FEIS) serves Congressionally authorized project purposes, complies with environmental laws including the Endangered Species Act (ESA), and fulfills the Corps' responsibilities to Federally recognized Tribes. The PA was developed in consideration of impacts to both upstream and downstream key uses and resources. The Corps believes the PA represents a balanced approach to operation of the Mainstem Reservoir System.

The PA includes more stringent drought conservation measures. During a drought period such as that experienced in the 1980s, more water would be conserved in the upper three lakes, Fort Peck Lake, Lake Sakakawea, and Lake Oahe, earlier in a drought.

In conjunction with the PA, the Corps has proposed Missouri River Restoration Implementation Program (MRRIP), guided by an overall adaptive management strategy. MRRIP includes habitat restoration and creation, increased pallid sturgeon propagation support, population assessment, a strong research monitoring and evaluation program, flow tests, and Missouri River Restoration Implementation Committee (MRRIC) that includes diverse stakeholder representation. MRRIC would provide recommendations to the Federal agencies regarding recovery measures. Release changes from Gavins Point Dam and Fort Peck Dam were not included in the PA and will not be included in the revised Master Manual.

Following publication of the Revised Draft Impact Statement (RDEIS), the Corps and the U.S. Fish and Wildlife Service (USFWS) reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a Biological Assessment (BA) that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 Biological Opinion (BiOp) on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and

Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' Record of Decision (ROD) following the FEIS comment period.

C05

Thank you for your comment. The Missouri River is a National treasure that must be protected, and the dams are National investments that serve the needs of the Missouri River Basin and the Nation. The Corps' challenge throughout the Missouri River Master Manual Review and Update has been to develop a flow management plan that accomplishes both objectives.

The Corps' PA reflects the need for changes in the operation of the Mainstem Reservoir System. The Corps believes that the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The Corps believes the PA represents a balanced approach to operation of the Mainstem Reservoir System that will ultimately lead to a more natural condition for the Missouri River.

C06, C07

The Corps carefully considered impacts to agriculture resulting from Gavins Point Dam flow modifications in arriving at our decision on the PA. The Corps' PA reflects the need for changes in the operation of the Mainstem Reservoir System. The Corps believes that the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The PA was developed in consideration of impacts to both upstream and downstream key uses and resources. The Corps believes the PA represents a balanced approach to operation of the Mainstem Reservoir System.

The PA includes more stringent drought conservation measures. During a drought period such as that experienced in the 1980s, more water would be conserved in the upper three lakes, Fort Peck Lake, Lake Sakakawea, and Lake Oahe, earlier in a drought.

In conjunction with the PA, the Corps has proposed MRRIP guided by an overall adaptive management strategy. MRRIP includes habitat restoration and creation, increased pallid sturgeon propagation support, population assessment, a strong research monitoring and evaluation program, flow tests, and MRRIC that includes diverse stakeholder representation. MRRIC would provide recommendations to the Federal agencies regarding recovery measures.

Release changes from Gavins Point Dam, which would result in an increased risk of crop damages, were not included in the PA.

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

An update on the navigation analysis was conducted following the release of the RDEIS using 1999 data on navigation movements on the Missouri River. The primary reason for this re-analysis was to better understand the potential impacts of having reduced summer flows, especially those that would require the suspension of navigation during the period from mid-June through mid-September (when the increased releases make it to the Missouri River mouth near St. Louis). Results of this analysis were documented in a report by the Tennessee Valley Authority (TVA, 2002). A primary finding of this analysis was that navigation could continue on the Missouri River even with the lower flows recommended by the USFWS. The PA does not include reductions in releases from Gavins Point Dam.

The RDEIS discusses thermal energy at risk due to low summer flows. There are 18 thermal plants

along the Missouri River below Gavins Point Dam that rely on cooling water. The EPA regulates the discharge temperature of the cooling water. If the temperature of the discharge water is too high, thermal plants have to reduce generation or completely shut down. The RDEIS identified 387 megawatts (MW) of capacity and 203 million megawatt-hours (MWh) of energy could be lost if Gavins Point Dam releases were to drop to 21 thousand cubic feet per second (kcfs) during the summer as recommended by the USFWS; however, these lower summer releases have not been included in the PA.

Under the current Water Control Plan (CWCP), average annual recreation benefits for the Missouri River from Fort Peck, Montana to St. Louis, Missouri total $84.70 million. This includes $31.63 million total for the upper three lakes, $28.75 million total for the three smaller lakes, $19.73 million on the Lower River, and $4.58 million for the river reaches between the lakes. The corresponding totals for the PA reflect a benefit ($34.21 million annually) to the three upper lakes resulting from inclusion of more stringent drought conservation measures, but reflect a slight reduction of benefits (to $19.68 million annually) on the Lower River.

C08

See Response C02.

C09

The Corps' PA reflects the need for changes in the operation of the Mainstem Reservoir System. The Corps believes that the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The Corps believes the PA represents a balanced approach to operation of the Mainstem Reservoir System.

Under the CWCP, average annual recreation benefits for the Missouri River from Fort Peck, Montana to St. Louis, Missouri total $84.70 million. This includes $31.63 million total for the upper three lakes, $28.75 million total for the three smaller lakes, $19.73 million on the Lower River, and $4.58 million for the river reaches between the lakes. The corresponding totals for the PA reflect a benefit ($34.21 million annually) for the three upper lakes resulting from inclusion of more stringent drought conservation measures, but reflect a slight reduction of benefits (to $19.68 million annually) on the Lower River.

C9A, C9B, C9C, C9D, C9E, C9F

See Response C02.

C9G

Your support for the CWCP is recognized. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. The Corps believes that the PA serves Congressionally authorized project purposes, complies with environmental laws including ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

The PA includes more stringent drought conservation measures. During drought periods, such as that experienced during the 1980s, more water would be conserved in the upper three lakes in a drought. This results in slightly higher lake levels. The higher lake levels would not impact downstream water supply needs for irrigation and drinking water. The more stringent drought conservation measures would result in reductions in releases to support Missouri River navigation service levels and season length.

Impacts to agriculture resulting from Gavins Point Dam flow modifications were thoughtfully considered by the Corps in arriving at our decision on the PA. The PA does not include release changes from Gavins Point Dam that would increase the risk of crop damages.

In conjunction with the PA, the Corps has proposed MRRIP guided by an overall adaptive management strategy. MRRIP includes habitat restoration and creation, increased pallid sturgeon propagation support, population assessment, a strong research monitoring and evaluation program, flow tests, and MRRIC that includes diverse stakeholder representation. MRRIC would provide recommendations to the Federal agencies regarding recovery measures. Release changes from Gavins Point Dam and Fort Peck Dam were not included in the PA.

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The

Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

An update on the navigation analysis was conducted following the release of the RDEIS using 1999 data on navigation movements on the Missouri River. The primary reason for this re-analysis was to better understand the potential impacts of having reduced summer flows, especially those that would require the suspension of navigation during the period from mid-June through mid-September (when the increased releases make it to the Missouri River mouth near St. Louis). Results of this analysis were documented in a report by the Tennessee Valley Authority (TVA, 2002). A primary finding of this analysis was that navigation could continue on the Missouri River even with a split navigation season. Another important finding was that navigation benefits would be dramatically lower in minimum service years. The updated numbers were incorporated into the analysis of Missouri River navigation benefits for the FEIS. The PA does not include lower summer releases from Gavins Point Dam.

The RDEIS and FEIS discuss thermal energy at risk due to low summer flows. There are 18 thermal plants along the Missouri River below Gavins Point Dam that rely on cooling water. The EPA regulates the discharge temperature of the cooling water. If the temperature of the discharge water is too high, thermal plants have to reduce generation or completely shut down. The RDEIS identified 387 MW of capacity and 203 million MWh of energy could be lost if Gavins Point Dam releases were to drop to 21 kcfs during the summer, as recommended by the USFWS in their November 2000 BiOp. An update of the thermal energy at risk analysis is included in the FEIS. That update shows that there is 2 to 3 times more thermal energy at risk than was identified in the RDEIS for summer releases of 21 kcfs. The PA does not include reductions in summer releases from Gavins Point Dam.

Rather than limiting public input into changes in river management, the Corps is committed to development of an adaptive management process that includes participation by a diverse range of basin stakeholders through MRRIC.

Your support for habitat restoration is noted. The Corps is committed to meeting the habitat recommendations included in the USFWS December 2003 Amendment to the November 2000 BiOp and will use all available authorities to accomplish habitat goals. Acquisition of property for habitat restoration is on a willing seller basis only.

C9H

See Response C02.

C10, C11

See Response C02.

C12

Your support for the CWCP is recognized. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. The Corps believes that the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

The Corps has clearly heard your concern regarding the increased flood risk and potential increased interior drainage damages that are associated with having more water in the river in May and June as a result of release changes from Gavins Point Dam in the spring. The PA does not contain a spring rise.

4.2 GEORGE WASHINGTON UNIVERSITY STUDENT PAPERS

Thank you for your papers concerning the Missouri River Master Manual Review and Update and the Corps' decision regarding an alternative Water Control Plan for the operation of the Missouri River Mainstem Reservoir System.

The Corps is pleased to see your interest in the Missouri River and your participation in the Responses NEPA process. As you continue your education and careers, we urge your participation in MRRIP and continued interest in the Missouri River and our Nation's waterways.

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4.3 CULTURAL RESOURCES RESPONSES

CR-1

Omaha District and the Fort Peck Tribes are currently identifying and updating cultural resource sites downstream of the dam that may be in imminent danger of being eroded and lost. With Tribal input, these sites are being prioritized, and sites are protected as funding becomes available.

CR-2

Impacts to historic properties will continue to be evaluated.

CR-3

The injunction against the Corps for low water levels does not make the historic model flawed. The site below the surface was a known site. Many sites below the water surface have been identified and cataloged in a database.

CR-4

Not all farms that are 50 years old meet the eligibility requirements to be on the National Register of Historic Places. There are no known farms that are on National Register of Historic Places that are adjacent to the Missouri River within the State of Missouri. If your farm is National Register eligible or listed please provide eligibility documentation from the State Historical Preservation Office to support the farm's eligibility.

CR-5

During the comment period none of the State Historic Preservation Offices identified archeological sites that will be eroded or negatively affected by the proposed spring releases from Gavins Point Dam. Further, the PA described in Chapter 8 of the FEIS does not include release changes from Gavins Point Dam.

CR-6

The RDEIS contains numerous discussions concerning cultural resources. The Government-to-Government consultation with the Tribes was conducted throughout the EIS process. The effort to survey, monitor, and protect cultural resources has been a centerpiece of discussions by the Tribes in the RDEIS' Government-to-Government consultation. The FEIS' Tribal Appendix contains all of the Tribes' comments concerning cultural resources. The Omaha District is moving forward with the Missouri River basin Tribes, and Tribal and State Historic Preservation Offices in the development of a new Programmatic Agreement for the Missouri River Mainstem Reservoir System projects. The Omaha District has contracts with several Tribes to do surveys on traditional cultural places. The Omaha District is moving forward with the development of Cultural Resources Management Plans with Tribal involvement and input.

CR-7

The Corps believes the cultural resource analysis of using an 8-foot floating band to measure impacts of the proposed alternatives and associated water levels and their impacts to cultural resources is adequate. This 8-foot band gives an index measurement from the current Water Control Plan. The Corps' CWCP is causing erosion of cultural sites and the alternatives being considered in the RDEIS indicate an increase of adverse impacts to cultural resources. The Omaha District will continue to survey, monitor, and protect cultural sites. The Northwestern Division Commander is making 3 million dollars available annually for the Omaha District cultural resource program.

CR-8

An 8-foot floating band was used to measure the impacts of the various alternatives on cultural resources. The top 3 feet of the band is affected by the surface wave action and the 5 feet below the surface is also affected by surface wave action with the pulling of fine material from the shallow areas below the surface. This model cannot measure impacts to cultural sites that are located at higher elevations than the pool will achieve.

CR-9

Cultural resource surveys are being conducted at five of the Missouri River mainstem lakes (Lake Oahe, Lake Sakakawea, Lake Sharpe, Lake Francis Case, and Lewis and Clark Lake); these surveys range from being 90 to 95 percent complete. Only 2 percent of Fort Peck Lake has been surveyed. Cultural resource surveys will be ongoing for many more years, as funds are available.

CR-10

Your comment is noted and a correction was made changing known sites to unknown sites.

CR-11

The 1994 Programmatic Agreement components will be utilized by the Omaha District to update priorities and plans as funding permits until a new agreement is developed and signed. Currently, the Corps is working on a new Programmatic Agreement to replace the 1994 Agreement. The information from the components within the 1994 Agreement and the new Agreement will be utilized in the development of the Missouri River Annual Operating Plan. The components will be used to assess the effects of changing water levels and how they might impact cultural resource sites.

CR-12

The cultural resource model was developed with the best information available. The model measures the differences between the alternatives. Some of the erosion processes cannot be modeled at this time, such as losses of large blocks along the shoreline due to the freeze-thaw cycle each winter and spring.

CR-13

It is noted that all sites have different values. The intent of the Study was not to identify each site and determine its value, but to assess and measure the differences between the alternatives with the best information available at the time. This information is important for decision-makers to consider when comparing the effects of the alternatives.

CR-14

Page 3-170, first paragraph, of the RDEIS has a transcription error stating, "a loss of 40 to 80 sites per year are being lost to erosion". The original statement was taken from Volume 7H: Environmental Studies (Historic Properties). The original statement is "each square mile probably contained from 4 to 8 sites - in a ten year period, from 40 to 80 sites are entirely lost." In probability, in a 20-year period approximately 80 to 160 could be destroyed.

CR-15

Adequate funding has been a primary determinant in cultural resources site protection. With only Operation and Maintenance (O&M) funding available, cultural resource protection competes with other O&M requirements. The Northwestern Division Commander recognizes the problem of losing cultural sites to erosion and is making an effort to ensure additional funding would be made available annually. For Fiscal Year 2004, the Omaha District has increased its budget total for cultural resources to $3 million.

CR-16

A new Programmatic Agreement is being developed. All of the Missouri River basin Tribes were asked to actively participate in its development. In June 2002, a meeting took place with Tribes, State Historic Preservation Offices, and the Advisory Council on Historic Preservation. Progress is being made in the development of a new Programmatic Agreement for the Missouri River mainstem lakes.

CR-17

An overall system-wide assessment of cultural resources is beyond the scope of the Study. Omaha District has an estimated cost of $77 million to survey, mitigate, and protect cultural resources.

CR-18

It is not the intent of the Corps to imply that there is an acceptable level of impacts to cultural resources in either the current Water Control Plan or the PA. The Corps recognizes the need to protect cultural resource sites on the Missouri River mainstem lakes.

CR-19

Indices give the relative rate of erosion from the CWCP. The CWCP is the baseline from which the Corps measures.

CR-20

The Water Ways Experiment Station study measured what happened under the CWCP. The model was measuring the difference between the CWCP baseline and the proposed alternatives to determine a greater or lesser impact.

CR-21

The model does not have the ability to measure impacts to cultural resource sites above the Flood Control Pool. The Corps recognizes that the land above Oahe's Flood Control Pool (elevation 1620 mean sea level) is subject to erosional forces and sloughing.

CR-22

Cultural resource sites that are partly within the Corps' project boundary would be within the cultural resource database. Sites that are outside the project boundary generally are not within the database unless the site was on or adjacent to the boundary and the surveyor discovered and mapped the site.

CR-23

Due to budget constraints, the Corps had only enough funds to do a sample survey of the Fort Peck Project. The limited funding was only enough to survey 2 percent of the Fort Peck Project.

CR-24

The Omaha District's 2002 cultural resources site database lists the following number of sites by reservoir project: Fort Peck Project – 139 sites, Garrison Project – 1,641 sites, Oahe Project – 1,060 sites, Big Bend Project – 334 sites, Fort Randall Project – 339 sites, and Gavins Point Project – 71 sites. It should be noted that not all project lands have been surveyed and that, as additional surveys are completed, project site numbers will change.

CR-25

The Omaha District spent $3.244 million on bank stabilization efforts for the protection of archaeological sites on the Missouri River from 1978 through 2002. All of this site protection work was completed with Operation and Maintenance funds. No new Congressional legislation was enacted to fund the site protection.

CR-26

The Omaha District has ongoing contracts with the Missouri River Tribes to survey and define both Cultural and Traditional Cultural Sites. Due to the sensitive nature of the cultural information, the Omaha District will not furnish this information to the public. When requested by a properly authorized Tribal government representative, the Corps will furnish the requested information to the Tribe.

CR-27

The changing water levels are normal operational activities that take place in a Mainstem Reservoir System to move water through the system in order to have adequate flood control storage. The flows serve the multiple Congressionally authorized project purposes. The more water that is held in the lakes, the higher the erosion rate and, therefore, the greater the negative impacts to the cultural resources.

CR-28

When cultural resource sites are inundated by the lake, the site is afforded protection from looting and wave action erosion.

CR-29

Most cultural sites that are associated with riverboats are no longer within the current channel; therefore, lower water levels would not lend to the recovery of the sunken riverboats.

CR-30

The Corps will continue to own and manage lands that were acquired for the Garrison Project. If so directed by Congress, the Corps will transfer lands to the Tribes.

CR-31

If human remains are found on Fort Peck Project lands, the Native American Grave Protection and Repatriation Act (NAGPRA) will be enforced by the Corps. The Fort Peck Tribes will be included in the process of repatriation if remains are determined to be associated with those Tribes.

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4.4 ENDANGERED SPECIES RESPONSES

EnSp-1

The Missouri River Fish and Wildlife Mitigation Project has been established to mitigate, or compensate, for fish and wildlife habitat losses that resulted from past channelization efforts on the Missouri River. The project strives to achieve the healthiest ecosystem possible and will offer diverse terrestrial and aquatic habitats therefore supporting the greatest number of species. The Project extends from Sioux City, Iowa to the mouth of the Missouri River near St. Louis, Missouri, a length of 735 miles. The purpose of this mitigation effort is to acquire, restore, and preserve aquatic and terrestrial habitat at separate locations along the river in Nebraska, Iowa, Kansas, and Missouri. Congress first authorized construction of the Missouri River Mitigation Project in Section 334 (a) of the Water Resources Development Act of 1986 (WRDA86). The authorization included acquisition and development of 29,900 acres of land, and habitat development on an additional 18,200 acres of existing public land in the States of Iowa, Nebraska, Kansas, and Missouri. In 1999, Congress passed another WRDA bill. Section 661 (a) of WRDA99 included modifying the Missouri River Mitigation Project by increasing the amount of acreage to be acquired by 118,650 acres.

EnSp-2

The Corps believes that the PA includes features that will ultimately result in an ecologically improved condition. In conjunction with the PA, the Corps has proposed a MRRIP that includes aggressive sandbar habitat development and an accelerated reconstruction of the Lower River to provide a more diverse aquatic habitat.

EnSp-3

The Corps believes that the PA serves the Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. Under the ESA, actions taken by the Corps cannot jeopardize the continued existence of species provided protection under the ESA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-4

As indicated in the NAS report, the greatest area of scientific uncertainty relates to species response to changes in system operation. Because of this uncertainty, the Corps proposes a MRRIP that includes a strong research, monitoring, and evaluation program. MRRIP would be guided by an overall adaptive management strategy.

EnSp-5

In conjunction with the PA, the Corps proposes a MRRIP guided by an overall adaptive management strategy. MRRIP includes aggressive sandbar habitat development; an accelerated reconstruction of the Lower River to provide a more diverse aquatic habitat; and a strong research, monitoring, and evaluation effort. The Gavins Point Dam flow changes recommended in the USFWS November 2000 Reasonable and Prudent Alternative (RPA) have not been included in the PA. The changes were envisioned to build sandbar habitat, move sediment, reconnect the riverine and floodplain habitat, and trigger pallid sturgeon spawning. The Corps analysis indicated that the spring rise did not meet the first three attributes. Additionally, there is considerable uncertainty about the key attributes necessary for effective pallid sturgeon spawning and recruitment. These key attributes can be determined through scientific study of natural spring rises in other locations throughout the basin without doing a spring rise from Gavins Point Dam.

EnSp-6

The impacts of peaking power operations on hydropower production and revenue were determined; however, impacts of peaking power operations on endangered species were not specifically analyzed. Peaking operations are constrained for the benefit of endangered species under the CWCP and will continue to be constrained in a similar manner under the PA.

EnSp-7

Chapter 8 of the FEIS describes the PA and its effect on the three listed species affected by the operation of the mainstem system. Other species are not discussed individually. In the EIS, the Corps elected to address habitat instead of the species themselves. A basic assumption is that improved or a greater amount of habitat should translate to greater abundance and healthier species. A research program designed specifically to determine the key attributes needed for effective pallid sturgeon spawning and recruitment is an essential element of MRRIP and will represent a significant step in advancing the scientific knowledge of the species. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

ENSp-8

The PA includes unbalancing of the upper three lakes but does not include release changes from Gavins Point Dam or Fort Peck Dam included in the USFWS' November 2000 Reasonable and Prudent Alternative. In conjunction with the PA, the Corps has proposed MRRIP guided by an overall adaptive management strategy. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-9

This observation agrees with the data presented in the RDEIS and FEIS.

EnSp-10

The Corps concurs. Correction/clarification was made in the FEIS.

EnSp-11

We concur with your characterization of the MRBA's November 19, 1999 letter and the USFWS BiOp and agree that the Missouri River Fish and Wildlife Mitigation Project is a vital component of the Missouri River ecosystem recovery. Considerable progress is being made in that effort.

EnSp-12

An extensive research, monitoring and evaluation program is included in MRRIP proposed by the Corps. These features will ensure that the future operation of the Missouri River Mainstem System includes full public involvement and that actions taken are based on the best available science and the biological results/impacts are closely monitored. MRRIP will be guided by an overall adaptive management strategy.

EnSp-13

The Corps' PA does not include release changes from Gavins Point Dam. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-14

Release changes from Gavins Point Dam and Fort Peck Dam have not been included in the PA. In conjunction with the PA, the Corps is proposing MRRIP, guided by an overall adaptive management strategy. MRRIP includes an extensive research, monitoring, and evaluation program that will ensure that actions taken are based on the best available science and the biological results/impacts are closely monitored.

EnSp-15

Your support of the Modified Conservation Plan (MCP) is noted.

EnSp-16

Your support of the Missouri River Basin Association (MRBA) proposal is noted.

EnSP-17

The Gavins Point Dam flow changes recommended in the USFWS November 2000, RPA were envisioned to build sandbar habitat, move sediment, reconnect the riverine and floodplain habitat, and trigger pallid sturgeon spawning. The Corps analysis indicated that the spring rise did not meet the first three attributes. Additionally, there is considerable uncertainty about the key attributes necessary for effective pallid sturgeon spawning and recruitment. The PA does not include release changes from Gavins Point Dam. The Corps has proposed MRRIP, which includes an extensive research, monitoring, and evaluation program that will be guided by an overall adaptive management strategy. This program is intended to gain a better understanding of the essential conditions necessary for pallid sturgeon spawning and survival. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-18

The USFWS indicated in their November 2000 BiOp that Gavins Point and Fort Peck flow changes are necessary. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-19

The Corps has not included changes in releases from Fort Peck Dam in the PA. However, as a component of MRRIP, the Corps is proposing Fort Peck flow tests. The tests would involve combined spillway and powerhouse releases to increase water temperature. The first test (mini-test) is intended to gather data on temperature, based on various combined flows from the spillway and powerhouse; evaluate the integrity of the spillway; and monitor potential downstream impacts. Data gathered during the mini-test will be used to inform a potential larger test directed at increasing water temperatures downstream to potentially trigger spawning of the pallid sturgeon.

EnSp-20

The Corps performed an additional analysis after the publication of the RDEIS that looked at the amount of tern and plover habitat around the rims of Lake Sakakawea and Lake Oahe under the various alternatives. The results of this analysis can be found in Sections 7.6 and 8.3 of the FEIS. The PA increases the combined least tern and piping plover habitat at those lakes by 24 percent over the CWCP. Fort Peck Lake was not included in this study due to the low number of birds nesting in that area.

EnSp-21

The Corps has not included changes in releases from Fort Peck Dam in the PA. However, as a component of MRRIP, the Corps is proposing Fort Peck flow tests. The tests would involve combined spillway and powerhouse releases to increase water temperature. The first test (mini-test) is intended to gather data on temperature, based on various combined flows from the spillway and powerhouse; evaluate the integrity of the spillway; and monitor potential downstream impacts. Data gathered during the mini-test will be used to inform a potential larger test directed at increasing water temperatures downstream to potentially trigger spawning of the pallid sturgeon.

The Fort Peck mini-test has a maximum release of 15,000 cubic feet per second (cfs). There is no evidence to indicate mini-test impacts to irrigation intakes beyond normal operations. However, there may be pumps located along the Missouri River below Fort Peck Dam that will be inundated/affected from higher releases. The Roosevelt County Conservation District, under contract with the Omaha District Corps of Engineers, gathered a variety of data on intakes along the Missouri River from Fort Peck Dam to the Montana-North Dakota border. Data collected during the mini-test, in combination with the intake survey completed by the Roosevelt County Conservation District, will help determine which pumps may be affected.

EnSp-22

We concur that a shortcoming in the tern and plover habitat modeling presented in the RDEIS and FEIS is that it does not simulate geomorphic process. The FEIS includes the results of an additional analysis that the Corps undertook in response to comments received. The new study compares the amount of tern and plover habitat around the rims of Lake Sakakawea and Lake Oahe under the various alternatives. The results of this analysis can be found in Sections 7.6 and 8.3 of the FEIS. The PA increases the combined least tern and piping plover habitat at those lakes by 24 percent over the CWCP. Fort Peck Lake was not included in this study due to the low number of birds nesting in that area.

EnSp-23

We concur with your conclusions regarding why the USFWS supports a plan that reduces the number of acres of tern and plover habitat below Fort Peck Dam.

EnSp-24

Although the Corps believes that meeting the basic life cycle needs of the pallid sturgeon is of utmost importance, there is considerable uncertainty about the key attributes necessary for effective pallid sturgeon spawning and recruitment. MRRIP, proposed in conjunction with the PA, includes an extensive research, monitoring, and evaluation program. The purpose of this program is to gain a better understanding of pallid sturgeon response to changes in system operation. This would be accomplished by determining the essential elements necessary for the spawning and recruitment of the pallid sturgeon. The role of flows can be determined through scientific study of natural spring rises in other locations throughout the basin where spring rises currently occur. Changes in releases from Gavins Point Dam are not included as components of the PA.

EnSp-25

Your comment is noted.

EnSp-26

The PA does not include release changes from Fort Peck or Gavins Point Dams. The Corps has proposed MRRIP, which includes habitat restoration and creation; pallid sturgeon propagation support; population assessment programs; a strong research, monitoring and evaluation program; flow tests; and development of a MRRIC made up of the full range of basin stakeholders. MRRIC would make recommendations to the Federal agencies regarding recovery of the species and the ecosystem on which they depend. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-27

The new census data for the Northern Great Plains piping plover as well as other new information that has become available since the November 2000 BiOp was considered by the Corps and the USFWS as the agencies reinitiated consultation under the ESA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-28

The ESA requires the Corps to ensure that operation of the Missouri River projects is not likely to jeopardize the continued existence of listed species or result in the destruction or modification of critical habitat for the listed species. The least tern and pallid sturgeon are listed as endangered; the piping plover is listed as threatened. The USFWS sets out the measures it feels are necessary to prevent jeopardy. The Corps has considered the impacts of the various operating plans on all of the multiple project purposes including endangered species. The Corps believes that the PA serves the Congressionally authorized project purposes; complies with environmental laws, including the ESA; and fulfills the Corps' responsibilities to Federally recognized Tribes. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-29

We concur that natural spring rises already occur on the Missouri River below the Platte River.

EnSp-30

The recent NAS report entitled *The Missouri River Ecosystem: Exploring the Prospects for Recovery* was completed at the request of the Corps and the U.S. Environmental Protection Agency (EPA). The Corps agrees with the National Academy of Sciences (NAS) that action is needed to reverse the decline of the Missouri River and its ecosystem. The Corps believes that the PA, in conjunction with MRRIP, includes features that will ultimately result in an ecologically improved condition for the Missouri River.

EnSp-31

Release changes from Gavins Point Dam included in the Gavins Point (GP) options have not been included in the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-32

The Corps is committed to meeting the agreed-upon fledge ratios for the least tern and piping plover. An aggressive sandbar habitat development program is part of MRRIP proposed by the Corps in conjunction with the PA.

EnSp-33

Although the exact number of pallid sturgeon is not known, the USFWS has listed it as an endangered species and therefore the Corps must ensure that operation of the Missouri River projects is not likely to jeopardize its continued existence or result in the destruction or modification of its critical habitat.

EnSp-34

The native river fishes, including the catfish, sturgeon, sauger, suckers, and paddlefish, have declined as a result of migration blockage, loss of habitat, and competition from new species that have taken advantage of the changes; however, catfish are not listed as threatened or endangered under the Federal ESA. The ESA requires the Corps to ensure that operation of the Missouri River projects is not likely to jeopardize the continued existence of listed species or result in the destruction or modification of critical habitat for the listed species.

EnSp-35

The operation of Big Bend Dam/Lake Sharpe does not vary with the different alternatives due to the small size of the project. Impacts of the various alternatives on Lake Francis Case are presented in the RDEIS and FEIS. Section 7.6 describes the impacts of the alternatives on wildlife resources. Table 7.6-1 shows the average annual tern and plover habitat downstream of the mainstem dams, including Fort Randall. All of the alternatives provide more habitat in this reach than the CWCP. Section 7.7 describes the impacts of the alternatives on fish resources. In particular, Table 7.7-10 shows the impact of the alternatives on average annual young fish production for the seven Tribal reservations, including the Lower Brule. Each alternative provides an improvement in young fish production over the CWCP.

EnSp-36

The modeling done in conjunction with the Master Manual Review and Update Study was designed to allow for the comparison of alternatives, not to determine the exact impact of an alternative on a resource.

EnSp-37

The Corps is unaware of any comprehensive evaluation of existing spring rises and their relationship to pallid sturgeon spawning.

EnSp-38

Under the existing channel configuration, the spring rise contribution to connectivity of low-lying lands is minimal. Release changes from Gavins Point Dam included in the GP options have not been included in the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-39

The CWCP provides a potential spawning cue approximately one-third of the time on the Lower River below Kansas City. Release changes from Gavins Point Dam included in the GP options have not been included in the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-40

Ecosystem attributes would be minimally affected by the Gavins Point Dam spring rise and lower summer flows. Release changes from Gavins Point Dam included in the GP options have not been included in the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-41

An additional analysis was done between the publication of the RDEIS and FEIS that confirmed the conclusion that the spring rise does not provide island building or maintenance. Results of this analysis are presented in the November 2003 Biological Assessment, included as Appendix C to the FEIS. Release changes from Gavins Point Dam included in the GP options have not been included in the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a

selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-42

The use of hatcheries and stocking is intended to be a short-term stop-gap measure to prevent the extinction of the species and is not intended to replace natural reproduction.

EnSp-43

Release changes from Gavins Point Dam described in the GP options (including lower summer releases) are not part of the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-44

The Corps is involved with the State of Montana doing a Section 22 study on a fish bypass at the Diversion Dam intake.

EnSp-45

Any actions the Corps does on the Yellowstone will not relieve the Corps from its obligation to prevent jeopardy to Missouri River protected species, including the pallid sturgeon. The ESA requires the Corps to ensure that operation of the Missouri River projects is not likely to jeopardize the continued existence of listed species or result in the destruction or modification of critical habitat for the listed species. The Corps recognizes the importance of the population of pallid sturgeon below Fort Peck Dam.

EnSp-46

The November 2003 BA, included as Appendix C of the FEIS, provides additional information on the availability of sandbar habitat with varying Gavins Point Dam releases. The BA contains a figure that graphically represents the change in sandbar habitat in acres per mile with varying Gavins Point Dam releases. It is important to note that the additional habitat acreages shown in the RDEIS and FEIS—for example, the 164 acres of additional habitat shown under the GP2021 option—are representative values used to compare the alternatives and do not represent the absolute number of additional acres of habitat provided by the alternative. Release changes from Gavins Point Dam included in the GP options have not been included in the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-47

Your comments on the November 2000 BiOp have been forwarded to the USFWS.

EnSp-48

The Corps is preparing a shallow water habitat plan for the Missouri River that will use many of the same engineering techniques used by the St. Louis District on the Mississippi River to restore habitat for the pallid sturgeon and other species at risk.

EnSp-49

Flows observed in 1993, 1995, and 1997 were obtained under the CWCP.

EnSp-50

For the last 7 years, least tern and piping plover fledge ratios have met or exceeded the fledge ratio goals established by the USFWS. Available habitat and nesting success were the result of the CWCP.

EnSp-51

Timeframes for the Fort Peck Dam spring rise were taken from the USFWS November 2000 BiOp. The Corps has not included changes in releases from Fort Peck Dam in the PA. However, as a component of MRRIP, the Corps is proposing Fort Peck flow tests. The tests would involve combined spillway and powerhouse releases to increase water temperature. The first test (mini-test) is intended to gather data on temperature, based on various combined flows from the spillway and powerhouse; evaluate the integrity of the spillway; and monitor potential downstream impacts. Data gathered during the mini-test will be used to inform a potential larger test directed at increasing water temperatures downstream to potentially trigger spawning of the pallid sturgeon.

EnSp-52

We concur. The November 2003 BA, included as Appendix C to the FEIS, provides additional information on the effectiveness of Gavins Point Dam releases to build and maintain sandbar habitat to meet the biological attributes described in the USFWS November 2000 BiOp. In addition, it is important to note that the additional habitat acreages shown in the RDEIS and FEIS—for example, the 164 acres of additional habitat shown under the GP2021 option—are representative values used to compare the alternatives and do not represent the absolute number of additional acres of habitat provided by the alternative.

EnSp-53

The flow changes resulting from operation of the Mainstem Reservoir System under any proposed alternative do not reflect pre-dam conditions. The rises and fall of the hydrograph are intended to provide habitat for certain life cycle requirements. For instance, the lower summer flow provides greater sandbar habitat for least terns and piping plovers. Timeframes for the Gavins Point spring rise and low summer flows were taken from the USFWS November 2000 BiOp; June and July were historically high flow months on the Missouri River. The GP options were designed to provide some semblance of a natural hydrograph while continuing to serve other authorized purposes. As a result of restricted releases during the least tern and piping plover nesting season, releases during the fall months are high in some years due to the delayed evacuation of flood control storage. Release changes from Gavins Point Dam included in the GP options have not been included in the P. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-54

Habitat goals were established by the USFWS in its November 2000 BiOp. In its December 2003 Amendment to the November 2000 BiOp, the USFWS revisited the habitat goals.

EnSp-55

Your suggestion is beyond the scope of this EIS.

EnSp-56

The Corps analysis of shallow water and sandbar habitat is described in Section 7.7.7 and Section 7.6, respectively, and in Appendix C of the FEIS. Release changes from Gavins Point Dam included in the GP options have not been included in the PA.. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation

Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-57

The Gavins Point Dam release during the least tern and piping plover nesting season was modeled as a flat release for the purpose of comparing alternatives. Release changes from Gavins Point Dam included in the GP options have not been included in the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-58

The Benthic Fish Study, completed in 2001, indicated that gravel substrate exists below both Fort Peck and Gavins Point Dams. According to that research, gravel makes up 7.1 percent of the substrate below Gavins Point Dam and 5.1 percent below Fort Peck Dam. There is also a comparable amount (5.0 percent) below Sioux City (Galat et al., 2001).

EnSp-59

The November 2003 BA, included as Appendix C to the FEIS, provides additional information on the impact of Gavins Point Dam low summer releases on shallow water habitat and existing mitigation sites, and the effectiveness of the lower summer flows to meet the biological attributes describes in the USFWS November 2000 BiOp. Release changes from Gavins Point Dam described in the GP options (including lower summer releases) are not part of the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-60

Because of its small size and short flow-through duration, the water temperatures in Lewis and Clark Lake are not stratified to the degree found in the upper three large lakes. Therefore, making releases from the spillway rather than the powerhouse would have minimal effect on the water temperatures below Gavins Point Dam. Release changes from Gavins Point Dam described in the GP options (including lower summer releases) are not part of the PA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River

Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

EnSp-61

Section 3.7.1 of the RDEIS and FEIS provide a description of the tern and plover nesting and foraging habitat, including the importance of shallow water habitat.

EnSp-62

The lake unbalancing rotates among the upper three lakes on a 3-year cycle so that each lake has a low year, a high year, and a float year, and then the cycle repeats.

EnSp-63

More stringent drought conservation measures are included as part of the PA because they assist in meeting the stated objectives for a PA. The PA is a balanced approach that serves Congressionally authorized project purposes; fulfills the Corps Trust responsibilities to the Tribes; and complies with environmental laws, including the ESA.

EnSp-64

The Corps is not aware of any evidence to support this claim.

EnSp-65

Low lake levels during moderate droughts are good for the piping plovers. Least terns nest on the river.

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4.5 EROSION AND SEDIMENTATION RESPONSES

ErSd-1

The comment concerning the information in Table 7.3-1 is noted. The information in Table 7.3-1 has been amended to reflect the current river processes.

ErSd-2

Issues related to the deposition of sediment, and related impacts, in the headwaters of the Missouri River lakes has been a concern for the Corps since before the projects were constructed. System constraints exist today and will continue to occur in the future. Due to these concerns, the Corps' Omaha District maintains more than 640 permanent channel and reservoir rangelines (cross-sections) from the headwaters of Fort Peck Lake, Montana to Ponca State Park in northeast Nebraska. These rangelines are surveyed periodically, and assessments are made relative to the impacts on Mainstem Reservoir System operations. These efforts will continue into the future as resources allow. Studies for the reaches below Fort Peck and Garrison Dams indicate that the alternatives presented in the RDEIS will have little impact on sediment yield. Further, any projected pool elevations are within the historic ranges under CWCP. There is no evidence that any of the alternatives will increase sediment-related constraints relative to those under the CWCP.

ErSd-3

None of the alternatives presented in the RDEIS will alter the rate at which sediments deposit in the headwaters of Lewis and Clark Lake compared to the CWCP. Neither will any of the alternatives change the configuration of the delta relative to the CWCP. Sediment deposition and related impacts are not, therefore, addressed in the FEIS.

ErSd-4

Current sediment transport through the Nebraska City reach will be maintained with every alternative, due to the minor shifts in the flow-duration curves. Periodically, sandbars move past the Nebraska Public Power District's Cooper Nuclear Station intake, and, in some instances, these sandbars can be quite large, causing excessive sediment deposits in the pumps, and limiting water availability. Due to the continuity of sediment transport capacity, none of the alternatives should increase the frequency or severity of the sandbar patterns adjacent to the Cooper Nuclear Station.

ErSd-5

Assessment of the flow duration data for releases from Fort Peck Dam indicates very little change in the overall distribution of flows for all the alternatives; therefore, long-term channel conditions below Fort Peck Dam are considered to be similar to those associated with the CWCP. The report prepared for the Corps by the Roosevelt County Conservation District provided a great deal of information and provided an estimate of the number of pumps that may be affected by a high discharge. The report did not, however, provide any details on the extent or nature of the impacts, nor was it intended to. The data collected by the Roosevelt County Conservation District are part of the mini-test plan and will be used to design data collection and assessment efforts for both the mini-test and full test.

ErSd-6

Because flow distribution is similar for all alternatives, protection of pump sites and other facilities is considered beyond the scope of this activity. The Corps can, however, consider protection of pump sites and other facilities under the Section 33 Program. Under this program, the Corps will continue to pursue opportunities to provide assistance to landowners as it is requested and as resources allow.

ErSd-7

Impacts to infrastructure from all alternatives are expected to be similar and, therefore, beyond the scope of this study. The Corps will, however, work with State and local agencies to protect infrastructure through the existing Section 14 Program.

ErSd-8

The vegetation rules consider major geomorphological processes in the sense that they attempt to optimize the value of the sandbar habitat created by major events, such as the flood of 1997. Creation/maintenance of sandbars is a function not only of the magnitude of the flow, but also the duration and frequency of the flow and the

availability of bed material. Through monitoring and evaluation, the reach-specific relationships between flows and sandbar creation/maintenance can be developed.

ErSd-9

Examination of the flow-duration curves below Gavins Point Dam for the various alternatives does not indicate a shift in the dominant discharge or discharge class; therefore, a long-term increase in overall erosion is not expected. The Corps' Omaha District has a monitoring and evaluation program that involves periodic channel surveys and aerial mapping. These data will be used to monitor and document any changes in the long-term trends. All data will be incorporated into an adaptive management process.

ErSd-10

The formation of the delta in Lake Sharpe is progressing, as predicted by the original design memorandum. Further, studies indicate that deposition of sediments in the river/lake downstream of the Pierre/Fort Pierre area is controlled by Lake Sharpe pool levels. None of the alternatives results in a change in the operation of Lake Sharpe; therefore, future deposition patterns are expected to be the same for all alternatives.

ErSd-11

Examination of the flow-duration curves below Gavins Point Dam for the various alternatives does not indicate a major shift in the long-term distribution of flows. As the distance from the Gavins Point Dam increases, the influence of Mainstem Reservoir System releases decreases; therefore, sedimentation rates/patterns downstream of Gavins Point Dam would be similar for all alternatives.

ErSd-12

Examination of the flow-duration curves below Fort Randall Dam for the various alternatives does not indicate a major shift in the long-term distribution of flows; therefore, the flow changes under any of these alternatives would not aggravate the sedimentation problems at the headwaters of Lewis and Clark Lake. The Corps is aware of, and concerned about, the impacts of sedimentation in the headwaters area of all the lakes and maintains an ongoing monitoring program.

ErSD-13

Examination of the flow-duration curves below Garrison Dam for the various alternatives does not indicate a shift in the dominant discharge or discharge class; therefore, a long-term increase in overall erosion is not expected. The Corps' Omaha District has a monitoring and evaluation program that involves periodic channel and lake surveys and aerial mapping. These data will be used to monitor and document any changes in the long-term trends that may occur. All data will be incorporated into an adaptive management process.

ErSd-14

The pool probably/frequency curves for Lake Francis Case are nearly identical for all alternatives. The only identified impact would be slightly higher pool levels during severe drought in years when there is no support for navigation.

ErSd-15

Examination of the flow-duration curves below Fort Randall Dam for the various alternatives does not indicate a major shift in the long-term distribution of flows; therefore, the flow changes under any of these alternatives would not aggravate the sedimentation problems at the headwaters of Lewis and Clark Lake or impact the long-term erosion process in the reach of the river downstream of Fort Randall Dam. The Corps is aware of, and concerned about, the impacts of sedimentation in the headwaters area of all the lakes and maintains an ongoing monitoring program.

ErSd-16

None of the alternatives presented in the RDEIS would alter the rate at which sediments deposit in the headwaters of any of the lakes compared to the CWCP. Neither will any of the alternatives change the configuration of the deltas relative to the CWCP. Sediment deposition and related impacts are, therefore, not addressed in the FEIS.

ErSd-17

The Corps is very concerned about channel degradation downstream of the mainstem dams and within the channelized reaches. Examination of the flow-duration curves below Gavins Point Dam for the various alternatives, however, does not indicate

a major shift in the long-term distribution of flows. As the distance from the Gavins Point Dam increases, the influence of Mainstem Reservoir System releases decreases; therefore, sedimentation rates/patterns downstream of Gavins Point Dam would be similar for all alternatives and are not addressed in the FEIS.

ErSd-18

Examination of the flow-duration curves below Gavins Point Dam for the various alternatives does not indicate a major shift in the long-term distribution of flows. As the distance from Gavins Point Dam increases the influence of system releases decreases; therefore, sedimentation/erosion rates/patterns downstream of Gavins Point Dam would be similar for all alternatives.

ErSd-19

Pool duration and flow duration curves for all alternatives are quite similar; therefore, sediment delivery and distribution for all alternatives are expected to be similar. For this reason sedimentation is not addressed in the FEIS.

ErSd-20

Examination of the pool-duration curves for the various alternatives indicates very little change from one alternative to the next, especially for high pool levels. Shoreline erosion patterns are expected to be similar for all alternatives; therefore, they are not addressed in the FEIS.

ErSd-21

The long-term distribution of flows from Oahe Dam is similar for all alternatives. There is a slight increase in the incidence of higher flows that may move some of the sediments further into the Lake Sharpe, providing a small, short-term benefit relative to delta impacts. The long-term delta development would, however, be the same for all alternatives and, therefore it is not considered in the FEIS. The Corps is in the process of buying/flood-proofing a number of properties in the Pierre/Fort Pierre area, and will continue to pursue all practical solutions to the sediment problems at all of the lakes.

ErSd-22

Assessment of the flow duration data for Fort Peck Dam indicates very little change in the overall distribution of flows for all the alternatives; therefore, long-term channel conditions below Fort Peck Dam are considered to be similar to those associated with the CWCP.

ErSd-23

Pool duration and flow duration curves for all alternatives are quite similar; therefore, sediment delivery and distribution for all alternatives are expected to be similar. For this reason sedimentation is not addressed in the FEIS.

ErSd-24

Erosion monitoring is part of the mini and full tests. Instrumentation has been placed at three locations below Fort Peck Dam in anticipation of the mini test, and additional sites will be monitored during the full test.

ErSd-25

Assessment of the flow duration data for Fort Peck Dam indicates very little change in the overall distribution of flows for all the alternatives; therefore, long-term channel conditions below Fort Peck Dam are considered to be similar to those associated with the CWCP. The larger source of turbidity is the Yellowstone River or extremely high discharges on Missouri River Tributaries below Fort Peck Dam. Changes in turbidity are not expected as a result of any flow modification from Fort Peck Dam.

ErSd-26

Examination of the flow-duration curves below Gavins Point Dam for the various alternatives does not indicate a major shift in the long-term distribution of flows. As the distance from Gavins Point Dam increases, the influence of system releases decreases; therefore, sedimentation rates/patterns downstream of Gavins Point Dam would be similar for all alternatives. Although one of the intents of any flow modification is to scour sandbars, the Corps acknowledges that the proposed flows would not scour sandbars. The increases in habitat acres shown in the RDEIS are attributable to the proposed summer low flow.

ErSd-27

The proposed flows for the Fort Peck full test are in excess of the normal range of peak flows from Fort Peck Dam and, as such, will likely cause some erosion/deposition that is beyond the norm. The proposed peak flow for the test is within the historic range of peak flows from the dam, meaning that this discharge and the associated erosion/deposition has some chance of being experienced in a given year without the tests. To accurately evaluate the impacts of the test, an analysis needs to be conducted to determine if the test significantly increases the overall incidence of high flows. The flow duration curves for Fort Peck Dam, with and without the proposed flow modification, are very similar, indicating that the proposed Fort Peck flow modification would have very little impact on the overall distribution of flows and, therefore, very little impact on the overall long-term erosion/deposition processes.

ErSd-28

An assessment of long-term erosion rates indicates that the left bank of the Missouri River downstream of the spillway would recede at the same rate with and without the Fort Peck Dam release modifications. Erosion protection in the vicinity of Mr. Garwood's pump site is, therefore, not identified as being necessary in this EIS. The Corps' Omaha District offered to construct an erosion control project to protect Mr. Garwood and other adjacent landowners under the Section 33 Program. The necessary real estate interest could not be secured, and the effort was terminated. This erosion control project was independent of the proposed Fort Peck flow modification. Any landowner in any of the open water reaches between Fort Peck Dam and Ponca State Park can apply for assistance under the Section 33 Program by writing a letter to the Omaha District Commander. Once a request is received, it will be evaluated relative to economic feasibility and environmental acceptability.

ErSd-29

The notching/modifying of the dikes along the Missouri River from Sioux City to the mouth is part of both the Corps' Operations and Maintenance Program and the Missouri River Mitigation Project. Notching of dikes is aimed at maintaining channel capacity and creating shallow water habitat. Notching/modifying dikes will be ongoing for the foreseeable future regardless of the Water Control Plan selected. The Corps' Kansas City District has completed a Supplemental EIS that addresses a number of issues related to habitat, including dike notching.

ErSd-30

Sediment yield to the river above Gavins Point Dam is unchanged regardless of the selected plan. Flow duration data below Gavins Point Dam indicate very little change in the distribution of flows; therefore, the various alternatives have very similar sediment distribution patterns. Sediment bypass is not considered in this EIS. Although Lewis and Clark Lake has an estimated remaining life of more than 150 years, the Corps' Omaha District is in the process of evaluating sediment management alternatives for this lake, including flushing of sediments.

ErSd-31

Examination of the flow-duration curves below all of the lakes, and pool-duration curves for each lake does not indicate a major shift in the long-term distribution of flows/pools. Sedimentation/erosion rates/patterns downstream of the dams and within the lakes would, therefore, be similar for all alternatives.

ErSd-32

The pool-duration curves for the Lake Oahe pool are similar for all alternatives. Sedimentation rates, patterns, etc. are expected to be similar for all alternatives and are, therefore, not considered in this EIS.

ErSd-33

The source is listed in the introduction to that section. It is the Cumulative Erosion Impacts Analysis (Corps, 1998h), which is Volume 10 of the Supporting Technical Reports for the EIS.

ErSd-34

Noted. The text in Section 3.4.1, para. 2 has been changed as follows, "… gravels and cobbles. Missouri River channel degradation has contributed to headcutting not only at the mouths of tributaries, but also up many of the tributaries. This headcutting has led to increased erosion, aquatic habitat degradation, reduced fish access up some of

the affected tributaries, and increased public expenditures to maintain infrastructure. Unprotected riverbanks are…"

ErSd-35

Examination of the flow-duration curves below Gavins Point Dam for the various alternatives does not indicate a major shift in the long-term distribution of flows. As the distance from the Gavins Point Dam increases, the influence of system releases decreases; therefore, sedimentation/erosion rates/patterns downstream of Gavins Point Dam would be similar for all alternatives. Although, levee/dike removal/modification is an ongoing activity in the lower Missouri River, those activities are independent of the release patterns and are not considered in the EIS.

ErSd-36

Comment noted. The low summer flows are primarily intended to increase sandbar habitat in the reach from Gavins Point Dam to Ponca State Park. For the reach below Sioux City, Iowa, the low summer flows are not intended to produce exposed sandbars but rather to produce an increase in shallow water habitat. The low summer flows would meet both habitat objectives to some degree; however, the increase in shallow water habitat would be minimal.

ErSd-37

Comment Noted. The channel was never designed to have 16 feet of depth for navigation, rather a 9-foot depth with a minimum width of 300 feet.

ErSd-38

Comments concerning the alluvial process are noted. The availability of sediment is, and will always be, a limiting factor. Examination of the flow-duration data below Gavins Point Dam indicates that the distribution of flows is similar for all alternatives; therefore, it is reasonable to assume that the current processes/trends would continue regardless of the selected Water Control Plan.

ErSd-39

Examination of the pool-duration curves for the various alternatives for all lakes indicates very little change from one alternative to the next, especially for high pool levels. Shoreline erosion patterns and other impacts associated with lake fluctuations are expected to be similar for all alternatives, and therefore are not addressed within this EIS.

ErSd-40

The comment is noted, but the research is incomplete. Further, the distribution of releases from Fort Peck Dam is similar for all alternatives; therefore, the long-term erosion patterns for this reach would be similar. For these reasons, erosion processes are not addressed in this EIS.

ErSd-41

Assessment of the flow duration data for Fort Peck Dam indicates very little change in the overall distribution of flows; therefore, the erosion/deposition patterns would be similar. Although, an increase in suspended sediment can be calculated, it is within the error band of the measurements and is not considered a significant contributor to either the alluvial processes or water quality.

ErSd-42

The impacts of tow boats and barges on erosion were not considered in the EIS because the dimensions of the navigation channel are specifically authorized by Congress. Rather, the alternatives were evaluated to determine their relative ability to maintain the authorized navigation channel. There is no evidence, scientific or anecdotal, that indicates that barges and tow boats impact the erosion/deposition patterns in the Missouri River. Further, the Corps does not routinely dredge on the Missouri River for navigation or any other purpose.

ErSd-43

Examination of the flow-duration data for the various alternatives indicates very little change in the distribution of flows; therefore very little change in the alluvial processes is expected. This would include Tributary response.

ErSd 44

Assessment of the flow duration data for Fort Peck Dam indicates very little change in the overall distribution of flows; therefore, the long-term erosion/deposition patterns would be similar for all

alternatives. A report prepared for the Corps by the Roosevelt County Conservation District provided a great deal of information and provided an estimate of the number of pumps that may be affected by a high discharge. The report did not, however, provide any details into the extent or nature of the impacts, nor was it intended to. The data collected by the Roosevelt County Conservation District are part of the mini-test plan and will be used to design data collection and assessment efforts for both the mini test and full test. The mini test is not specifically part of this EIS; however, your comment was provided to the mini test environmental assessment team for consideration.

ErSd-45

The stages for certain flood flows have risen at a number of locations from the Platte River to the mouth. This is due primarily to accretion on the high bank riverward of the levee(s) as a result of flooding. None of the alternatives would appreciably alter the incidence of flooding and would not affect this process in any way; therefore, this issue is not addressed in this EIS.

ErSd-46

The U.S. Coast Guard is responsible for closing the river to navigation. The Corps provides information to the Coast Guard, but does not make the decisions. None of the alternatives significantly alters the incidence of high flows. Further, the riprap that is in place was never intended to prevent erosion, but rather to maintain the channel alignment. Erosion above the riprap can be expected whenever the river stages are high, with or without tow boats.

ErSd-47

The pool-duration curves for the Lake Oahe pool are similar for all alternatives. Sedimentation rates, erosion patterns, etc. are expected to be similar for all alternatives; therefore, these processes are not considered in this EIS.

4.6 FISH RESPONSES

Fish-1

Results of the Daily Routing Model (hydrologic model) were used as input to the fisheries habitat models to determine the impacts on cold and warm water fisheries in both the river and the lakes. The results are detailed in Section 7.7 of the RDEIS/FEIS.

Fish-2

The alternatives presented in the RDEIS/FEIS are not expected to have a significant effect on fish migration.

Fish-3

Chapter 8 of the FEIS describes the PA and its impact on the three listed species affected by the operation of the Mainstem Reservoir System. Other species are not discussed individually. In the EIS, the Corps elected to address habitat instead of the species, themselves. A basic assumption is that improved or a greater amount of habitat should translate to greater abundance and healthier species. The Corps believes that the PA includes features that will ultimately result in an ecologically improved condition and will avoid jeopardizing the continued existence of the listed species and benefit other species as well. A comprehensive monitoring and research program designed to determine the key attributes needed for effective pallid sturgeon spawning and recruitment is an essential element of the PA and will represent a significant step in advancing the scientific knowledge of the species.

Fish-4

Concur. Section was rewritten to improve clarity.

Fish-5

The information presented is correct and useful for the scientific community reading the FEIS, therefore it was not removed.

Fish-6

The cold and warm river habitat modeling efforts do not take into consideration the effect of the warm water spill from Fort Peck Dam; however, they provide additional information relevant to the reader. The warm water spill from Fort Peck Dam was included as part of the USFWS' November 2000 BiOp to benefit the pallid sturgeon and other native aquatic resources. All of the alternatives presented in Chapter 7 of the RDEIS (and FEIS) with the exception of the CWCP include the Fort Peck Dam spring rise, and therefore the impacts of the alternative on warm and cold river fish habitat are comparable. Chapter 5 alternatives ARNRC, FWS30, BIOP, and MODC also included the Fort Peck Dam spring rise and would achieve the same desirable habitat attribute for native species. The Fort Peck Dam spring rise would not affect the coldwater trout fishery immediately below the dam because the spillway and powerhouse releases meet 6 miles below the dam. Flow modifications from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP.

Fish-7

Concur. Correction/clarification was made in the FEIS.

Fish-8

This observation agrees with the data presented in the RDEIS and FEIS.

Fish-9

The Corps agrees, intrasystem regulation (unbalancing the upper three lakes) provides benefits to lake fisheries, but it also benefits the listed species as water is moved among the lakes as described in Section 6.2 of the RDEIS/FEIS.

Fish-10

The PA includes aggressive sandbar habitat development. The adaptive management process will be used to evaluate and adjust management, as necessary.

Fish-11

The Corps concurs that the GP2021 would mimic the natural hydrograph on the Lower River. All of the GP options were designed to do just that. Elements of a natural hydrograph currently exist on the river downstream of Omaha, Nebraska.

Fish-12

Table 7.7-1 of the RDEIS/FEIS shows the average annual young fish production index in the mainstem

lakes under the various alternatives. Young fish production in Lake Francis Case is enhanced under each of the alternatives except the MCP, which remains unchanged from the CWCP.

Fish-13

Your comment is noted.

Fish-14

The USFWS is aware of the status of the sport fisheries in the Mainstem Reservoir System and Lower River and they took that into account in the preparation of their December 2003 Amendment to the November 2000 BiOp.

Fish-15

Annual operating plans will continue to be based on the current Master Manual until a record of decision is signed and the manual is updated.

Fish-16

Your suggestion/comment is beyond the scope of this EIS.

Fish-17

Lake unbalancing will provide a benefit to lake fisheries, on and off the reservation. Unbalancing is not done in years with very high or very low runoff; therefore, it will not affect recreation access or access for water supply. Furthermore, the range of fluctuation proposed is within the normal operating range of the lake.

Fish-18

The coldwater fish habitat in river reaches is not a significant operational issue; most of the coldwater fishing occurs in the tailwaters and for a limited number of miles downstream of the dams. This resource would be minimally affected by any alternative; however, the analysis is included because coldwater habitat was identified at scoping meetings as a resource of interest.

Fish-19

The impacts on warmwater fish habitat in river reaches due to changes in the operational criteria have little relevance biologically; however, this resource was identified at scoping meetings as a resource of interest.

Fish-20

Your suggestion is beyond the scope of this EIS, but could be considered within the adaptive management framework.

Fish-21

The Corps is not aware of any evidence that walleye have taken sturgeon larvae or fry in the Missouri River System.

FISH-22

This letter is not addressed to the Corps, but the information has been noted.

Fish-23

Trout populations below Fort Peck Dam will not be affected by the spring rise because the warmer spillway flow enters the river 6 miles below the dam. In addition, minimum powerhouse releases will be maintained throughout the flow modification for the trout population directly below the dam.

Fish-24

Providing a steady or rising pool level at the upper three lakes every year cannot be achieved under the PA, nor was it under the CWCP. The lake unbalancing feature of the PA should provide a steady or rising pool at one of the upper three lakes each year on a rotating basis for the benefit of lake fisheries. Fishery experts agree that a steady to rising pool is not required every year to maintain the lake fishery.

FISH-25

The Corps Concurs that the Gavins Point Dam spring rise would increase the flow-through rate at Lewis and Clark Lake and that this is an undesirable effect. However, the PA does not include a spring rise from Gavins Point Dam.

Fish-26

The PA increases coldwater fish habitat in the upper three lakes.

4.7 FLOOD CONTROL RESPONSES

FC-1

Flood control benefits and losses of those benefits are historically based on the economic uses in the floodplain that are damaged during floods. Many resource impacts also occur during floods, and many of those impacts have been addressed in non-economic terms. Several of the resource analyses that respond to variations in river flow are wetland and riparian habitat, tern and plover habitat, connectivity, and shallow water habitat. The results of these analyses were included in the RDEIS, and continue to be included in the FEIS in terms that are non-economic, e.g., acres of habitat. Unfortunately, resource impacts, although they may have an economic value, do not readily lend themselves to the assignment of economic values. No attempt to do so was made for the Master Manual Study.

FC-2

"Flooding" to farmland can occur in three ways. First, direct flooding from an adjacent stream can flood a farm. Second, drainage following rainfall that is impeded can pond on the land before it enters an adjacent stream, and this is referred to as interior drainage, especially if the farm is included in an area protected by a levee. Third, groundwater levels can rise high enough that the farmland is too wet to plant or crops die because the water impedes the growing process. As adjacent streams rise, the groundwater levels along the stream generally rise or the movement of groundwater from the adjacent land is impeded. In general, all three of these types of "flooding" can result in the loss of crops through the killing of the plants (no grain to harvest) or reduced production (lower crop yields).

The remainder of this response focuses on the first of these types of flooding—direct flooding. The Master Manual impacts models include a flood control benefits analysis that determines the flood damages in each day of the 100-year simulation period (repeat of inflows for the period 1898 to 1997) and, subsequently, the remaining flood control benefits. A detailed examination of the flood control model results and potential causes for differences in the damages (or benefits) determined that the spring rises were generally not the cause for differences in flood control benefits among the alternatives. Generally, the flood control constraints, which limit Gavins Point Dam releases when downstream high flows get too high, do a good job of shutting off the spring rises early in a flood event. If the flood event comes from a tributary in a manner that the peak of the flood event takes several days to maximize, the spring rise is generally shut off about the time it maximizes the flood damages. Generally, spring rises do not occur in years when the lower basin is already experiencing a wet period and having higher flows that some call a "natural spring rise." When the spring rise occurs in the drier periods, or when the flows on the lower reaches are generally lower, incoming flows from rainfall events cause rises in the river flow; however, these rises generally are not great enough to cause flood damages from direct flooding. The potential for a sudden, large inflow always exists, and if more water is in the river when such an event occurs, the resulting downstream flows will be higher. The risk of flooding always goes up when the release from Gavins Point Dam goes up; however, it appears that this risk did not come to fruition as the result of a spring rise in the period simulated for the Master Manual Study.

Increased crop damages were modeled as the result of the spring rise in differing periods of analysis and in some representative sites that were modeled. Generally, reduced interior drainage and increased groundwater levels were the source of these increased crop damages; however, the differences among the alternatives (those with and without spring rises) diminished for the representative sites modeled that were further downstream. The interior drainage and groundwater responses further address these findings.

FC-3

The observation is correct regarding the differences among the flood control benefits.

FC-4

Flood control benefits are essentially the same for all of the alternatives, including those with increased spring releases from Gavins Point Dam. An extensive review of the minor differences among the alternatives determined that a very minor part of the flood control damage changes were due to increased spring releases. Essentially, all of the differences in flood control benefits were due to minor differences in how the Daily Routing Model (DRM) reacted under the different operating criteria in certain situations not related to the spring release increase. The DRM is an excellent tool;

however, modeling techniques used for each alternative's simulation leads to some minor differences that occur during high-flow events on the Lower River that would not occur under real-time operations. The flood control constraints included in all model runs limit releases when flows on the river from Omaha to Kansas City increase above prescribed levels. These flood control constraints work very effectively in limiting downstream flood control damages based on DRM modeling results. These constraints basically limit the spring release increases to years in which the potential for downstream flooding is lowest.

FC-5

The Missouri River hydrologic model, the Daily Routing Model (DRM) is a water balance model that tracks historical inflows into the Missouri River mainstem and routes them through the Mainstem Reservoir System and the Lower River. Part of the routing process as the flows move downstream is to account for potential water losses that could occur, such as evaporation that occurs today at each of the six lakes on the mainstem. Basic assumptions on potential river-reach losses are made as the water already in the mainstem above a Tributary is joined with the Tributary water and routed downstream. The ability to move high flows down the river increased when some of the Lower River levees were destroyed in the 1993 flood. This, however, does not affect the routing of most of the flows that the DRM must account for because it routes all inflows through the system to the Mississippi River. These levee breaks also have no effect on depletions because essentially all of the water that may go overbank will make it back into the Missouri River.

FC-6

The Corps has clearly heard the concern that you have expressed regarding the increased flood risk that is associated with having more water in the river in May and June, especially when the benefits of the spring rise are not clearly understood. The PA does not contain a spring rise.

FC-7

The greatest change among the alternatives evaluated in detail is $0.21 million for the GP1521 option. This represents a decrease of 0.3 percent from the benefits of the CWCP.

FC-8

Flood risk is a function of the amount of water that is in the river before the rainfall runoff enters the river. The flood risk is increased during the time the spring rise is in the river, whether it is the Missouri River or the Mississippi River. One way of accessing any potential increase in flood risk is to look at the change in maximum flows that occur during potential flood damage events.

Examination of all of the flood events on the Lower Missouri River downstream from Gavins Point Dam for the PA determined that the spring rise was the sole factor in flood damages at one gage location in 1 year (1974) out of the 100 years of inflow records that were used in the simulation model for the Master Manual Study. It was a secondary factor in 3 years, meaning that there was a previous or subsequent event that had even higher river stages than the one during the period the spring rise was in the river. Over the 100-year period, these events would have had a very minor effect on the Missouri River flood control benefits provided by the Mainstem Reservoir System.

Flow data for St. Louis were also examined to determine potential impacts on the Mississippi River. To provide some perspective, the St. Louis stage rose to over 37 feet in mid-May of 2002 and flood stage is 30 feet. In the 100-year period of record, in 8 years the river stage at St. Louis exceeded 30 feet during the period a spring rise would have gone through that reach. In the modeling, the spring rise was released from Gavins Point Dam in only one of those years (1974), meaning that it was only a factor in increasing the highest stage during that one year. In 1974, the flows at the three flood control constraint locations (Omaha, Nebraska City, and Kansas City) were not high enough to shut off the spring rise before flooding originated downstream from Kansas City, much like it did in 2002.

A similar analysis was done for the Vicksburg, Mississippi gage. Because source of inflows leading to floods comes from additional Tributaries than feed into the Mississippi River above Vicksburg, there is a potential for additional times that a spring rise affects flooding at Vicksburg. The analysis found that spring rises affected flooding stages in only 1968 and 1974. The 1968 maximum stage was about 37 feet, and the 1974 maximum stage was about 43 feet. The PA does not contain a spring rise.

FC-9

The observation regarding flood control impacts agrees with the data presented in Section 7.8 of the RDEIS and FEIS.

FC-10

Construction of the Mainstem Reservoir System and the Missouri River levees have reduced the flood potential on the floodplain. Much of the development of the floodplain would have occurred no matter what the level of protection. If the Mainstem Reservoir System were not as effective as it is, perhaps the levees would have been built differently. No matter what could have happened, the development on the floodplain is protected from flooding that is less frequent today than it was historically. The Corps will continue to provide flood protection to these floodplain lands and do its best to minimize flood damages, while meeting all of its authorized project purposes and legislative responsibilities.

FC-11

High inflows to the Missouri River occurred in May 2002. A flood fight prevented the floodwaters from overtopping a levee just downstream from the Grand River, which was the primary source of floodwater into the mainstem Missouri River. Had there been a 20-kcfs spring rise in May 2002, the levee would likely have been overtopped because the river stages would have been over a foot higher than the levee. There are many levees with relatively low levels of protection that are more susceptible to increased river flows and could be overtopped with the extra water from a spring rise. The occurrence of any flooding due to the spring rise, however, is very infrequent, as discussed in response FC-8, even though the spring rise is recommended by the Service and modeled to occur on average about once every 3 years (see Section 6.2 of the RDEIS and FEIS).

FC-12

Changes in flood damages can also occur in the fall months due to lower summer releases from Gavins Point Dam. When Mainstem Reservoir System releases are limited during some time of the year, the potential need to evacuate more water in the fall months increases. Historically, major storms have occurred downstream from Gavins Point Dam during fall months, and higher fall releases could result in increased flood damages during this period. The differences among the alternatives due to higher fall flows, however, are relatively minor as indicated by essentially the same flood control benefits for all of the alternatives. A review of the sources of flooding for two alternatives determined that fall flood damages might have been exacerbated in 4 years (of the 100 years modeled) because of the need to evacuate water at a higher rate following the summer lower releases. Over the 100-year period, these events would have had a very minor effect on the Missouri River flood control benefits provided by the Mainstem Reservoir System.

FC-13

The Mainstem Reservoir System has considerable storage set aside for flood control. None of the alternatives reduces the exclusive flood control zone nor the annual flood control and multiple use zone. The storage in these zones allows the Mainstem Reservoir System to capture major flood events to limit the extent of downstream flooding. A prime example of this occurred in real life in 1993, when the Mainstem Reservoir System storage was able to store almost all of the upper basin runoff during the time that downstream inflows were causing extensive flooding. An analysis was done to determine if the Mainstem Reservoir System could have handled the same event had it been "full" instead of partially empty due to the drought, and the analysis determined that the it would have been able to capture the upper basin runoff and release it following the peak of the downstream flooding. This would have resulted in no increase in flood damages. An analysis of the 100 years modeled for the Study found no instance where the lack of Mainstem Reservoir System storage led to an increase in downstream flooding.

FC-14

Lake Francis Case does not experience the draw downs during the major droughts. Consequently, it may experience high water levels that can cause damages to facilities around the lake in almost any year when inflow into this lake is high, or when total Mainstem Reservoir System inflow is very high, such as it was in 1997. This factor and the abundance of recreation facilities on this lake result in relatively high flood damages when compared to the other lakes. This is evidenced with the higher negative flood control benefits for this lake compared to the other five lakes. No changes in the

operation of this lake were considered as part of the Master Manual Study.

FC-15

Following the Draft EIS, which was released in 1994, the Corps made a decision to go to daily hydrologic modeling. This allowed the conversion of the flood control model from a monthly time step model to a daily time step model. Flood damages are now computed on a daily basis. The daily hydrologic data also allowed the use of daily flows to understand Mississippi River impacts better and the development of interior drainage and groundwater models for representative Missouri River sites.

FC-16

A release from Gavins Point Dam reaches the mouth of the Big Sioux River in just 1 day. Flood flows on the Big Sioux River generally are slow to reach their peak and can be forecasted several days in advance of reaching the mouth of the river where Missouri River flows can influence the stage the flood flows attain. Because of its proximity to Gavins Point Dam and the ability to forecast high runoff events from the Big Sioux River basin several days in advance, releases from Gavins Point Dam can be reduced far enough in advance to limit any impact the Missouri River may have on flooding along the Big Sioux River. A far greater impact may occur for flows less than the spring rise because it is difficult to cut releases for more than a couple of days at a time when terns and plovers are nesting on sandbars and islands downstream from Gavins Point Dam. Also, a minimum release of 6 kcfs is required to meet water intake requirements at Yankton, South Dakota.

FC-17

Reduced summer releases from Gavins Point Dam increase the likelihood that fall releases will need to be greater, especially in years with above-normal inflow into the Mainstem Reservoir System. Examination of the cause of increased flood damages along the Lower River for two of the GP options with lower summer releases determined that the summer/fall evacuation became more prevalent as the primary cause of the damage increased. For the GP2028 option, this increased evacuation was the primary cause in 7 years, and for the GP2021 option, it was the primary cause in 9 years. Fall groundwater and interior drainage damages were also greater for the alternatives with the lower summer releases. More detailed information on these fall damages is included in Section 7.8 of the RDEIS and FEIS.

FC-18

Stop protocols are being developed for the mini-test, and full test of Fort Peck release modifications for the pallid sturgeon. The data you have provided will be helpful as these protocols are finalized.

FC-19

Tradeoffs among the various uses and resources and how the Corps may have considered them is addressed under one of the "other" responses. To address the tradeoff discussed between flood control and recreation, one must make the comparison on an incremental basis to best understand what to attribute the changes to. Increasing conservation during droughts and these impacts can be understood by comparing the impacts of the CWCP and the MCP. The increase in conservation resulted in a decrease in flood control benefits (differences are primarily a modeling factor as discussed in response FC 4) of $2.26 million and recreation benefits increased by $3.24 million. Adding the spring rise and summer low flow resulted in a further decrease of flood control benefits of $2.61 million and an increase in recreation benefits of $0.75 million. It is important to note that the decrease in flood control benefits is more likely due to higher flows at some point in various years, whereas the increase in recreation benefits is more likely due to lower summer flows.

FC-20

Operations would have been essentially the same under all alternatives during the 1993 flood. This was a drought year, and releases from Gavins Point Dam were set to meet downstream targets for minimum navigation service. Under the various plans, releases would have been within about 8 kcfs of what they actually were in 1993. When it became apparent that navigation was to be suspended, water supply targets were then the basis for the release. These targets would have been 9 kcfs or less under the CWCP; however, they could be as high as 18 kcfs (primarily to limit thermal release constraints to power generation) in the summer under the five alternative plans. As the inflows entering the Missouri River came in above Sioux City, Iowa, the water supply target release

became what was necessary to meet the intake need for the City of Yankton, South Dakota, which was a release of 6 kcfs under all alternatives. It is apparent that the release from Gavins Point Dam can be extremely variable, depending on a multitude of factors during extreme river conditions.

FC-21

The construction of the Mainstem Reservoir System has greatly limited the flooding potential from runoff entering above Yankton, South Dakota. The system has limited capability to limit major flooding resulting from runoff entering the Missouri River downstream from Yankton.

FC-22

Changes to the floodplain to address the requirements of the USFWS' BiOp would be very similar no matter if operations continue under the CWCP or under a Water Control Plan that has more natural flows. The carrying capacity of the river channel would, therefore, be similar no matter what the Water Control Plan is.

FC-23

At full capacity, the flood control zones in the six mainstem lakes encompass 1,194,000 acres. Not all of this land would be Class I or II land. Much more than that acreage receives flood protection by the Mainstem Reservoir System. There is a total of 2,203,000 acres of floodplain land from Sioux City, Iowa to the mouth. There are also several large metropolitan areas that receive flood protection. Typically in the Midwest, floodplain farmland is sacrificed behind dams to provide downstream flood protection along the stream or river downstream. This is, obviously, one negative impact that will likely help limit the construction of major dams in the future.

FC-24

The Mainstem Reservoir System provides more than $400 million in flood control benefits.

FC-25

The CWCP provides the best flood control, interior drainage, and groundwater benefits of the seven alternatives evaluated in Chapter 7 of the RDEIS and FEIS.

FC-26

Unfortunately, high releases are required in some years to evacuate the flood control storage in extremely high inflow years. These high releases are typically made in the fall; however, they may begin earlier in the summer, or even spring, depending on the volume of water that needs to be evacuated. For example, flood storage evacuation started in March in 1997 to evacuate the greatest inflow into the system since the Mainstem Reservoir System has been operated. Spring rises will increase the frequency that flows in the range of 50 to 55 kcfs will occur in the reach downstream from Fort Randall Dam. The PA does not include spring rise flows.

FC-27

Flooding along rivers tends to affect the same people in a given reach. The number of people affected increases as the extent of the flooding increases. The differences among the alternatives are not great; therefore, the area affected would be limited primarily to those areas that have relatively low levels of protection and are flooded most often.

FC-28

Four of the five alternatives to the CWCP discussed in Chapter 7 of the RDEIS and FEIS include spring rise releases from Gavins Point Dam; however, the fifth one—the MCP—does not include any spring rise releases from Gavins Point Dam.

FC-29

The Fort Peck Dam release modifications will be closely monitored. Overbank flooding would not be a normal occurrence at the flows expected for the mini-test, full test, or any other flow modifications that could be recommended in the future. Stop protocols will be followed should the flood control potential be a concern.

FC-30

An indicator of the impacts of the alternatives on Kansas River flood control storage and its evacuation potential is discussed in Section 7.2.7 of the RDEIS and FEIS. This section concludes, "In summary, the spring rise from Gavins Point Dam provided by the GP options results in a very minor increase in the number of days during the May to June timeframe that the flows at Boonville are in

excess of 90 kcfs." This analysis was conducted and discussed because it provides insight into any potential restrictions at Waverly, the control point for Kansas River flood control storage releases. One could go further to conclude that there should be very little impact on the storage evacuation due to spring rise releases from Gavins Point Dam for spring rises up to 20 kcfs.

FC-31

The Corps has held many meetings and workshops and participated in the meetings of many organizations throughout the Missouri and Mississippi River basins over the last 12 years. Input has been sought in many ways. The opportunities for input to the Study have been extensive, yet it is difficult to ensure that everyone who desires to provide input partakes in these opportunities. The flood damage analyses have been modified over the years the Study has been conducted to ensure that the input data and the analyses are as accurate as possible to meet the objective of understanding the relative difference among the alternatives. The Corps feels that this objective has been met very well.

FC-32

The Corps is not currently authorized to mitigate any potential adverse economic impacts due to any operations, whether under the CWCP or any other alternative.

FC-33

Your efforts to provide better flood protection and to ensure that you have done all you can to limit damages are well spent. The Corps will continue to do all it can to limit downstream flooding while fulfilling all of its responsibilities for Mainstem Reservoir System operation.

FC-34

The Corps has legislated responsibilities to provide flood protection to floodplain lands along the Missouri and Mississippi Rivers. It will fulfill those responsibilities and make adjustments to this flood protection as legislated by Congress.

FC-35

Based on your comments, you may be experiencing flooding impacts that would normally be relatively minor under Mainstem Reservoir System operations, and, therefore, not included in the economic analysis of the operations. In your case, however, sedimentation at the mouth of Oak Creek as the stream flow enters Lake Oahe may be exacerbating flood problems. Also, the erosion of land adjacent to the lake may have extended beyond the take line for the lands purchased for the operation of Lake Oahe. In both cases, you need to work with the Omaha District of the Corps to see what relief your Tribe may be entitled to under the conditions you have been experiencing. You should work with the District's American Indian Coordinator to ensure that you make contact with the appropriate District staff to address your concerns.

FC-36

Flooding at Washington, Missouri in 1983 and 1985 was the greatest in the early spring timeframe, well before the spring rise timeframe. The spring rise would not have exacerbated the flooding identified in the attached letter to the editor.

FC-37

Ameren AE, the utility that serves the St. Louis, Missouri region, makes the releases from Bagnell Dam. During the latter part of the period you discussed in your letter, the Corps built additional flood control storage upstream from Bagnell Dam.

FC-38

Water management in the Mainstem Reservoir System was extremely difficult in 1997 because the inflow into the System was approximately twice as much as normal and the highest in the period of record, which goes back to 1898. Releases were extremely high all year to ensure that spillways were not overtopped and that all of the water could be safely passed through the six dams without extreme downstream flooding. Elimination of all flooding in the downstream reaches was not possible; however, it was lower than many thought could possibly be accomplished considering the extreme amount of water. Emergency plans were made for those downstream from Oahe Dam because much higher releases were forecasted than the Corps actually had to make that spring. No special operation except for flood storage evacuation in the safest way possible was accomplished that year.

FC-39

The stage changes presented in the RDEIS Summary for the spring rise or the lower summer flow were based on stage changes when the river flows are near the navigation service levels. These are the "normal" flows on the river. As the river experiences higher flows, the increase in stage for an additional 15 or 20 kcfs diminishes. For example, when the river is near flood stage, an additional 15 or 20 kcfs could mean a difference in river stage of about 1 foot downstream from Kansas City and up to about 2 feet upstream from Kansas City.

FC-40

The Corps has not estimated what portion of the floodplain experiences crop losses due to flooding, interior drainage problems, or high groundwater levels. The Soil Conservation Division's estimate appears to be reasonable; however, you do not State that major portions of those acres are also affected by the CWCP. The groundwater and interior drainage analyses computed acres potentially experiencing crop damages. About 25 percent of the groundwater area modeled experienced crop damages, and about 10 percent of the interior drainage areas modeled experienced crop damages. Not all of the groundwater damages are limited to the areas with interior drainage damages and vice versa. This makes it difficult to arrive at a total number. Assuming that groundwater levels affect 50 percent of the interior drainage area, the total acreage could be in the 30 percent range. Interior drainage damages are limited to the reach downstream from Omaha, Nebraska, as there are no levees upstream. An additional 800,000 acres are on the floodplain upstream from Omaha, making a total of 2,200,000 acres potentially affected. Total acres affected on a very gross estimate would be 800,000 times (0.10) plus 1,400,000 times (0.30) for a total of 500,000 acres potentially affected. One must remember, however, that a major portion of these acres is affected by the CWCP and the five other alternatives. The increase in area affected was relative small for the areas experiencing crop damages.

FC-41

The ice-jam flooding problems that the Cheyenne River Tribe has had along the Cheyenne River would be essentially the same under all of the alternatives. The problem is most likely the greatest when lake levels are high in the late winter or early spring as the Cheyenne River ice break-up occurs. All of the alternatives require that the storage in the Mainstem Reservoir System be at the base of flood control storage by March 1 of each year. This is the timeframe during which the breakup occurs. The only factor that could exacerbate the problem is the unbalancing of the three upstream lakes. This factor, however, could be implemented under the CWCP as part of the Annual Operating Plan next year even with no change to the Master Manual, which leads to the response that this problem would be essentially the same under all alternatives.

FC-41

The comment implies that tern and plover nests would be flooded in the Omaha reach of the Missouri River. These birds nest in the approximately 80-mile reach downstream from Gavins Point Dam between Yankton, South Dakota and Sioux City, Iowa.

FC-42

The RDEIS and FEIS report in Section 7.8 that the flood control benefits for the Fort Randall downstream reach are the same for all of the alternatives evaluated in detail.

FC-43

Construction of the Mainstem Reservoir System has resulted in a significant reduction in flood damages, in the amount of about $400 million on an average annual basis according to the data presented in Section 7.8 of the RDEIS and FEIS.

FC-44

The Corps concurs that some flexibility would be lost; however, the modeling determined that excessive releases had to be made in only 1 year. Close examination of the data for that year determined that a slight change in operation earlier in the spring would have precluded that excessive release. Lake Oahe is in the exclusive flood control zone in 1 to 3 additional years for those five alternatives addressed in detail in Chapter 7 of the RDEIS and FEIS. The CWCP is there in 17 of the years, the MCP in 18 years, and the four GP options in 20 of the years.

FC-45

Wetlands are beneficial in reducing crop damages along the Missouri River in at least two ways. First, any land that is a wetland is land that is not cropland, which means there are fewer crops to damage by direct flooding, interior drainage of storms that cause runoff from within the areas protected by levees, and high groundwater levels. Second, the amount of runoff coming off an acre of wetland versus an acre of cropland is generally less, which means that wetlands within areas protected by levees may have less runoff through the drainage structures and crops losses due to the impediment of the drainage through the structures.

FC-46

Your comment is noted.

FC-47

Additional flow out of Gavins Point Dam in the form of a spring rise will not increase the amount of debris in the river. The source of debris is typically the result of high flows due to flooding on Tributaries to the Missouri River.

FC-48

Total flood control, interior drainage, and groundwater losses range from $2.28 million for the MCP to $5.37 million for the GP 2028 option, based on the numbers presented in the RDEIS Summary. As indicated in the comment, all of the alternatives to the CWCP result in a net loss of benefits, or an increase in costs, for these three categories of impacts. It is important to note that the flood control, interior drainage, and groundwater values are not necessarily additive. All three analyses were conducted separately, and no attempt was made to determine if the crop losses for interior drainage would also be caused by direct flooding (flood control loss of benefits) or reduced interior drainage. Similarly, groundwater and flood control losses were not compared.

4.8 GROUNDWATER RESPONSES

GW-1

Since 1998, funds have been budgeted annually to initiate the acquisition of lands by easements from willing sellers in the Buford Trenton Irrigation District, North Dakota. This district is located on the north bank of the Missouri River near its confluence with the Yellowstone River, upstream of Williston, North Dakota.

GW-2

The effects of various study alternatives on the potential for increased groundwater problems were evaluated for four sites along the Lower River. This analysis evaluated the groundwater levels within the Study areas over a 10-year period (1970-1979) for each alternative, including the CWCP. The economic analysis of the simulated groundwater levels indicated both reductions and increases in average annual damages when compared to the CWCP. Generally, alternatives with changed releases from Gavins Point Dam show increased damages that are consistently higher than those for the CWCP. RDEIS and FEIS Tables 5.8-4, and 7.8-6 present the average annual groundwater damages at the studied levee units for each alternative. These impacts were considered as the PA was selected.

GW-3

The degradation of the channel of the Missouri River at Sioux City, Iowa is primarily the result of two factors; a reduced sediment supply and downstream channel shortening. Since closure of the last dam of the Mainstem Reservoir System, the water released from Gavins Point Dam is essentially sediment free. The river tends to re-establish its sediment load by eroding the river's bed and banks. Another important factor affecting channel degradation at Sioux City is the channel straightening conducted as part of the Missouri River Navigation and Bank Stabilization Project. Degradation at Sioux City is monitored through the analysis of the stage trends at the Sioux City gage, which show that, since 1965, the river stage for a discharge of 30 kcfs has dropped about 10 feet. The Missouri River channel degradation directly affects the groundwater levels at Sioux City. The channel response to both reduced sediment load and the Navigation and Bank Stabilization project is an ongoing process, irrespective of Mainstem Reservoir System operational changes.

GW-4

The stage fluctuations at Sioux City, Iowa can occur due to either a change in release at Gavins Point Dam or a change in the Tributary flows. The uncontrolled drainage area between Sioux City and Gavins Point Dam is approximately 35,000 square miles and includes the Vermillion, James, and Big Sioux Rivers. The modeled Gavins Point Dam spring release changes would add stage to the naturally occurring cycles.

GW-5

The Corps concurs with your comment.

GW-6

The initial input parameters for the groundwater model were based on the best available data. The initial parameters were then adjusted through the calibration process. The final parameters used in the calibrated groundwater model are substantially different from the initial input parameters. The river conductance is based on the thickness and hydraulic conductivity or the riverbed and area of the river cell. Initially assumed values were modified through model calibration. Very high hydraulic conductivity was applied to the line of cells representing ditches or creeks to allow flow to occur similarly to an open channel. Study area locations often required the river stage for the nearest USGS gauging station to be adjusted to reflect the water surface profile along the model reach. Measured water surface profiles between the USGS gaging stations and the Study areas were used to make this adjustment. Potential errors introduced in this process were uniformly applied to the CWCP and all alternatives and, therefore, would not have affected the relative differences between alternatives.

GW-7

The effects of various study alternatives on the potential for increased groundwater problems were evaluated for four sites (near Onawa, Iowa; Nebraska City, Nebraska; and St. Joseph and Hermann, Missouri) along the Lower River. This analysis evaluated the groundwater levels within the Study areas over a 10-year period (1970-1979) for each alternative, including the CWCP. The four

sites selected for analysis provided site-specific information to compare the relative differences of alternatives at levee units, but, because of the site-specific nature of the input parameters, no attempt to extrapolate the groundwater damage results to the entire 811-mile reach was made for the RDEIS. The economic analysis of the simulated groundwater levels indicated both reductions and increases in average annual damages when compared to the CWCP. Generally, alternatives with changed releases from Gavins Point Dam show increased damages that are consistently higher than those for the CWCP. These impacts were considered as the PA was selected. An extrapolation for the 2,200,000 acres of Missouri River floodplain from Sioux City, Iowa to the mouth was done for the FEIS. This extrapolation determined that damages due to groundwater level changes would impact total crop production by less than 1 percent. It is also important to note that the damages from the 10-year period were likely greater than for any other 10-year period with several spring rises in the last 50 years because this period had numerous spring rises and high-flow periods. (That is the primary reason this period was selected for modeling.)

GW-8

The groundwater damages may be overstated in some of the modeled sites because the Corps made no attempt to determine the status of all of the land potentially affected. It is important to understand that the modeling used in the Master Manual Study was not oriented primarily towards developing the best absolute value that could be determined, but towards understanding the relative difference among the alternatives. In the case of the groundwater analysis, there may have been some cells (generally 500 feet by 500 feet in size) with all or a portion that did not have crops grown on them; however, that would have occurred under all of the alternatives. The absolute values may be overstated, but not by so much that it negates what the Corps learned from the modeling effort to understand, primarily, the relative differences among the alternative Water Control Plans. Furthermore, the mapping provides some additional insight as to the distribution and potential significance of the damages.

GW-9

The Corps attempted to understand the negative effects of higher groundwater levels. It did not look at the positive effects of groundwater levels that were high enough to be beneficial in drier years. Similarly, it did not look at the effect of lower groundwater levels that may have been too low in the summer months due to lower summer flows. The summer months are also critical for crop yield.

GW-10

The numbers included in this paragraph do not correspond with any information included in the RDEIS or with data that have been generated on acreage affected for the interior drainage or groundwater analyses. The interior drainage analysis addressed six levee units; however, the groundwater analysis addressed only four sites, three of which were analyzed for interior drainage. Interior drainage damage differences between the CWCP and the GP2021 option total $0.13 million for the six sites, and the groundwater damages for the four sites vary by a total of $0.33 million for a total of $0.46 million ($460,000). Median interior drainage acres affected total 6,075 acres, and groundwater acres affected total 63,498 acres. A high number of affected acres will not fall into the categories that would remove them from crop production, especially the areas affected by groundwater.

GW-11

Groundwater analyses conducted for the area just south of Whiting (R691 site) indicates that groundwater level increases for the GP options could lead to increased crop damages. Because crop damages are higher during the same period that much of the construction takes place, one could assume that groundwater levels could result in increased costs associated with construction in the vicinity. The point that you make regarding increased construction costs due to the spring rise has some validity. On the other hand, an analysis of number of days that flows are greater than 35, 40, and 45 kcfs at Sioux City, Iowa determined that there would be an increase of high-flow days due to the spring rise in May and June and a reduction in high-flow days in July and August due to the lower summer release from Gavins Point Dam. This would indicate that groundwater problems could be more prevalent in the spring; however, they could be reduced in the summer months. If timing of high groundwater makes a difference, the problem could be more or less severe for construction activities in Whiting.

GW-12

The impacts of groundwater levels on wells or basements were not evaluated and discussed in the RDEIS or FEIS. The stage fluctuations and impacts to groundwater levels are in the range of those occurring under the CWCP under all of the other five alternatives discussed in Chapter 7. The releases from Gavins Point Dam do not get above 55 kcfs in the spring, and releases in the fall can get higher than 60 kcfs for extended (2 or more months) periods. If contamination of wells or wet basements were to occur it could occur under any of the alternatives.

GW-13

The observation is correct regarding the location of groundwater damages for the Chapter 7 alternatives in the RDEIS and FEIS. Mapping included in Section 7.8 of the two EISs demonstrates this.

GW-14

The numbers presented in this statement relate to a groundwater impacts analysis completed by the Iowa Farm Bureau Federation. The Technical Coordinator for the Master Manual Study was briefed by two staff members of the Federation in the Northwestern Division Office prior to completion of the RDEIS. The study was conducted for the period of 1989 through 1997, give or take a year or two. Based on crop damages over that period, a total estimate of groundwater damages to crops was completed. The Federation then asked the Iowa City office of the U.S. Geological Survey to estimate how much the groundwater levels would have risen in each year of that period if a spring rise had been added to the flows along Iowa's western border in every year. Resulting crop damages from the increased groundwater levels were then estimated. Various multipliers were then used to provide an estimate of the impact of the increased damages on the State of Iowa.

At the time of the briefing, the Federation staff was informed of the potential inappropriate assumptions associated with the analysis and were cautioned about providing them to the public. The most inappropriate assumption is that a spring rise would occur in each of the 10 years of the analysis. In the Corps simulation of the spring rise alternatives and in potential real-time operations, 1994 is the only year in that period that a spring rise would have occurred due to increased releases from Gavins Point Dam, assuming that spring rises would not be released from Gavins Point Dam in extended droughts. Spring rises in all years of droughts were not recommended by the USFWS as part of its RPA in its November 2000 BiOp. The Corps included that recommendation in its simulation runs for the RDEIS; however, the Corps also suggested that spring rises may be provided in droughts as one way of limiting the risk of flooding and other crop damages (see Section 7.21 of the RDEIS and Section 7.20 of the FEIS). The latter part of the period evaluated by the Federation included some higher flows on the Lower River due to a variety of factors; however, no additional water would have been released from Gavins Point Dam other than to provide navigation service or evacuate excess water in flood control storage (1997) in the same manner as would be done under the CWCP. Since the basic assumption that spring rises would occur in all years of the period of analysis is not appropriate, the findings of the Federation's groundwater damage analysis are very likely an overstatement of impacts.

The Corps completed an analysis of direct crop damage impacts to the area around Hamburg, Iowa, and the results are included in the RDEIS and FEIS. Furthermore, an analysis was also conducted in which the Corps extrapolated the changes in the groundwater damages at modeled sites to the entire floodplain. The average annual increase in crop damages over those of the CWCP for the GP2021 option averaged $1.69 million per year, which is very likely significantly lower than computed by the Iowa Farm Bureau Federation for just a portion of the floodplain. Results of the extrapolation of groundwater damages to the entire floodplain are discussed in Chapter 7 of the FEIS. Again, as stated in an earlier response (GW-7), the period modeled by the Corps likely has the greatest difference in damages among the alternatives of any 10-year period since the Mainstem Reservoir System was constructed.

GW-15

The Master Manual Study focused on the groundwater impacts to crops; however, the Corps is aware that there are other impacts that are not readily known to the Corps or that are difficult to quantify. It is apparent from the analyses that major groundwater changes are highly unlikely because the crop damage analysis determined that the areas affected remained essentially the same under all alternatives.

GW-16

Two factors are most relevant when considering whether or not the entire floodplain lands would be affected. First, the increased damages tend to be in the same locations that would experience damages under the CWCP, whether due to direct flooding from the river, reduced interior drainage from behind the levee, or increased groundwater levels. There is not a significant growth in the number of areas affected. If some of the lands do not appear to be very valuable due to recurring crop losses, the remaining lands adjacent to these areas may not have any lost value at all when it comes to raising crops. Second, the overall increase in total crop losses is less than 1 percent over that lost under the CWCP in the extrapolation of potential crop losses across the entire Missouri River floodplain due to interior drainage and groundwater changes.

Also, caution must be used when discussing adverse impacts because public perception can amplify those adverse impacts. One of the upstream States early in the 1977 to 1993 drought publicly expressed concern regarding the severity of adverse impacts to lake fishing in that State. The press widely and repeatedly reported this concern and the public came away with an exaggerated impression of the actual adverse impacts to the fishery. Visitation to the Missouri River in that State dropped dramatically that year. The following year, adverse impacts were not overplayed in the press, public perception was more realistic, and visitation increased. Putting impacts in the right perspective can play a role in keeping unwanted actions from occurring.

GW-17

Spring rises would be released primarily to provide a spawning cue for the pallid sturgeon. The 164 acres of habitat referred to in this comment relates to additional habitat for terns and plover, which results primarily from the lower summer flows of the GP options, not the spring rise.

GW-18

An analysis of flow changes at Omaha, Nebraska, as they relate to potential impacts to Carter Lake, focused on differences in monthly average flows. A flow of about 53 kcfs corresponds to a river stage of about 971 feet. Average monthly flows at Omaha drop below 53 kcfs in 85 to 90 percent of the years under the CWCP and MCP in the April through August months. This frequency goes up to over 90 percent under the GP options, with the options with the lower summer flow having an additional year or two with average monthly flows less than 53 kcfs. The problems with Carter Lake levels appear to be more related to runoff entering the lake. The year 2002 is a prime example. Rainfall and runoff were very low in the spring through early summer months of that year, and Carter Lake dropped to very low levels. The river flow was down a little due to the reduced navigation service flows under the CWCP operations that year, but the runoff into the lake was extremely low, too. Mitigation of impacts appears to be a local responsibility about 90 percent of the time, and the additional 5 to 6 years of average monthly river stages dropping below 971 feet in the summer would not be a problem as long as inflow via runoff remains at normal levels.

GW-19

Reduced drainage normally affects surrounding groundwater levels if the drainage ditch retains water at a higher level. Groundwater problems will be exacerbated with a change to one of the four GP options because all of them have spring rises. The studies conducted on four representative sites determined that the crop damages will go up as the spring rise increases in magnitude. These same studies also concluded that the increased damages will primarily affect the same lands that will experience problems under the CWCP, only the level of damage on these lands will increase. In some areas, a small increase in the area affected will occur. Conversely, if higher river flows due to spring rises exacerbate the groundwater problems in the spring, the lower summer flows in the summer will reduce the groundwater levels and, therefore, the problems.

4.9 HYDROLOGY RESPONSES

Hydro-1

The Corps concurs.

Hydro-2

The Corps agrees. The graphs/analyses presented in the RDEIS were wrong: Williston flows were used rather than Bismarck flows. The corrected analyses have been completed and are presented in the FEIS in Sections 5.2.4 and 7.2.4.

Hydro-3

Lake Oahe reached its minimum pool level of 1580.7 feet mean sea level (msl) in November 1989; 1607.5 feet msl is the top of the carryover multiple use zone.

Hydro-4

Table 7.2-1 shows the minimum pool elevations reached during drought periods for the RDEIS alternatives. Table 8.3-2 presents the minimum pool elevations for the upper three lakes under the PA.

Hydro-5

The PA does not include release modifications from Gavins Point Dam. However, analysis of the GP options presented in Chapter 7 (which do include a spring rise) indicates that although the spring rise draws additional water out of the lakes early in the year, the low summer flows more than offset the loss of reservoir storage. In addition, the spring rise is foregone during periods of extended drought. Section 7.12 describes the effects of the Gavins Point Dam flow modifications on navigation. In general, the spring rise has very little effect on the navigation benefits. Navigation benefits are affected to a much greater degree by the low summer flows.

Hydro-6

The depletion analysis is presented in Section 7.19 for the GP1528 and GP2021options. The results of the GP1528 and GP2021 options in the rest of Chapter 7 do not include the effects of future depletions.

Hydro-7

Fort Peck Lake will share the benefits of the drought conservation measures. A review of the modeling input parameters determined that a tern and plover release parameter was set too high. This resulted in Fort Peck Dam releasing too much water on an annual basis under the GP options in 1992, the last full year of the 1987 to 1993 drought. Subsequent modeling was completed with the parameter either reduced or bypassed, and more appropriate lake levels were obtained from the simulation runs of the alternatives that used this parameter in early 1993, when the lowest lake level was attained. The results of the revised simulation are shown in Table 7.2-1. Impacts of the more stringent drought conservation measures included in the PA are presented in Chapter 8 of the FEIS.

Hydro-8

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and also would include broad stakeholder participation through MRRIC. If requested by the Fort Peck Tribes, the Corps could provide assistance in locating the new proposed regional water intake near Poplar, Montana to minimize potential impacts and to provide a wide range of operating flexibility.

Hydro-9

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through

MRRIC. A separate Environmental Assessment was prepared for the mini-test so that it could proceed prior to the finalization of the FEIS. However, low Fort Peck lake levels delayed the mini-test in 2001, 2002, and 2003. The Corps' Omaha District is responsible for the Fort Peck mini-test. Stop protocol has been established for the Fort Peck Dam mini-test. It includes:

- Spillway slab movement or excess erosion of spillway banks
- Danger of loss of life
- Missouri River flow exceeding capacity of banks
- Major loss or potential loss of historic remains
- An energy shortage within the region.

One of the purposes of the test flows is to obtain additional temperature data needed to determine the relationship between spillway, powerplant, and river temperatures. The criteria will be refined through the adaptive management process as additional information becomes available in order to allow affected stakeholders to provide input.

Hydro-10

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck to ensure the safety of those who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC. Adequate advance notice will be provided so landowners can safely move pumps, livestock, or other property out of harm's way prior to the increased flow.

Hydro-11

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC. Any future tests of the spring rise will be timed so as to avoid, to the extent possible, drawing down the lake during the forage fish spawn.

Hydro-12

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through a MRRIC. A separate Environmental Assessment was prepared for the mini-test so that it could proceed prior to the finalization of the FEIS. However, low Fort Peck lake levels delayed the mini-test in 2001, 2002 and 2003. The Corps' Omaha District is responsible for the Fort Peck mini-test.

Hydro-13

The issue of altering Fort Peck Dam winter releases was not addressed in the Master Manual FEIS. This issue could be addressed in the Annual Operating Plan meetings.

Hydro-14

Your comment is noted.

Hydro-15

The flow changes resulting from operation of the Mainstem Reservoir System under any proposed alternative do not reflect pre-dam conditions. The rise and fall of the hydrograph in the GP options were intended to provide habitat for certain life cycle requirements. For instance, the lower summer flow provides greater sandbar habitat for least terns and piping plovers. Timeframes for the Gavins Point spring rise and low summer flows

were taken from the USFWS November 2000 BiOp; June and July were historically high flow months on the Missouri River. The GP options were designed to provide some semblance of a natural hydrograph while continuing to serve other authorized purposes. As a result of restricted releases during the least tern and piping plover nesting season, releases during the fall months are high in some years due to the delayed evacuation of flood control storage. The PA does not include release modifications from Gavins Point Dam.

Hydro-16

An analysis of the impact of future depletions on both the Missouri and Mississippi Rivers for the PA is presented in the FEIS.

Hydro-17

While it is true that under the CWCP the navigation season length is not reduced until the July 1 system storage is below 41.0 MAF, navigation service is reduced beginning at 59.0 MAF. The drought conservation measures included in the PA are changed from those included as a feature of the MCP and GP options. The PA's drought conservation measures do not shorten the navigation season until Mainstem Reservoir System storage falls below 51.5 MAF on July 1.

Hydro-18

Under the MCP alternative, there were 6 individual years (i.e., not part of a multi-year drought) when navigation service was reduced due to the July 1 storage check. However, in each of these 6 years, the minimum system storage fell below the top of the carryover multiple use zone (57.1 MAF), indicating drought conditions in the basin. The drought conservation measures included in the PA are changed from those included as a feature of the MCP and GP options. The PA's drought conservation measures do not shorten the navigation season until Mainstem Reservoir System storage falls below 51.5 MAF on July 1.

Hydro-19

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC. The Fort Peck Dam mini-test was postponed in 2001, 2002, and 2003 due to low Fort Peck lake levels. The mini-test will be performed in 2004 if there is sufficient water in Fort Peck Lake. A pool elevation of 2230 feet mean sea level is needed to run the mini-test.

Hydro-20

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC. Hydrologic and meteorological conditions in the region will be monitored prior to and during any future test of the Fort Peck Dam spring rise. Stop protocol for the Fort Peck Dam spring rise mini-test have been developed and include out of bank flows on the Missouri River.

Hydro-21

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC. Data collected in the mini-test will allow the Corps to provide better estimates of predicted river levels and possible associated impacts that could be expected during any further test of the Fort

Peck Dam spring rise. The information provided by the Roosevelt County Conservation District under contract with the Omaha District will be useful in this process.

Hydro-22

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through a MRRIC. The Missouri River Basin Water Management Division located in Omaha, Nebraska will control the releases from Fort Peck Dam during any future spring rise test. Hydrologic and meteorological conditions will be monitored. In the event that on-site Corps personnel encounter a situation which requires releases to be reduced, Water Management Division will be available at all times via phone for consultation and response.

Hydro-23

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC.

Hydro-24

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC. The releases from Fort Peck Dam following any future spring rise mini-test will be based on the hydrologic conditions at the time; however, releases required for irrigation will be met to the extent possible as they are under the CWCP.

Hydro-25

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC. One of the primary objectives of the Fort Peck mini-test is to test the long-term integrity of the spillway. The spillway will be monitored during the mini-test and stop protocol, which includes spillway slab movement and excess erosion of spillway banks, will be in place.

Hydro-26

Uncertainties associated with the modeling used in the Master Manual Study are addressed in Section 6.5.6 of the FEIS. All of the models were developed to understand the relative differences among the alternatives and levels of uncertainty were not established. In some cases, the size of the area being studied and relative complexity of the models limited the analyses to representative sites or conversion of complex model results to regression relationships. The common thread through the models is that they had river flow, lake level, or both as parameters instead of an economic use benefit or an environmental resource value. This allowed the computation of numeric values for all of the uses and resources being analyzed. All of the models were developed on the best available information and have withstood the test of various levels of review.

Hydro-27

Evaporation rates used in the Master Manual Study were based on the best available information. Actual evaporation rates vary significantly based on the observed lake surface area and weather conditions. Because the purpose of the modeling was to understand the relative differences among the alternatives, the uncertainty in actual evaporation rates is not significant.

Hydro-28

Depletion estimates used in the Master Manual Study were based on the best available information. Because the models are used to understand the relative differences among alternatives rather than the precise economic or environmental value of a single alternative, the degree of uncertainty in the U.S. Bureau of Reclamation's depletion estimates is less significant. As requested by the State of Missouri due to their concern about substantial future depletions, potential future depletions ranging from 0.8 to 3.2 MAF were included in the analyses and are presented in Section 7.19 for the CWCP, MCP, and three of the four GP options.

Hydro-29

Although we have not looked specifically at the effects of the various alternatives on navigation for the years 2000 and 2001, the drought conservation measures maintain higher lake levels early in a drought, which can have a negative effect on navigation on the Missouri and Mississippi Rivers.

Hydro-30

We have no indication that the assurance of increased storage in the upper three lakes would result in the upper basin States seeking to deplete greater amounts of water from the lakes. However, to address the issue, potential future depletions ranging from 0.8 to 3.2 MAF were included in the analysis of the PA, as requested by the State of Missouri, and are presented in Section 7.19.

Hydro-31

The PA does not include release modifications from Gavins Point Dam. The Corps has proposed flow tests from Fort Peck Dam, Fort Randall Dam, and Gavins Point Dam as components of an initial MRRIP. Flow tests would be implemented in the context of an overall adaptive management strategy that included broad stakeholder participation through MRRIC. This adaptive management process could also be used to delay the evacuation of flood control storage until after September 15 in years when such an extension would not severely limit the evacuation of flood control storage or have significant adverse impacts on other project purposes.

Hydro-32

The observation regarding water supply benefits agree with the data presented in Section 7.9 of the RDEIS and FEIS.

Hydro-33

While it is true that flood damages on the Lower River begin at flow levels considerably higher than the Gavins Point release presented in the GP options, Tributary inflows can have a major impact on flood damages at downstream locations. These Tributary inflows vary greatly depending on local rainfall and soil moisture conditions. For example, as you noted, during the 1993 flood the peak flows at Sioux City and Nebraska City were 75,000 cfs and 200,000 cfs, respectively. These peak flows occurred while Gavins Point releases had been reduced to the 6,000 to 9,000 cfs level. Thus, the Tributary inflow was in excess of 65,000 cfs between Gavins Point Dam and Sioux City, and in excess of 190,000 cfs between Gavins Point Dam and Nebraska City. The PA does not include release modifications from Gavins Point Dam.

Hydro-34

Loss of sediment storage in the lakes will continue over time, but was not included as another variable in the analysis. The hydrologic modeling for all of the studies for the RDEIS and FEIS was based on existing conditions and uses. The studies were based on 100 years of historic flow records and current-day lake elevation-storage capacity relationships. Because the models are used to understand the relative differences among alternatives rather than the precise economic or environmental value of a single alternative, the future loss of storage capacity is less significant.

Hydro-35

The PA does not include release modifications from Gavins Point Dam. While it is true that the river velocity in the main channel will only be slightly

reduced by the lower summer releases included as a feature of the GP options, the lower releases would provide a small amount of additional areas of shallow, slower-moving water in some portions of the river.

Hydro-36

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana, affected Tribes, and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available and includes broad stakeholder participation through MRRIC.

A separate Environmental Assessment was prepared for the Fort Peck spring rise mini-test so that it could proceed prior to the finalization of the FEIS. However, low Fort Peck lake levels delayed the mini-test in 2001, 2002, and 2003. The Corps' Omaha District is responsible for the Fort Peck mini-test. The purpose of the mini-test is to verify the integrity of the spillway, to test data collection methodology, and to gather information on water temperature based on various combinations of spillway and powerhouse discharges. The Fort Peck mini-test, with a maximum release of 15,000 cfs, is within the limits of the CWCP and there is no evidence to indicate mini-test impacts to irrigation intakes beyond normal operations. However, there may be pumps located along the Missouri River below Fort Peck Dam that will be inundated/affected from higher releases. The Roosevelt County Conservation District, under contract with the Omaha District Corps of Engineers, gathered a variety of data on intakes along the Missouri River from Fort Peck Dam to the Montana-North Dakota border.

Hydro-37

The drought conservation measures included in the PA are changed from those included as a feature of the MCP and GP options. The PA's drought conservation measures do not shorten the navigation season until Mainstem Reservoir System storage falls below 51.5 MAF on July 1.

Hydro-38

The Corps concurs. The section was rewritten to improve clarity.

Hydro-39

Winter release rates are set based on the September 1 storage check. However, due to channel degradation since the mainstem system was constructed, the low winter release rates described in the CWCP do not provide adequate river levels for water supply and thermal powerplant intakes. Gavins Point winter releases in the range of 12 to 13 kcfs are now considered to be the minimum allowable during the winter. The March 1 storage mentioned in the 2000-2001 AOP is just a reference to the desired system storage on that date, which is to begin the water year at the base of the annual flood control and multiple use zone, 57.1 MAF.

Hydro-40

The Corps will continue to maintain winter release rates from Gavins Point Dam at a level that provides the majority of intakes on the Lower River access to water. During extreme cold spells, releases will be increased to make up for losses due to ice formation to the extent possible. Weather permitting, releases will be reduced later in the winter season to maintain the desired average winter release rate.

Hydro-41

The Corps' Kansas City District Water Management office coordinates releases from Truman Dam with the Missouri River Basin Water Management office in Omaha. When the Lower Missouri River is high, releases from Truman are limited based on the guidance in the Truman Water Control Manual.

Hydro-42

The PA does not include release modifications from Gavins Point Dam. The Corps has proposed flow tests from Fort Peck Dam, Fort Randall Dam, and Gavins Point Dam as components of an initial MRRIP. Flow tests would be implemented in the context of an overall adaptive management strategy that included broad stakeholder participation through MRRIC. As presented in the analysis of the GP options in Chapter 7 of the FEIS, changes in flood damages can occur in the fall months due to

lower summer releases from Gavins Point Dam. When Mainstem Reservoir System releases are limited during some time of the year, the potential need to evacuate more water in the fall months increases. Historically, major storms have occurred downstream from Gavins Point Dam during fall months, and higher fall releases could result in increased flood damages during this period. The differences among the alternatives examined in Chapter 7 of the FEIS due to higher fall flows, however, are relatively minor as indicated by essentially the same flood control benefits for all of the alternatives. A review of the sources of flooding for two alternatives determined that fall flood damages might have been exacerbated in 4 years (of the 100 years modeled) because of the need to evacuate water at a higher rate following the summer lower releases. Over the 100-year period, these events would have had a very minor effect on the Missouri River flood control benefits provided by the Mainstem Reservoir System.

Hydro-43

The impacts of the alternatives on Mississippi River navigation are presented in Sections 7.15 and 8.4 of the FEIS.

HydRo-44

The PA does not include release modifications from Gavins Point Dam. The Corps has proposed flow tests from Fort Peck Dam, Fort Randall Dam, and Gavins Point Dam as components of an initial MRRIP. Flow tests would be implemented in the context of an overall adaptive management strategy that included broad stakeholder participation through MRRIC.

HydRo-45

The PA does not include release modifications from Gavins Point Dam. The Corps has proposed flow tests from Fort Peck Dam, Fort Randall Dam, and Gavins Point Dam as components of an initial MRRIP. Flow tests would be implemented in the context of an overall adaptive management strategy that included broad stakeholder participation through MRRIC.

Hydro-46

The flow changes resulting from operation of the Mainstem Reservoir System under any proposed alternative do not reflect pre-dam conditions. The rise and fall of the hydrograph in the GP options were intended to provide habitat for certain life cycle requirements. For instance, the lower summer flow provides greater sandbar habitat for least terns and piping plovers. Timeframes for the Gavins Point spring rise and low summer flows were taken from the USFWS November 2000 BiOp; June and July were historically high flow months on the Missouri River. The GP options were designed to provide some semblance of a natural hydrograph while continuing to serve other authorized purposes. The PA does not include release modifications from Gavins Point Dam.

Hydro-47

The PA does not include release modifications from Gavins Point Dam. However, in response to your comment, the Corps did an additional analysis to determine if the spring rise from Gavins Point Dam would affect our ability to evacuate floodwater from Truman Dam. The water control manual for Truman Dam (Section 9-21 d.) reads, "No release will be made from Truman reservoir storage (as long as the water surface elevation is within the flood-control pool) when the flow rate of the Osage River at St. Thomas is above flood stage, or when the Missouri River at Hermann, Missouri, is above 260,000 cfs and rising. After the Missouri River has crested at Hermann, releases will be continued from Truman Reservoir subject to the limitations outlined above."

Therefore, an analysis was completed to look at the number of days between May and August that the Hermann flows were above 260,000 cfs for the alternatives presented in Chapter 7 of the RDEIS. The results of the analysis indicated that over the 100-year period modeled, the greatest annual difference was in 1995 between the CWCP and the GP2021 option. The CWCP had 40 days in the May to August timeframe with flows above 260,000 cfs; the GP2021 option had 44 days.

We also looked at the total number of days for the 100-year period that had flows above 260,000 cfs. The totals were as follows:

CWCP:	351 days
MCP:	363 days
GP1528:	373 days
GP2021:	369 days
GP1521:	368 days
GP2028:	375 days

Thus, the maximum increase in number of days Hermann was above 260,000 cfs over the entire 100-year period was 24 days, or an average of 0.24 days per year. This difference is considered insignificant.

4.10 HYDROPOWER RESPONSES

HPOWR-1

A spring rise is part of each GP option. It calls for increased flows of 15,000 to 20,000 cfs above navigation flows from May 15 to June 15 every third year, or as appropriate. These flows are designed to trigger spawning of the endangered pallid sturgeon. The spring rise will cause higher system releases and spilling of water at Gavins Point Dam. Although additional generation is produced, it is provided at a time where it has less demand and the value is less than if the energy was generated in the summer during higher demand. The cost to the ratepayers for this operation is not significant. The spring rise is not part of the PA in the FEIS.

HPOWR-2

The National Economic Development (NED) analysis for hydropower shows increases in benefits for the MCP and the GP options compared to the CWCP of 1 to 2 percent. For many in the power community reviewing the RDEIS there were expectations that there would be more variance. The water conservation management included in the MCP and GP options created higher lake elevations (higher heads), and thus more efficiency when hydropower turbines operate. This gave the slight benefit gains. The reason for slight variance is the fact that the same amount of water moves every year no matter what the alternative.

The RDEIS revised the 1994 Hydropower Economic Technical report by only adjusting the unit values for energy and capacity. New updated energy and capacity values were developed by the Corps Hydropower Analysis Center. Plugging these new values into the RDEIS resulted in higher NED benefits than stated in the 1994 report by about 10 percent. The relative differences did not change as stated above. The hydropower consumer groups questioned the validity of the NED analysis in the RDEIS and several meetings were held with these groups. In preparing for the FEIS, the Hydropower Analysis Center reviewed the NED analysis and re-analyzed the energy and capacity values. They were verified; however, a multiplier error was discovered in correcting from unadjusted capacity value to the adjusted capacity value. A multiplier was used twice, once within the model and once outside the model. This error was corrected for the FEIS. This results in slightly lower hydropower NED benefits for all the alternatives, but the comparison of the other alternatives with the CWCP remains at 1 to 2 percent.

HPOWR-3

As a cooperating agency WAPA provided to the Corps a revenue impact analysis for the MCP and GP options compared to the CWCP. This analysis is clearly presented in the RDEIS. The same rules were applied for each alternative when computing monthly averages for the 100 years of record used.

As far as your statement that "The GP options do not envision conducting operations when river conditions do not allow." This my be true for the spring rise; however, the low summer flow is every year and it is the low summer flow and the timing of hydropower generation in the high demand summer period that is showing high impacts to rate payers.

The FEIS will contain the same information in Section 7.10.3 without updating.

EPA should contact the Corps and initiate a meeting with the Corps, WAPA, and USFWS as you suggested to help in your understanding of hydropower and revenue analysis.

HPOWR-4

Averaging the hourly pricing to monthly tends to dampen the price spikes and valleys. In terms of the 100 years of data, this averaging provides the level of detail required by the RDEIS.

HPOWR-5

Because the RDEIS does not contain a discussion on air emissions caused by using more thermal powerplants to offset reduced hydropower for some of the alternatives, it will not be discussed in the FEIS.

HPOWR-6

Capacity is based on lake elevations we call head. For the period of record on average the head in the lakes is nearly uniform throughout the year providing nearly equal capacity. That is why the monthly peaking capacities shown in Table 7.10-2 are substantially similar.

HPOWR-7

If Congress sees it necessary to change the rate at which the Federal treasury is reimbursed to protect customers that may be affected by Missouri River operations, they can change the law.

HPOWR-8

The Corps concurs with your statement.

HPOWR-9

Relative to hydropower, the increased head in the lakes does slightly increase the NED benefits by 1 to 2 percent for the five alternatives as compared to the CWCP. However, the release timing of water is important to the ratepayers. Holding back water during the summer months will increase costs.

HPOWR-10

The water conservation measures of the other alternatives (except for one) provide hydropower efficiencies. This results in higher NED benefits to all but one of the other alternatives when compared to the CWCP. For example, at Garrison Dam, all the other alternatives except for one have an annual NED value $4 to $9 million higher than the CWCP. This is compared to $152.59 million NED value for the CWCP.

HPOWR-11

The FEIS contains updates and corrections to the NED benefit analysis. It contains a revised thermal energy at risk analysis. There also is more discussion on regional effects on the power system when there are shortages of hydropower and at the same time reductions of thermal power from plants along the Missouri River. There are clarification discussions in the text of the FEIS.

HPOWR-12

NED benefits analysis is for long-term investing. If society wants electrical power it must decide how it is to be created—hydropower, coal, gas-fired thermal plants, nuclear plants, or windpower. The Corps needed an economic number for the hydropower project purpose to compare the relative differences in benefits (either positive or negative) that would occur for the various Missouri River flow alternatives compared to the CWCP. Therefore, a NED evaluation was conducted because this is generally the accepted protocol to develop an economic number. The NED number is basically the benefit hydropower has over other competing generating plants. The NED benefit for hydropower shown in the RDEIS for the CWCP is $741.5 million.

A marketing analysis looks at the short term. This type of analysis is subject to market swings that may not be appropriate for long-term investing. This type of analysis can identify some areas of economic interest that are not picked up in a NED analysis. After several meetings with power customer organizations the Corps, in cooperation with the Western Area Power Administration, completed a marketing analysis that was included in the RDEIS.

As a result of conducting the NED and marketing analyses, two different economic hydropower stories were presented in the RDEIS. First, the NED analysis shows positive benefits of 1 percent for the MCP and 2 percent for the GP options compared to the CWCP. The gain in benefits is the conservation measures in the MCP and GP options that create higher pool elevations (head), which will result in increased efficiencies when water passes through the turbines. The second story is the market analysis. This analysis shows a slight increase in benefits for the MCP, but a decrease in annual purchase power for all of the GP options. This will lead to higher costs to the ratepayers. As indicted in the RDEIS, ratepayers were divided up into categories based upon their usage of hydropower as follows: 10, 40, 70, 100 percent and Tribal (60 percent). Those ratepayers with the higher percentage of reliance on hydropower will be paying relatively more.

The FEIS addresses the issue of NED and marketing analyses so that the dual story is less confusing. The NED and market analyses were both fairly considered when making the decision to select a PA.

HPOWR-13

The Corps and the Western Area Power Administration (WAPA) have mentioned to the Tribal leaders on various consultation gatherings and meetings that they stand ready to help with the windpower initiatives when Congress provides the authority and funding to do so. In the meantime, these agencies will not create barriers or obstructions to any independent windpower advocates.

HPOWR-14

The RDEIS provides to the Missouri River basin information on the impacts to economic and environmental multipurposes with a section devoted to Tribes. The RDEIS provides the necessary basis for each person, group, community, Tribe, etc. to determine his or her own detailed impacts. The report you are suggesting is outside the scope of the EIS process. The Omaha District is the Corps office responsible for coordination and/or consultation on the Fort Peck flow issues. Work with that office to assist you with specific reports you are interested in pursuing.

HPOWR-15

The 1944 Flood Control Act, sometimes called the Pick/Sloan Plan, focused on the construction of the mainstem lakes as multiple purpose with the primary purposes then identified as flood control, navigation, irrigation, and hydroelectric power. The phrases "and other uses" or "and other purposes" were used to indicate there would be additional purposes to be included in the multiple purposes of the mainstem. It is reasonable to conclude that those "other purposes" and "other uses" were those then named in the final paragraph of the portion signed by the Chief and Commissioner. It States that the unified plan for the entire development of the Missouri River basin includes "maximum benefits for flood control, irrigation, navigation, power, domestic, and sanitary purposes, wildlife, and recreation," presented in that order.

HPOWR-16

The RDEIS has identified that, compared to the CWCP, all the other alternatives have greater NED benefits of 1 to 2 percent. This is one piece of information that the Corps considered when deciding on a PA. The Corps' decisions took into account all the economic and environmental purposes.

HPOWR-17

A regional impact analysis on capacity was conducted by WAPA to address market concerns when there is both a loss of hydropower and thermal power at the same time. The Corps used graphics prepared by WAPA on the Mid-Continent Area Power Pool (MAPP) (U.S. Region) surplus/deficit capacity for the 2001 to 2010 time frame to determine if any generating shortfalls would change the MAPP region's need for additional generating capability. This analysis determined that there was no difference among the alternatives as to when additional capability needed to be on line to offset the lost generating capability for any of the alternatives under consideration as a PA. For this reason and the complexity associated with describing the analysis, the Corps elected not to include a discussion on the analysis in the FEIS.

HPOWR-18

As a cooperating agency, WAPA provided to the Corps a revenue impact analysis for the MCP and GP options compared to the CWCP. Because of the timing of release changes, WAPA determined that there would be an $8 to $30 million reduction in revenues for the GP options. The MCP actually showed a slight increase in revenues of $1.6 million. These changes translated into variable increases in the purchase power cost for WAPA customers depending on their reliance on hydropower. WAPA divided the customer base in hydropower percentage groups of 10, 40, 70, and 100 percent and Tribal (60 percent) users. For the GP options, depending on the percent of the load provided by hydropower, purchase power increases varied from 1 to 20 percent. WAPA also conducted a regional capacity impacts analysis that is included in Chapter 8 of the FEIS. The PA shows an average annual reduction of revenues of $4.8 million.

HPOWR-19

Any compensation to rate payers for the losses in hydropower production from the spill requirements for endangered species is outside the scope of the RDEIS and FEIS. At this time there was a bill proposed to add language that reduces WAPA's payment to the Federal treasury as a result of any environmental flow changes that affect hydropower production when compared to the current Water Control Plan. In the long term if the Fort Peck spring rise proves successful for the Pallid Sturgeon there may be considerations to design and construct a different method of moving warm water from the resource surface through the turbines rather than spilling the water over the spillway.

HPOWR-20

Moving the hydropower payments directly to basin activities from the Federal treasury sounds logical;

however, it reduces the Federal treasury. Congress is able to change the payment stream if it wishes to do so.

HPOWR-21

Executive Order 13211 does not apply to the Master Manual Review and Update.

HPOWR-22

Thank you for sharing your opinion.

HPOWR-23

The higher lake elevation, called higher head, also equates with a higher storage not a loss of storage.

HPOWR-24

Our desire is to complete the process with a FEIS that fully explains the consequences of operating for a new PA. With the help of comments such as yours we hope to be able to reach that goal.

HPOWR-25

The hydropower model captures the seasonal differential cost of energy using the methodology it is required to work under. The Principles and Guidelines for developing NED benefits allow the computations of benefits using power replacement costs, in this case, the cost of building an appropriate mix of power generation facilities to match that not provided by the Mainstem Reservoir System. Computation of the replacement energy cost does not allow for the short-term variability in energy cost throughout the year, which is the basis that the WAPA is using appropriately when it is looking at energy revenues. Both analyses are appropriately conducted; however, these analyses are focused on different aspects of hydropower value to the basin and nation.

HPOWR-26

We appreciate the information and will consider it in our final decision.

HPOWR-27

The RDEIS averages the flows of 100 years of data. This provides the best method for determining impacts for a study of the caliber of the Master Water Control Manual Review and Update. We know that there will be spikes from short duration floods or low water situations; however, each facility must analyze these details and adapt their operations accordingly.

HPOWR-28

Water for the Fort Peck test passes over the spillways rather than through the turbines. Except for the relatively small amount of hydropower energy lost, there is no change in the consumer relationship of power supply and availability. The price the consumer pays for electricity is based on a firm allocation and not based on total hydropower produced. There will of course be a slight loss of total hydropower produced, which will slightly impact WAPA's repayment to the Federal treasury.

HPOWR-29

The Fort Peck mini-test is a release procedure from the dam that blends cool deep water through the turbines and warm water over the spillway to increase the temperature of the downstream flows and encourage the spawning behavior of the endangered pallid sturgeon. During the test, a minimum of 4,000 cfs will be released through the turbines. The test is designed to last for about 30 days. Spillway flows will vary. For 12 days they will be 4,000 cfs, 8 days they will be 8,000 cfs and then 4 to 9 days (depending on monitoring results) they will be 11,000 cfs.

To the extent water, which would otherwise be used to generate electricity, is spilled, the amount of energy generated during the test would be diminished. The amount of energy lost depends on the water level of the lake at the time of the release. More potential energy is lost at higher lake elevations due to the increased head at the powerplants. The additional water released during June 2002 for the mini-test would result in reduced Fort Peck releases from July through late November, further reducing energy generation in addition to the energy lost as a result of the spillway releases. The estimated power production loss of energy is 56 gigawatt-hours (GWh). This is about 1 percent of the power generated by the mainstem system during FY2001 and 1 percent of the energy forecast to be generated during the affected period. A change of this magnitude can easily be picked up by another part of the power grid, provided other generating elements are readily available and not already working at capacity. A factor, which could greatly increase the severity of this loss, would be an energy shortage. The market

expenses for the 56 GWh will vary with market pressures for energy in a particular year; however, based on recent regional pricing it is anticipated that the total will be $2,285,000.

A full test is still in the planning phases, so details of the hydropower costs are not known.

HPWR-30

Congress authorized all project purposes and assigned the Corps to implement their charge. It is not within the Corps' authorities to not support a project purpose until Congress changes the law.

HPWR-31

None of the project economic or environmental purposes are sole driving forces on the management of the river. The Corps operates the system for all the purposes as spelled out in the Master Water Control Manual and each Annual Operating Plan. When the Master Water Control Manual Update is completed the Corps will operate the system based on that document and future Annual Operating Plans.

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4.11 INTERIOR DRAINAGE RESPONSES

IntD-1

The effects of various study alternatives on the potential for levee interior drainage problems were evaluated for six levee units along the Lower River. This analysis evaluated the size of the interior ponding areas on a daily basis over the 45-year study period (1950 to 1994) for each alternative evaluated. The economic analysis of these data included both crop damages and pumping costs, and it confirmed that, in aggregate, all of the alternatives evaluated produced higher average annual damages when compared to the CWCP. RDEIS and FEIS Table 7.8-3 presents the average annual interior drainage damages at the studied levee units for each alternative evaluated in detail for Chapter 7. These impacts were considered as the PA was selected.

IntD-2

The Corps concurs with the comment that an interior drainage analysis was not conducted in this county. The effects of various study alternatives on the potential for levee interior drainage problems were evaluated at six representative levee units along the Lower River. This analysis evaluated the size of the interior ponding areas on a daily basis over the 45-year study period (1950 to 1994) for each alternative evaluated. The economic analysis of these data included both crop damages and pumping costs, and it confirmed that, in aggregate, all of the alternatives evaluated produced higher average annual damages when compared to the CWCP. RDEIS and FEIS Table 7.8-3 presents the average annual interior drainage damages at the studied levee units for each alternative evaluated in detail for Chapter 7. These impacts were considered as the PA was selected.

IntD-3

While it is correct that the "Master Water Control Manual, Missouri River, Review and Update Study Volume 11: Interior Drainage Study, dated August 1998" only looked at two alternatives, the RDEIS, dated August 2001, presents the interior drainage damage analysis for all of the alternatives considered. The comment also correctly identifies that the damages for interior drainage were not extrapolated for the lower 811 miles of the Lower River in the RDEIS. The six levee units selected for analysis provided site-specific information to compare the relative differences of alternatives at levee units, but because of the site-specific nature of the information no attempt to extrapolate the damage results to the entire 811-mile reach was made for the RDEIS. An extrapolation of the data from the six sites was conducted following the review and comment period for the RDEIS for the 1,400,000 acres of Missouri River floodplain from Omaha, Nebraska to the mouth. This extrapolation determined that the increased crop losses associated with reduced interior drainage are less than a half of a percent with a spring rise of 20 kcfs. One must remember that the spring rise does not occur every year and flood control constraints limit releases in years during which downstream flooding is a potential problem.

IntD-4

The difference in the period of record for the interior drainage analysis and the other efforts was not considered by the Corps to be a concern because the interior drainage analysis was developed to better understand potential relative differences among the alternatives evaluated.

IntD-5

The assumptions made in the interior drainage analysis were uniformly applied to all the alternatives evaluated and, as such, do impact the comparison of the relative differences among alternatives for the six levee units analyzed.

IntD-6

The groundwater modeling (MODFLOW) and interior drainage modeling (HEC-IFH) are separate modeling efforts. There was no attempt to integrate the MODFLOW and HEC-IFH Models.

IntD-7

Evaluation of modifications to levee interior drainage facilities is beyond the scope of this study.

IntD-8

The effects of various study alternatives on the potential for levee interior drainage problems were evaluated for six levee units along the lower 600 miles of the Missouri River. This analysis evaluated the size of the interior ponding areas on a

daily basis over the 45-year study period (1950 to 1994) for each alternative to the CWCP. The six levee units selected for analysis provided site-specific information to compare the relative differences of alternatives at levee units, but, because of the site-specific nature of the input parameters, no attempt to extrapolate the damage results to the entire 811-mile reach was made for the RDEIS. The economic analysis of these data included both crop damages and pumping costs, and it confirmed that, in aggregate, all of the alternatives studied produced higher average annual damages when compared to the CWCP. These impacts were considered as the PA was selected. An extrapolation of the data from the six sites was conducted following the review and comment period for the RDEIS for the 1,400,000 acres of Missouri River floodplain from Omaha, Nebraska to the mouth. This extrapolation determined that the increased crop losses associated with reduced interior drainage are less than a half of a percent with a spring rise of 20 kcfs. One must remember that the spring rise does not occur every year and flood control constraints limit releases in years during which downstream flooding is a potential problem.

IntD-9

The interior drainage studies, along with all of the studies for the RDEIS and FEIS, were based on existing conditions and uses. The only exception to this was the effort to understand the impact of a range of future depletions on many of the existing uses. The impacts analyses are contentious, and any effort to forecast future uses would likely be even more contentious.

IntD-10

The observation is correct regarding the location of interior drainage damages for the Chapter 7 alternatives in the RDEIS and FEIS.

IntD-11

No analyses of interior drainage impacts were conducted for the Mississippi River levee units. One finding regarding Missouri River impacts was that the crop damages decreased in a downstream direction as the addition of water to the river results in Lower River stage increases in a downstream direction. One can anticipate that the impacts, if any, to Mississippi River interior drainage would be very minor.

IntD-12

Two factors are most relevant when considering whether or not the entire floodplain lands would be affected. First, the increased damages tend to be in the same locations that would experience damages under the CWCP, whether due to direct flooding from the river, reduced interior drainage from behind the levee, or increased groundwater levels. There is not a significant growth in the number of areas affected. If some of the lands do not appear to be very valuable due to recurring crop losses, the remaining lands adjacent to these areas may not have any lost value at all when it comes to raising crops. Second, the overall increase in total crop losses is less than 1 percent over that lost under the CWCP in the extrapolation of potential crop losses across the entire Missouri River floodplain due to interior drainage and groundwater changes. This type of increase in total floodplain crop losses should not result in a major reduction, if any reduction, in floodplain cropland value.

Also, caution must be used when discussing adverse impacts because public perception can amplify those adverse impacts. One of the upstream States early in the 1977 to 1993 drought publicly expressed concern regarding the severity of adverse impacts to lake fishing in that State. The press widely and repeatedly reported this concern and the public came away with an exaggerated impression of the actual adverse impacts to the fishery. Visitation to the Missouri River in that State dropped dramatically that year. The following year, adverse impacts were not overplayed in the press, public perception was more realistic, and visitation increased. Putting impacts in the right perspective can play a role in keeping unwanted actions from occurring.

IntD-13

One would expect interior drainage damages to occur in the same area with only the size of the area varying, depending on the severity of the storm that must exit through the drainage structure, the pre-storm ground conditions (wet or dry), and the level of the river on the discharge side of the drainage structure (above invert level and how much above). Generally, one would not anticipate a dramatic difference in the area affected with higher river stages. It may be slightly larger, but not in a new area.

IntD-14

An analysis of the number of days the flow at Omaha, Nebraska is equal to or exceeds 60 kcfs was conducted. It found that, over the 100 years of analysis, the difference in the number of days between the CWCP and the GP2028 option (one with highest spring and summer releases from Gavins Point Dam of the GP options) was only 81 days for the 4-month period of May through August. The CWCP and GP2028 option had 31 and 38 years, respectively with 1 or more days with flows above this level in these months. Whether these differences result in a significant difference in the drainage problems during the summer for Council Bluffs has not been determined because the interior drainage and groundwater studies focused on crop damages.

IntD-15

Drainage is impeded from the Dakota Dunes development upstream from Sioux City during "high" river stages. The Corps is well aware of these problems and has kept close watch on them during high Gavins Point Dam releases in the mid- to late 1990s. Drainage becomes a problem at a flow somewhat greater than 50 kcfs. The anticipated spring rise release for the GP20XX options is 20 kcfs over the navigation target flow of approximately 28 to 30 kcfs, meaning that the release would be about 50 kcfs, somewhat below the flow at which drainage becomes a problem.

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4.12 LEGAL RESPONSES

LE-1

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

LE-2

Congress authorized the construction, operation, and maintenance of these projects by the Corps. Through other legislative enactments such as the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), the Clean Air and Water Act, and others, Congress established additional requirements that the Corps must comply with in the operations and maintenance of these projects. The Corps exercises its discretion and operates the Missouri River Mainstem Reservoir System projects subject to these additional legislative authorities.

LE-3

This comment raises the issue of whether Congress should place the Missouri River in a special status that would ensure protection of its bed and floodplain. Certainly there are designations that provide certain listed rivers with special protections, see for instance the Wild and Scenic Rivers Act (WSRA). However, the segments of the Missouri River covered by this EIS have been not been designated as such under the WSRA or other Acts of Congress.

LE-4

Under the ESA, the Corps must ensure that the operations of the Mainstem Reservoir System projects are not likely to jeopardize the continued existence of listed species or result in the destruction or modification of designated critical habitat. One purpose of the current EIS process is to evaluate proposed alternatives for complying with the ESA with respect to the Missouri River operations. In addition, the NEPA process also considers the significant impacts of project operations on other fish and wildlife resources.

LE-5

Because of the varied nature of the property interests and the diverse range of activities that occur adjacent to the Missouri River, no single statement of liability can cover the diversity of claims that could arise from a Gavins Point Dam spring rise. Factors to be considered would include but not be limited to the following: statutory disclaimers of liability, e.g., 33 United States Code (USC) 702 (c); where the damage occurs, i.e., inside or outside the area subject to the navigable servitude; whether the claimant has a contractual relationship with the government such as a lease, easements, mutual cooperation agreement, or marina permit which creates or disclaims liability for fluctuation in river or pool levels; potential liability under the Federal Tort Claims Act for authorized activities conducted in a negligent manner; as well as takings under the Fifth Amendment.

LE-6

Actions taken by the Corps pursuant to adaptive management processes under MRRIP would comply with all appropriate statutory and regulatory requirements, including NEPA. Thus, as an example, before proposed flow modifications that were developed in an adaptive management process would be implemented, the Corps would ensure that the proposed actions were consistent with all appropriate statutory and regulatory requirements including, when applicable, the requirements of NEPA.

LE-7

The current Master Manual review presents an analysis of alternatives that address all relevant legal mandates. As indicated in the introduction

section of the RDEIS Summary, "After publication of the FEIS, which will identify the selected plan, the Corps will issue a ROD. This ROD will include the Corps' conclusions and determinations on how it intends to meet its statutory authorizations and requirements to include project authorities and ESA requirements."

LE-8

The Corps has met its obligations under the ESA and other statutory and regulatory requirements. The Corps has consulted with the USFWS under the ESA regarding Missouri River mainstem operations and the listed threatened and endangered species. The Corps has included an analysis of the elements of the RPA identified in the USFWS November 2000 BiOp on Missouri River operations in the EIS. The ROD will include the Corps' conclusions and determinations on how it intends to meet its statutory authorizations and requirements to include project authorities, ESA, and other statutory and regulatory requirements.

LE-9

The USFWS has the statutory obligation to develop BiOps in accordance with the ESA. The issues raised by the commenter concerning that agency's compliance with statutory requirements should be addressed to that agency for appropriate consideration. With respect to the Senate amendment to the appropriation bill, consistent with that amendment, the Corps has considered a range of alternatives in the EIS process other than the RPA developed by the USFWS.

LE-10

From the comment it is not clear why the GP options would violate NEPA. The EIS analyzes the range of alternatives concerning the GP options. If future processes develop operations not covered by the EIS, the Corps would take additional action to ensure that these future operations are covered by appropriate NEPA documentation.

LE-11

While NEPA regulations suggest that the agency identify a PA in the Draft EIS, the regulations only require that the agency identify a PA in the FEIS. The Corps has identified a PA in the FEIS.

LE-12

NEPA requires the action agency to provide an analysis of the alternatives. The EIS provides a reasonable discussion of the direct, indirect, and cumulative impacts of the alternatives on the Missouri River and the Mississippi River.

LE-13

The Fifth Amendment to the constitution provides that the private property will not be taken without just compensation. As indicated in the EIS, because of the constraints that will be imposed before implementing a spring rise, it is not anticipated this operation, if implemented, would result in the taking of private property.

LE-14

The selection of an alternative for the Master Manual study will not divest any rights of property right holders. Those holding rights who believe they are negatively affected will have the same rights that they hold under the current manual. The Master Manual process is to develop a new guidance for annual operations not to decide what property rights will be recognized or retained.

LE-15

Pursuant to the Flood Control Act of 1944, the Corps was given the authority by Congress to construct the Missouri River Mainstem Reservoir System projects and then manage those projects while developing the multiple-use purposes of the overall system. The alternatives evaluated within the Master Manual Review are all within the broad discretionary delegation by Congress to the Corps in operating the Mainstream Reservoir System projects. The United States Supreme Court has held that the United States is not liable for depriving a person from the opportunity to utilize water for economic gain when "the United States asserts its superior authority under the Commerce Clause . . . to utilize or regulate the flow of the water of a navigable stream, [as] there is no 'taking' of 'property' in the sense of the Fifth Amendment because the United States has a superior navigation easement which precludes private ownership of the water or its flow." United States v. Grand River Dam Authority, 363 U.S. 229, 231-32 (1960)(cites omitted).

LE-16

SDCL 43-17-35 is the statutory section dealing with the fencing of agricultural land on both sides of a navigable stream, while SDCL 43-17-40 explains that the persons who cause such fences to be constructed are responsible for maintaining them. However, SDCL 43-17-35 specifically notes that it does not apply to any river or stream, or portion thereof, that has been determined to be navigable pursuant to Federal law, as is the Missouri River.

LE-17

The Corps thanks you for your comment, but it is not completely understood what your exact concerns are with regards to "State versus Federal jurisdiction" on fencing, public access, and liability issues. The Corps does advise you that 33 USC Section 403 States that "the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is prohibited." If SDCA so wishes, it may direct specific questions regarding issues of navigability and public access to the Corps.

LE-18

It is not the policy or position of the Corps that owners are entitled to compensation for livestock allegedly lost because of rising and falling water levels in the Missouri River. Under the Flood Control Act of 1944, Congress provided the Corps with broad discretionary authority to operate the Missouri River Mainstem Reservoir System projects, which includes making decisions on how much water should be released into the system through the raising or lowering of the water levels in the various lakes. Under the Federal Tort Claims Act, a claim is not payable if it is based on the exercise of a discretionary function by a Federal agency (28 USC Section 2680 (a)). The Corps has previously provided some compensation to "Tribal members," but that compensation was based on Section VIII of Public Law 776-83, in which the United States indicated that it would perform "such protective measures as may be necessary to minimize losses to the Indian parties hereto as to livestock only."

LE-19

Thank you for your input on this matter. In conjunction with the Department of Justice, the Corps may decide to settle claims brought against it by private landowners for a myriad of reasons, even if it does not acknowledge that it violated the property rights guaranteed by the Fifth Amendment. We also appreciate your recommendation that the Corps thoroughly review the issue of whether property rights would be infringed as a part of its ongoing Missouri River Master Water Control Manual process. The Corps seeks to have a PA Water Control Plan that meets the contemporary needs of the Missouri River basin, serves Congressionally authorized project purposes, complies with the applicable environmental laws, and fulfills the Corps' responsibilities to the Federally recognized Missouri River basin Tribes and property owners. In examining the alternatives within the RDEIS and FEIS, the Corps specifically analyzed interior drainage and groundwater impacts for the CWCP and the six alternatives and estimated the potential crop damages to agricultural land. Although the Corps believes that the PA will result in fewer appreciable damages to crops adjacent to the Missouri River, it will examine any allegations or claims from the property owners.

LE-20

Compliance with laws and regulations is addressed in Chapter 9 of the FEIS.

LE-21

It is the Corps' position that the alternatives analyzed in the Master Manual Review and Update EIS are all within the broad discretionary delegation provided by Congress to the Corps in operating the Mainstem Reservoir System projects. In addition, to the extent any alternative could be interpreted to be outside the Corps' broad discretionary authority, CEQ guidance provides that if an alternative is outside the legal jurisdiction of the lead agency it must still be analyzed in the EIS if it is reasonable. The guidance further provides that a potential conflict with local or Federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered. Section 1506.2(d) States: "Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable, because

the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies. Section 1500.1(a)." (See Forty Most Asked Questions Concerning CEQ's NEPA Regulations, http://ceq.eh.doe.gov/nepa/regs/40/40p3.htm.)

In the authorizing legislation for the Missouri River Mainstem Reservoir System projects, Congress authorized the construction of all but one of the projects by adopting the Pick-Sloan Plan in Section 9 of the Food Control Act of 1944. This provision States:

> Sec. 9(a) The general comprehensive plans set forth in House Document 475 and Senate Document 191, Seventy-eighth Congress, second session as revised and coordinated by Senate Document 247, Seventy-eighth Congress, second session, are hereby approved and the initial stages of recommended are hereby authorized and shall be prosecuted by the War Department and the Department of the Interior as speedily as may be consistent with budgetary requirements.
>
> 1994 The general comprehensive plan for flood control and other purposes in the Missouri River Basin approved by the Act of June 28, 1938, as modified by subsequent Acts, is hereby expanded to include the works referred to in paragraph (a) t be undertaken by the War Department and said expanded plan shall be p-prosecuted under the direction of the Secretary of War and Supervision of the Chief of Engineers.

Section 9 adopted no management standards other than through the incorporation of House Document 475, "the Pick Plan" and Senate Document 191 "the Sloan Plan" as revised and coordinated by Senate Document 247 "the Reconciliation Report," which itself only identifies the broad purposes of the Missouri River Mainstem System, among them being flood control, irrigation, navigation, power, wildlife, and recreation. Neither plan defines any further standard of any kind for management of the recommended projects or for developing the multiple-use purposes of the system. The alternatives evaluated in the Master Manual Review and Update EIS are all within the broad discretionary delegation provided by Congress to the Corps in operating the Mainstem Reservoir System projects.

LE-22

The comment implies that the Corps will violate NEPA in implementing the adaptive management provisions that are included in all the alternatives analyzed. This is not the case. As clearly set forth in the RDEIS and FEIS, actions that are developed out of the adaptive management process will be subject to all appropriate environmental requirements, including NEPA. For example, if as a result of the adaptive management process flow operations from Gavins Point are recommended that do not have existing NEPA coverage, then the Corps would prepare an EA/FONSI or EIS/ROD (depending on the scope of the activity) to provide the appropriate level of NEPA coverage for that proposed operation.

LE-23

The comment indicates that the unbalancing of the upper Mainstem Reservoir System would constitute a "take" under the ESA because this operation would inundate habitat for the interior least tern and piping plover adjacent to the lake. However, this comment neglects the fact that the system unbalancing was proposed in the USFWS November 2000 BiOp as a way to maximize habitat conditions for the two referenced listed species. As such, a take permit would not be required because any such take would be warranted under the USFWS November 2000 BiOp and incidental take statement.

LE-24

The comment indicates that the RDEIS did not consider the substantial devaluation of prime farmland adjacent to the Missouri River that could result from a spring rise. These impacts have been detailed in the RDEIS and again in more detail in the FEIS. The analysis indicates that, depending on the level of a spring rise, there can be increased interior drainage and groundwater impacts. These impacts would increase interior drainage and groundwater damages by approximately 8 percent over the current Water Control Plan. However, estimated increased damages over current levels does not necessarily constitute a taking. In actuality, these impacts represent a reduction in benefits of the Mainstem Reservoir System projects and the Navigation and Bank Stabilization Project. Generally, without these Federal projects, negative impacts resulting from interior drainage and groundwater would have been much greater. With

respect to possible crop damages, the Flood Control Act of 1928, 33 USC § 702c (1982), provides that "No liability of any kind shall attach to or rest upon the United States for any damage from or by floods or flood waters at any place." The courts have broadly construed this provision, and because the Mainstem Reservoir System projects have been authorized for flood control, this provision would be expected to apply to limit the government's liability for any damage claims for interior drainage or groundwater. With respect to takings claims under the Just Compensation Clause of the Fifth Amendment of the Constitution, generally such takings must result in the categorical destruction of all economically beneficial use of land. It is not anticipated that a spring rise implemented once every 3 years under conditions that restrict implementation during high water periods would result in the categorical destruction of all economically beneficial uses of land for which compensation is required. The cases cited by the State of Missouri all detail factual situations where the entire economic value of the property was lost. The PA does not include a spring rise.

LE-25

See Response LE-4 above. In addition, the State of Missouri also cites Executive Order 12630. However, section 6, Executive Order 12630, provides that the executive order is only for the internal management of the Federal government and does not create a right or benefit enforceable by a party against the United States.

LE-26

The State of Missouri alleges that the Corps failed to comply with this Act in the RDEIS. The Farmland Protection Program provides funds to help purchase development rights to keep productive farmland in agricultural uses. Working through existing programs, USDA joins with State, Tribal, or local governments to acquire conservation easements or other interests from landowners. USDA provides up to 50 percent of the fair market easement value. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency. From this description it is evident that the Corps has not violated the FPPA, because it is a program that only applies when Federal projects may irreversibly convert farmland to nonagricultural use. The Master Manual Revision process does not propose to convert, directly or indirectly, existing farmlands to nonagricultural uses.

LE-27

The FEIS contains a revised or updated analysis of the navigation benefits of the Mainstem Reservoir System projects. This analysis is contained at Chapter 8 of the FEIS.

LE-28

The State of Missouri alleges that Congress has only authorized the Corps to engage in works of improvement on the Missouri River for flood control and navigation and the proposed changes subvert the navigational servitude contrary to the intent of Congress. As previously indicated above, the Flood Control Act of 1944 authorized the Missouri River Mainstem Reservoir System projects for multiple purposes, not only flood control and navigation. In addition, ESA also provides further conditions on the Corps' discretionary authority to operate for the multiple project purposes when listed species may be affected by Corps operations.

LE-29

In this comment, the State of Missouri repeats its allegation that the Flood Control Act of 1944 provides for only two purposes, flood control and navigation, and not for recreation. As indicated previously, the Corps interprets its authority under the Flood Control Act of 1944 consistent with multiple purposes which include, but are not limited to, flood control, and navigation.

LE-30

The State of Missouri alleges that the flow modifications and improvements set forth in the USFWS November 2000 BiOp are doomed to failure. The State alleges that the Corps' detailed analysis demonstrates that the flow "mandates" fail to achieve what the USFWS States is biologically necessary. The Corps has reviewed the USFWS November 2000 BiOp and the RPA. The FEIS sets forth the alternative that the Corps believes would meet the requirements of the ESA and its project authorities.

LE-31

See Responses LE-24 and LE-25 above.

LE-32

In their comment, the historical society States that they cannot agree that the RDEIS is an adequate document on which to base a ROD, nor is there any indication that the requirements of 36 CFR 800 have been met.

Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council a reasonable opportunity to comment on such undertakings. Agency implementation procedures are set forth at 36 CFR 800. These procedures define how Federal agencies meet their NHPA responsibilities through consultation with other parties with an interest in the effects of the undertaking on historic properties. The goal of consultation is to identify historic properties potentially affected by the undertaking; assess its effects; and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties. Under 36 CFR Section 800.14 (b), The Council and the agency official may negotiate a Programmatic Agreement to govern the implementation of a particular program or the resolution of adverse effects from certain complex project situations or multiple undertakings.

At the present time, the Corps has established a task force to specifically address cultural resource issues along the Missouri River. The task force is currently developing a programmatic agreement to guide the preservation and protection of cultural resources along the entire Mainstem Reservoir System. NHPA regulations provide that compliance with the procedures established by an approved Programmatic Agreement satisfies the agency's Section 106 responsibilities for all individual undertakings of the program covered by the agreement until it expires or is terminated by the agency. Thus, it is the Corps' intention to pursue the development of a Programmatic Agreement to carry its Section 106 responsibilities.

LE-33

First, it is not anticipated that any of the effects of the categories of actions contemplated under the RDEIS and FEIS will be borne predominantly by Tribes or any other low-income or minority group. Thus, Executive Order 12898 does not appear to apply to the RDEIS or FEIS, as there should not be any "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." In addition, the RDEIS and FEIS do discuss the environmental impacts to the Tribes and identify the economic impacts to the Tribes due to probable increased power rates. However, it is not within the scope of the RDEIS or FEIS to study, identify, or address impacts that may be attributable to the initial construction of the Mainstem Reservoir System dams.

LE-34

See Response LE-33.

LE-35

Response Other-148 lays out a detailed description of the Corps' efforts on "government-to-government" consultation with the Missouri River basin Tribes. In summary, the Corps believes that it is complying with Section 106 of NHPA and 36 CFR Section 800.4, such that the RDEIS is legally sufficient.

LE-36

See Responses CR-6, CR-15 and CR-17. The Corps is making efforts to mitigate and/or avoid adverse effects on Tribes within the Missouri River basin. The Northwestern Division Commander recognizes the problem of losing cultural sites to erosion and is making an effort to secure the availability of additional annual funding to the Omaha District for cultural resource surveys, protection, and mitigation. The FEIS includes measures regarding avoidance, minimization, and mitigation of any adverse effects on historic properties, in accordance with 36 CFR Section 800.8I(1)(v).

LE-37

The Corps believes that the RDEIS and FEIS demonstrate that it will fully satisfy its responsibilities under both NEPA and Section 106 of NHPA as described in 36 CFR Section 800.8I(4).

LE-38

See Response LE-33.

LE-39

The November 2000 BiOp was prepared by the USFWS.

LE-40

The Working Group on the ESA and Indian Water Rights, Department of Interior, published recommendations for consideration of American Indian water rights in Section 7 consultations: "The environmental baseline used in ESA Section 7 consultations on agency actions affecting riparian ecosystems should include for those consultations the full quantum of: a) adjudicated (decreed) water rights; b) Indian water rights settlement act; and 3) Indian water rights not otherwise partially or fully quantified by an act of Congress. The guidance set forth by the working group will be followed by the Corps. Should there be subsequent adjudications of reserved Tribal water rights, the Corps will determine at that time whether additional compliance with NEPA and other environmental legislation is necessary.

LE-41

In Appendix A, sections A-10 and A-11, there is a lengthy recounting and description of the consultation efforts undertaken by the Corps with regards to the Study. In addition, Section 10 of Executive Order 13175 provides that the Order is intended only for the internal management of the Federal government and does not create a right or benefit enforceable by any party against the United States.

LE-42

Under the Fort Peck Reservation Rural Water System Act of 2000, the Secretary of the Interior was to plan, design, construct, operate, maintain, and replace the Assiniboine and Sioux rural water system. However, the Act does not provide any greater rights to the Fort Peck Tribes with regards to water intake sites than other landowners along the Missouri River. This issue should be addressed by the Assiniboine and Sioux Tribes during the ongoing coordination and/or consultation with the Omaha District, which has the lead on these intake issues concerning the Fort Peck releases. See also Response WS-6.

LE-43

There are a large number of State, local, and Tribal jurisdictions and interests that may be affected by changes to the operations of the Missouri River Mainstem Reservoir System projects, as well as the diverse range of activities related to and dependant on the Missouri River. In order to keep the RDEIS and FEIS manageable and understandable by the public, they cannot address every statute, regulation, and ordinance that may be related in some manner to the Missouri River and its operation.

LE-44

Executive Order 13007 requires the Corps to take steps to accommodate Tribal access to and ceremonial use of sacred sites, as well as avoid adversely affecting the physical integrity of the these sites. The Omaha District of the Corps is currently working with the Mainstem Reservoir System Tribes to identify sacred sites. It also should be noted that Section 4 explains that the Executive Order is intended only for the internal management of the Federal government and does not create a right or benefit enforceable by any party against the United States.

LE-45

See Response LE-33.

LE-46

By definition, an internal meeting does not include attendance by individuals outside of the agency or group. Internal meetings allow for the discussion and consideration of the input of other groups and individuals before the RDEIS and FEIS are presented for comment. It also should be noted that the Tribe is not the only group with consultation rights who does not attend these internal meetings. For example, the USFWS has consultation rights under Section 7 of the Endangered Species Act, but it does not have anyone in attendance at internal discussion meetings of the Corps. See also Response LE-41.

LE-47

In Appendix A, Section A-10 and A-11, there is a lengthy recounting and description of the consultation efforts undertaken by the Corps with regards to the Study.

LE-48

Regarding future claims of Tribal rights to water within the Missouri River Mainstem Reservoir System, until such time as a Tribe quantifies its water rights and consumptively withdraws its water from the Mainstem Reservoir System, the Corps must fulfill its duty as the responsible agency by controlling the operations of the Mainstem Reservoir System projects in a manner that reflects that the water still is in the system and has not been quantified for withdrawal. When there is a factual basis in the future for newly quantified Tribal water rights, the Corps can take those water rights into account during the adaptive management of the Missouri River. The Tribes will be able to actively participate in additional public discussions and comment at that time regarding potential courses of action.

LE-49

Thank you for this comment. At this point in the process, it is correct that the Northwestern Division is no longer compiling data for the Missouri River Master Water Control Manual. The Corps reaffirms its position that it has compiled a considerable and more than sufficient amount of data on which to issue the RDEIS and FEIS, in full compliance with NEPA, Executive Order 12898, and all other applicable laws and regulations.

LE-50

The Corps understands the concerns and issues of the Tribe and is cognizant of the Tribe's rights to be consulted under NHPA, Archaeological Resources Protection Act (ARPA), NAGPRA, as well as Executive Order 12898. The Corps submits that the RDEIS and FEIS both meet the legal requirements of these Acts, and the Corps strives to maintain a strong working relationship with the Tribe throughout the Missouri River Master Water Control Manual process, the subsequent operations of the Missouri River Mainstem Reservoir System projects, and any future adaptive management efforts.

LE-51

As indicated in Tribal Appendix A, the Corps recognizes that the Winters doctrine reserves water rights for future potential Tribal uses. However, the Corps does not quantify, adjudicate, or allocate Tribal or non-Tribal water rights. Thus, the EIS is not intended to be a document that defines or quantifies the water rights that a Tribe or other party may be entitled to by law or Treaty, but to regulate water in the system subject to the exercise of the right by the water right holder. Until a Tribe or non-Tribal entity quantifies its water rights and consumptively withdraws the water from the Missouri River Mainstem Reservoir System, the Corps is required to regulate that water and make water control determinations in accordance with that fact.

LE-52

Until such time as a Tribe quantifies its water rights and consumptively withdraws its water from the Mainstem Reservoir System, the water is in the system. As a responsible public entity, the Corps must operate the system to reflect the fact that the water still is in the system.

LE-53

In developing the new Master Manual, the Corps is complying with the provisions of the NHPA and all relevant treaties so as to protect cultural resources and remains. As indicated in the FEIS, as part of the current Master Manual study the Corps has analyzed the impacts of the alternative operations on Tribal historic sites, including sacred sites, along the Missouri River and is developing a Programmatic Agreement under the NHPA to seek ways to avoid, minimize, or mitigate any adverse effects on these sites.

LE-54

See Responses LE-51 to LE-53.

LE-55

As indicated in Tribal Appendix A, the Study did not attempt to define, regulate, or quantify water rights or any other rights of the Tribes. Until such time as Tribal water rights are quantified and consumptively withdrawn, the water remains in the system and is subject to regulation by the Corps as part of the Missouri River Mainstem System. Also see Appendix A, Section A-7.

LE-56

See Responses LE-53 and LE-55.

LE-57

See Response LE-51.

LE-58

As indicated in the FEIS, as part of the current Master Manual study the Corps has analyzed the impacts of the alternative operations on Tribal historic sites, including sacred sites, along the Missouri River and is developing a Programmatic Agreement under the NHPA to seek ways to avoid, minimize, or mitigate any adverse effects on these sites. However, while past impacts are generally described in the EIS (see Appendix A, Section A-8 and A-9) the Master Manual Study assumes a baseline condition of the dams in place and does not analyze further mitigation for the construction of the Mainstem Reservoir System projects.

LE-59

In developing the Master Manual Study, the Corps has analyzed the impacts on individual Tribes of the range of alternatives considered. In so doing, the Corps has also consulted and coordinated with the Tribes on a Government-to-Government basis and will continue to do so. See Appendix A, Sections A8, A9 and A-10 for a description of the Corps' efforts regarding environmental justice, Tribal impacts, and consultation history.

LE-60

See RDEIS Appendix A, Section A-7, and Response LE-51.

LE-61

The Corps takes seriously the concerns of the Standing Rock Sioux, believes it has appropriately addressed their comments and concerns in the development of the Master Manual Study, and will continue to address concerns as appropriate when they are raised. The Corps also recognizes that it is the right of the Tribes and others to seek review or redress in a court of law for a perceived violation of its rights.

LE-62

No legal response necessary.

LE-63

See Response Other-148.

LE-64

The Corps disagrees that the RDEIS or FEIS fail to comply with the requirements of NHPA and NAGPRA. However, the Corps takes seriously the concerns of the Tribe regarding NHPA compliance and will continue toward completing another Programmatic Agreement with the Tribes and carrying out their responsibilities under the NHPA and the NAGPRA. We recognize that the Tribes as well as other parties have the right to seek review though our legal system.

LE-65

An analysis of impacts to the Tribe of the alternatives considered in the Master Manual Study is found in Appendix A at Section A-9. As indicated in that section, the Corps does concur in the characterization of the Tribe as to the impacts of the various alternatives on the Standing Rock Reservation.

LE-66

See Response LE-54.

LE-67

The Policy provides general guidance to Department of Defense Components, like the Corps, on addressing issues generally affecting Tribes. The Corps contends that it fully addressed and applied all applicable Federal statutes, regulations, and executive orders, such as but not limited to the NHPA; NAGPRA; ARPA; and Executive Orders 12898, 13007, and 13175. In addition, the Corps has endeavored to build Government-to-Government relationships with Tribes, including the assessment of possible significant effects of proposed actions on Tribal resources, Tribal rights, and Tribal lands; consulted and negotiated in good faith throughout the decision-making process; and recognized the significance of natural and cultural resources of the Tribes while managing Corps' actions so as to protect and mitigate against damage to those resources.

LE-68

See Response LE-67. Also, a brief summary of the consultation history is set forth in the EIS at Appendix A, Section A-10.

LE-69

This is a correct statement of the Corps' position regarding the Missouri River Operations and the future quantification or adjudication of Tribal reserved water rights.

LE-70

The EIS does not address adjudicated or unadjudicated American Indian water rights. The EIS considers only existing consumptive uses and depletions. Future modifications of projects based upon new quantifications of Tribal water rights will be accomplished by appropriate compliance with environmental laws. Thus, this study process does not prejudice any reserved or aboriginal Tribal rights of the Missouri River Tribes. See also Response LE-55.

LE-71

See Response LE-70.

LE-72

This comment explains the Presidential veto of Section 103 of the Energy and Water Resource Development appropriations for Fiscal Year 2001. No response to this statement is needed.

LE-73

See Responses LE-55 and LE-70.

LE-74

The Corps appreciates the Tribe's opinion on this issue. The Corps does not seek to extinguish the water rights of any Tribe, nor at this time does it seek to purchase those rights for use by others. Lastly, the Corps is not basing the selection of the PA upon the criteria that you advance. Rather, the Corps seeks a balanced approach to the operation of the Missouri River Mainstem Reservoir System. The Corps believes that the PA Water Control Plan meets the contemporary needs of the Missouri River basin, serves Congressionally authorized project purposes, complies with applicable environmental laws, and fulfills the Corps' responsibilities to Federally recognized Tribes, such as the Standing Rock Sioux Tribe.

LE-75

See Responses LE-55 and LE-70.

LE-76

The Corps appreciates the Standing Rock Sioux Tribe's concerns regarding the quantification of future water rights. However, the Corps is not the appropriate entity to determine or quantify the Tribes reserved water rights.

LE-77

With respect to the future designation of critical habitat for the listed piping plover, the Corps will review that designation when it is finalized to determine whether it requires actions beyond those already taken for the listed plovers as a result of the November 2000 BiOp from the USFWS. Because of the identified need in the USFWS' November 2000 BiOp to take actions in 2003, finalization of the Missouri River Master Manual needs to continue at the present schedule. Subsequent to the RDEIS, critical habitat for the piping plover was designated by the USFWS. Designation of this critical habitat was one of the primary bases for reinitiation of consultation between the Corps and the USFWS under ESA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

LE-78

The Corps disagrees with your comment that flood control has been given the highest priority, then navigation, with recreation and fish and wildlife having the lowest priority. Rather, the Corps seeks a balanced approach to the operation of the Missouri River Mainstem Reservoir System. The Corps believes that the PA Water Control Plan meets the contemporary needs of the Missouri River basin, serves Congressionally authorized project purposes, complies with applicable environmental laws, and fulfills the Corps' responsibilities to Federally recognized Tribes.

LE-79

The Corps is following Federal laws, ER 1110-2-8154, and other Corps regulations as it develops the Master Manual Review and Update Study. The analysis of the impacts of the alternatives focus on an ecosystem approach to the Missouri River System which is also consistent with the comments of the National Research Council in their report on the Missouri River Ecosystem (NAS, 2002).

LE-80

See Response LE-79.

LE-81

By definition, the "persons" subject to the Act are individuals, corporations, firms, partnerships, associations, and other legal entities that are not governmental bodies. See Mont. Code. Ann. Section 75-7-103; Mont. Code. Ann. Section 87-5-502. While there is no provision in the Natural Streambed and Land Preservation Act that specifically addresses proposed actions by the U.S. Government, Section 87-5-508 does address Federal actions that injure or might injure fish and wildlife resources in Montana.

LE-82

The Corps appreciates your concerns regarding the protection of private property. It is not anticipated that private property rights will be damaged by the actions of the Corps. However, to the extent that this might occur, the Corps has administrative procedures for the submission of claims by injured parties. The District administering the claim will provide claimants with information that is necessary to support their claims based upon the particular facts upon which the claims are based. See also Response LE-81.

LE-83

The Corps believes that the PA Water Control Plan meets the contemporary needs of the Missouri River basin, serves Congressionally authorized project purposes, complies with applicable environmental laws, and fulfills the Corps' responsibilities to Federally recognized Tribes. See also Responses LE-80 and LE-81.

LE-84

Thank you for your opinion on this matter. Rather, the Corps seeks a balanced approach to the operation of the Missouri River Mainstem Reservoir System. The Corps believes that the PA Water Control Plan meets the contemporary needs of the Missouri River basin, serves Congressionally authorized project purposes, complies with applicable environmental laws, and fulfills the Corps' responsibilities to Federally recognized Tribes.

LE-85

While there have been many court suits filed over operation of the Mainstem Reservoir System, as of this date, no court specifically has ordered the Corps to prepare revisions to the Master Manual. The reasons giving rise to the Corps review of the Master Manual are set forth in the introductory section of Chapter 1 in the RDEIS and FEIS.

LE-86

This is a correct statement of the O'Mahoney-Milliken Amendment, and the Corps complies with this amendment in the operation of the Mainstem Reservoir System projects.

LE-87

The USFWS represents the opinion of the listing service of the actions set forth in the RPA that are necessary to prevent jeopardy to the listed species. It is the decision of the action agency to implement either the RPA or some other action it believes will be likely to avoid jeopardy to the listed species. In the alternative, the action agency can apply for an exemption under the procedures set forth in the ESA and implementing regulations.

LE-88

Should the Tribe be successful in obtaining Congressional legislation that provides for the transfer of lands from the Corps, the Corps will facilitate transfer to the Tribes in accordance with such legislation.

LE-89

See Response LE-88.

LE-90

See FEIS Appendix A, Section A-7 and Response LE-51 above.

LE-91

The Corps is consulting with the Tribes as part of the Master Manual Review and Update process to determine the extent of impact on American Indian Trust assets, if any. See also Appendix A-6 and A-10.

LE-92

See Response LE-33.

LE-93

See Response LE-33 and Appendix A, Section A-8 of the FEIS where impacts of the Missouri River Mainstem Reservoir System projects to Tribal lands and resources are described.

LE-94

See Response LE-88.

LE-95

statement requires no legal response.

LE-96

The Corps is committed to consulting with the Tribes throughout the Master Manual Study process. A record of these consultations has been included in the RDEIS and FEIS, and the Corps will continue to meet its responsibilities to consult on a Government-to-Government process with the Tribes.

LE-97

See Response LE-88.

LE-98

The Tribes' concerns regarding the actions of the USFWS should be brought to the attention of that agency. The Corps, however, has not attempted to quantify the Tribes' water rights. See Appendix A, Section A-7.

LE-99

The Missouri River operations are subject to the ESA as well as other statutory and regulatory requirements. The Corps is developing a revised Master Manual, which will take into account ESA requirements as well as other statutory and regulatory requirements.

LE-100

See Responses LE-55 and LE-70.

LE-101

See Responses LE-55 and LE-70, and Appendix A, Section A-7, FEIS.

LE-102

See Response LE-21. The Corps has the discretionary authority to operate the Missouri River for the benefit of the Mississippi River.

LE-103

The Corps recognizes its obligations under NEPA and the Coastal Wetlands Planning, Protection, and Restoration Act.

LE-104

No legal response needed to this statement concerning the development of the draft USFWS 2000 BiOp.

LE-105

CEQ regulations do not require that a PA be selected in the Draft EIS. However, they do require the selection of a PA in the FEIS and the Corps has met this requirement.

LE-106

Comment indicates that the Corps has a responsibility to ensure that individual biological components of the system do not disappear, not only for the species themselves, but also for recreation benefits, which are much greater than navigation. The Corps concurs in the assessment that it has a responsibility to operate the system for multiple purposes including, but not limited to listed threatened and endangered species, recreation, and navigation.

LE-107

See Responses LE-21 and LE-102.

LE-108

See Responses LE-21 and LE-102.

LE-109

See Responses LE-5 and LE-22.

LE-110

See Responses LE-5, LE-13, LE-23, LE-24, and LE-25.

LE-111

Executive Order 13211 applies to the promulgation of new Federal regulations and does not apply to the Master Manual Review and Update.

LE-112

There is considerable disagreement between the Corps and the upstream States on the interpretation of the O'Mahoney-Milliken Amendment. Recreation was not identified as a beneficial consumptive use under the amendment.

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4.13 MISSISSIPPI RIVER RESPONSES

Miss-1

Several Mississippi River impact analyses were completed on the six alternatives evaluated in detail as part of the RDEIS. First, an analysis of hydraulic and hydrologic changes in the Mississippi River flows from St. Louis to the mouth downstream of New Orleans, including the Atchafalaya River, was completed on each alternative for a 66-year period (1930 to 1995) for the Middle Mississippi River and a 61-year period (1935 to 1995) for the Lower Mississippi River. These data were then used to determine the increased costs associated with Mississippi River navigation inefficiencies during low-flow periods on both reaches. Cursory analyses were completed that examined the accessibility of side channels for use by fish, and that examined dredging requirements. Both of these analyses were for the Middle Mississippi reach, and expanded environmental analyses were completed on the Chapter 7 alternatives for the FEIS. Finally, an analysis of potential changes to the channel improvement measures was completed for the RDEIS. Details of the analyses and results are included in Section 7.15 of the RDEIS and/or FEIS.

Miss-2

Mississippi River analyses were based on daily Missouri River flows, which vary because releases from the Mainstem Reservoir System and historic tributary inflows vary on a day-by-day basis. The hydrologic modeling for the Missouri River was based on historic inflows to the Missouri River mainstem from its many tributaries, with adjustments made to those historic inflows to account for depletions that may have occurred over the years for the various tributaries. Daily discharges at Hermann, Missouri, the last node of the Daily Routing Model (DRM) for the Missouri River were converted to stages that were routed down the last reach of the Missouri River to the Mississippi River just above St. Louis using the UNET unsteady flow routing program. The combined flow from the Upper Mississippi River, its Tributaries, and the Missouri River were then routed down the Mississippi River using the UNET program. More detailed information on the Missouri and Mississippi River hydrologic and hydraulic modeling can be found in Supporting Technical Reports Volumes 2A and 13 of the EIS.

Miss-3

The hydrologic model for the Missouri River was based on historic tributary inflows into the Missouri River mainstem. The inflows since the Kansas River system was completed and filled include historic evaporation rates of the upstream lakes on the Kansas River tributaries. Depletion adjustments for the Kansas River tributary inflows should have accounted for the evaporation losses that could have occurred in the portion of the 100-year modeling period that occurred prior to the dams and associated lakes being built. Based on these two factors, the Missouri River flows account for the water losses due to the Kansas River system; therefore, the Mississippi River hydrologic analyses account for these losses.

Miss-4

Mississippi River flows are affected by changes in releases from Gavins Point Dam. Two factors could reduce the releases compared to those of the CWCP. First, the flows are reduced earlier in droughts under the MCP and four GP options discussed in Chapters 6 and 7 of the RDEIS to reduce the draw down of the mainstem lakes compared to how much they would drop under the CWCP. This factor affects November releases in 30 to 35 years of the 100-year simulation period used for the Master Manual Study for these five alternatives. Second, the four GP options also have lower releases in July and August than the CWCP in numerous years over the 100-year simulation period, which could lead to low-flow impacts on the Mississippi River in July through early September. The lower these summer releases, however, the fewer days in November that have substantially lower flows in drought years. For example, if the summer low flows are as low as 21 kcfs (compared to about 34 kcfs for the CWCP and MCP), the number of days affected in November in a drought year is reduced from about 27 days for the MCP to only 6 days for the GP2021 and GP1521 options. Under the CWCP, the number of days affected range from 0 to as many as 66 days in an extreme drought such as the 1930 to 1941 drought. Under the CWCP, the season length would be cut as much as 2.5 months. The navigation season is 7 months or less in 8 drought years of the 100 years (1898 to 1997) modeled, all in the 1930 to 1941 drought. When all of the various combinations of low flows are evaluated in a navigation cost model, the net effect is that the four GP options reduce the increased average annual costs during low-flow events on the Middle

and Lower Mississippi River by about $6 to $7 million per year over the 66-year period (1930 to 1995) evaluated on the Mississippi River. The conservation measures in the alternatives also result in an overall decrease in increased costs due to navigation inefficiencies during low-flow periods. The MCP has reduced costs that are slightly over $1 million per year for the 66-year period (66 years times $1.26 million per year equals a total of about $83 million). Under the PA in Chapter 8 of the FEIS, the lost Mississippi River navigation efficiency costs are reduced by $3.6 million.

Miss-5

Future reductions in the inflows to the Missouri River, or depletions, will result in less water to meet the various needs during droughts. This also applies to the Mississippi River needs. One adverse impact would be to navigation. Depletions analyses on Mississippi River navigation inefficiency costs during low-flow periods indicate that navigation inefficiency costs will go up as the depletions increase on the Missouri River under any Water Control Plan. The analyses completed for the RDEIS for the GP1528 and GP2021 options indicate that the losses will average about $10 million per year per every million acre-feet (MAF) of inflow depletion on the Missouri River. Additional analyses were completed subsequent to the RDEIS for the CWCP, MCP, and the GP2028 option. These subsequent analyses indicate losses of $3.78 million per MAF, $7.98 million, and $10.07 million, respectively, for these three alternatives (Table 7.19-1). A similar analysis was conducted for the PA in Chapter 8 of the FEIS (Table 8.4-1), and the loss per MAF of depletion is $7.72 million.

Miss-6

The Corps does not concur with this request and run-of-river flows were not included in the analysis of impacts to Mississippi River side channels. The baseline for the Study is the CWCP with the dams in place, and this is the basis of comparison for the other alternatives. The Section 7.15 discussion on the side channels analysis has been revised with the results of other additional environmental analyses.

Miss-7

The statement in the text is correct. The data used to make these figures include all of the data for the period from 1930 to 1995. Similarly, the subsequent 12 figures include the 66 years of data for each month from the 1930 to 1995 period.

Miss-8

The statement regarding the reach beginning at Lock and Dam 27, which is the most downstream of the Mississippi River Locks and Dams (Upper Mississippi River reach), is referring to the upstream end of the Middle Mississippi River reach, which includes St. Louis near its upstream end down to Cairo, Illinois. The navigation analyses included impacts in the Middle Mississippi River and the Lower Mississippi River, which goes from Cairo, Illinois (where the Ohio River joins the Mississippi River) to the mouth downstream of New Orleans, Louisiana.

Miss-9

As the FEIS was being prepared, it became apparent that the low river stages are not significantly different to require any modification of structures. For this reason, the FEIS does not include any discussion of the requirement to lower the Low Water Reference Plane.

Miss-10

Additional side channel analyses were completed and documented in the FEIS.

Miss-11

The analysis was completed on all six alternatives evaluated in detail in Chapter 7 of the RDEIS. Results of this analysis are included in Section 7.15 of the FEIS.

Miss-12

The St. Louis District used the 0.0-foot gage reading as a screening variable. Dredging may begin at stages greater than 2.0 feet; however, this gage level was not selected as a screening parameter. There is a good likelihood that the difference in when the stage drops below 2.0 feet for two alternative Water Control Plans will be very similar, if not exactly the same, for the difference in days for when the stage drops below 0.0 feet at the gage. The stage selected for screening is, therefore, not critical.

Miss-13

The Corps concurs that the change in the Low Water Reference Plane was overstated in the RDEIS and the need for the additional dredging may not be needed. The differences in the minimum stages are not significant enough to warrant any discussion of this at this time; therefore, the FEIS does not have any discussion of these issues.

Miss-14

All Mississippi River analyses that could be quantified are included in the summary table in Section 7.17 of the FEIS. The only change for Mississippi River uses has been to compare the changes from the CWCP based on average annual benefits lost instead of changes in costs. All of the uses and resources for the Missouri River have been quantified based on the total benefits computation, so a change was made to the Mississippi River navigation numbers. The values for impacts to Mississippi River navigation are very small when compared to total Mississippi River navigation benefits.

Miss-15

The Corps does not concur with this request. The purpose of the discussion of projects currently being considered in the RDEIS was to point out that, as various entities move forward with planning and construction of projects along the river (or even the lakes), consideration must always be given to what the Water Control Plan for the Mainstem Reservoir System is, or may be. This consideration may lead to an abandonment of a particular project or a restructuring of the project. The request to include a description of the Corps' fish and wildlife mitigation efforts does not fit the purpose for this section of the RDEIS and FEIS.

Miss-16

The results of the analyses of the alternatives without lower summer releases from Gavins Point Dam indicate that the impacts to the shallow water habitat will be minimal. This impact for the PA will, therefore, not need to be mitigated due to the rarity of its occurrence.

Miss-17

The Corps modeled the Missouri Department of Conservation alternative (identified as the MODC alternative). The results of that effort are documented in Chapters 4 and 5 of the RDEIS and FEIS. The MODC alternative resulted in slightly increased inefficiency costs to Mississippi River navigation at $1.34 million per year.

Miss-18

Numerous documents were on the Corps' Master Manual Web site that included information on Mississippi River impacts including the RDEIS Summary, the RDEIS, and a Mississippi River fact sheet. The public was also encouraged to meet directly with Corps' Master Manual staff to discuss the impacts included in these documents and contained in computer files that were brought to all of the Master Manual workshops. Workshops were held at five Mississippi River locations (St. Louis, Missouri; Memphis, Tennessee; New Orleans, Louisiana; Cape Girardeau, Missouri; and Quincy, Illinois).

Miss-19

The pitfalls of the MCP and four GP options are identified in the comment. This response will focus on the benefits of these five alternatives. The primary benefit of all five alternatives is that the season length never gets shorter than 7.1 months, whereas, the season length can get as short as 5.5 months under the CWCP. In fact, the season length is shorter than 7.1 months in 8 years under the CWCP. Second, the service level is less than 3 kcfs under full service in the fall months when flows are most critical with respect to the Mississippi River based on historic low-water periods in only 8 years plus the five non-navigation years for a total of 13 years. Under the CWCP, the flows get down to 6 kcfs less than full service in the 24 minimum service years and the 1 non-navigation year for a total of 25 years. The potential for increased Mississippi River navigation costs during low-flow periods could occur about twice as often if service level is critical. Finally, the net effect of the shorter seasons, which the comment identifies as being most critical, and the service level, which this response indicates is also critical, is that navigation costs are reduced under all five alternatives to the CWCP. If the net impact on costs is an indication of reliability, the CWCP is the least reliable of the six alternatives presented in detail in the RDEIS. Because the Missouri River Mainstem Reservoir System does not operate solely for the Mississippi River, there is no guaranteed level of reliability for Mississippi River navigation.

Miss-20

Even though impacts of depletions on the MCP were not included in the RDEIS, the results of depletion runs of this alternative are presented in the FEIS. The impacts with future depletions are relatively linear and far from being exponential. The correlation coefficient is 0.825 for the linear regression for the set of Mississippi River navigation costs. The slope of the line is $7.98 million per million acre-feet of future depletion. The GP1528 option on which depletions were evaluated for the RDEIS would have provided an indication of linearity for the MCP. The correlation coefficient was 0.929 with a slope of $9.93 million per million acre-feet of future depletion for this somewhat similar alternative with essentially identical conservation measures except for the lower summer release from Gavins Point Dam. The C31 alternative the comment refers to has greater conservation measures that work dramatically different than those of the five alternatives in the RDEIS. This alternative does not represent as "close" an alternative to the MCP as the GP1528 option represents. Depletion impacts data are also included in the FEIS for the MCP (Chapter 7) and the Corps' PA (Chapter 8).

Miss-21

The Corps fully considered the effects on the Mississippi River using the data included in the RDEIS and the comments received during the RDEIS review and comment period. Discussions were conducted on several occasions with the Corps' Mississippi Valley Division staff that worked on the Study, and a decision was made to continue to use the best available information for the selection of the PA and the FEIS preparation. Additional analyses of some environmental resources and dredging found that the differences among the alternatives were very minor or minimal; these results were available in time for the Corps' decision process for the PA.

Miss-22

Upon further analysis and discussion among Master Manual team members (included Mississippi Valley Division team members), the differences described in the RDEIS for the potential changes to the construction reference plane are insignificant for all five alternatives to the CWCP. No discussion of additional channel dredging is included in the FEIS.

Miss-23

The data included in the RDEIS for the CWCP are marked with an asterisk. This indicates that only a 2-point plot was used to determine the slope of the data. Since the RDEIS, a more complete analysis has been conducted. This analysis was conducted using five data points. The slope of the linear regression of this more complete data set is $3.78 million and the regression coefficient is 0.765 (Table 7.19-1).

Miss-24

Mississippi River navigation faced low stages at St. Louis in November and December 2001 and 2002 under existing operations (CWCP operations). The stages experienced should have, at a minimum, required some reconfiguration of tow sizes in order to move through the Middle Mississippi. Some individuals in the navigation industry have indicated in their comments that light loading of barges may also have had to be made to ensure continued movement of the tows. In either case, adjustments from normal operations had to be made. Similar changes would have had to be made under the MCP as well. The reconfigured tows may have had to be even smaller under the MCP than the CWCP, and essentially the same light loading may also have had to be used. The difference in the economic impacts would likely have been somewhat similar. The analysis of the long-term impacts as part of the Master Manual Study found that the MCP had more frequent increases in costs; however, the MCP limited the more severe adverse economic impacts such that the long-term costs for Mississippi River navigation were slightly reduced relative to those of the CWCP.

Miss-25

The Corps concurs that the Missouri River and its Mainstem Reservoir System provide many benefits to the Mississippi River, especially in times of drought when Mississippi River navigation is susceptible to increased costs. Changes to the CWCP will adversely affect the Mississippi River in some years while reducing impacts in other years. The RDEIS and FEIS show that, over the long term, Mississippi River navigation will have reduced costs under the alternatives included in Chapter 7 of the RDEIS and FEIS, and under the PA included in Chapter 8 of the FEIS.

Miss-26

This American River Transportation Company estimate of impacts of a switch to the MCP overestimates the impacts of flow changes because the major assumptions made for the estimate are incorrect. The estimate assumes that "reduced flows will negatively impact river stage in St. Louis for approximately half the navigation season." In reality, a stage of 2 feet is exceeded 76.78 percent of the time on an annual basis under the CWCP. Under the MCP, this value would be decreased by 0.62 percent. Similar values for a 4-foot stage are 67.30 and –0.30 percent, respectively. One can anticipate that the impacts of this considerably smaller effect would be much less than estimated by the American River Transportation Company. The American River Transportation Company's estimate for current depletion level impacts is $7.5 million. This estimate grows to $15 to $30 million under the 3.2 million acre-foot depletion level. Again, looking at the flow data for St. Louis, the amount of time the stage is above 2 feet is reduced by about 2.5 to 3.0 percent compared to the values for the CWCP at current depletion levels. One must remember that the depletions will also affect how often the CWCP drops below the 2-foot stage. The actual difference between the CWCP and MCP at any future depletion level is probably very similar to what it is under current depletions. If it is, the depletion estimate is also considerably too high. The Corps' estimate of navigation inefficiency costs under current depletions indicates that navigation costs would actually go down over an extended period like what occurred from 1930 to 1995. Under future depletions, impacts per million acre-feet of depletion appear to be less for the CWCP than the other five alternatives included in Chapter 7 of the RDEIS and FEIS. The increased costs during the low-flow periods appear to be about equal for the CWCP and the PA at about 2 MAF of future depletions. The MCP and GP options have similar costs at about 1.5 to 1.8 MAF of future depletions. These levels of depletions are not anticipated to occur in the short-term future.

Miss-27

The observation regarding Mississippi River impacts agree with the data presented in Section 7.15 of the RDEIS and FEIS.

Miss-28

Transportation of commodities by barge is more economical for many movements of those commodities. It is estimated that the Mississippi River provides several billions of dollars of transportation cost savings to the United States.

Miss-29

At the request of the Corps, the Tennessee Valley Authority (TVA) conducted an analysis of movements in and out of ports at St. Louis, Missouri and Memphis, Tennessee. The TVA "superimposed the water release hydrology at St. Louis (1990-2000) and Memphis (1990-1995), as supplied by the Corps, over the Waterborne Commerce Statistical Center (WCSC) data base. Each loaded barge that originated, terminated, or passed through the Ports of Memphis and St. Louis in those years was compared to the gage reading at the port. Those barges that exceeded the channel or dock depth were classified as low-water affected." Further, the report by TVA States, "While individual shippers and receivers can have grounding or flooding problems, TVA's results indicate that in the worst year, less than 0.1 percent of the commerce would be adversely affected by the change in release rates. Further, there are years in which no adverse observations occurred." The TVA concluded, "low water releases will have little effect on the flow of commerce on the Mississippi River."

The TVA also examined the impacts of additional truck traffic due to disruption of barge navigation on the Missouri River. Generally, this analysis demonstrated that little of the traffic would change and relatively small impacts would be experienced. Aspects looked at include delays due to traffic congestion, pavement damage, truck-related accidents, air pollution, and traffic-related impacts to smaller towns with special situations (e.g., one bridge with traffic limitations and a strong reliance on the bridge for day-to-day use).

Miss-30

The EISs that have been prepared for the Master Manual Study have always included the data for all years. Extreme impacts occur in individual years for many of the resources, yet all of the data are included. Annual plots have been included in most of the sections of Chapter 7, and they are included for Mississippi River navigation in the FEIS. The most dramatic differences occur in 1939, but another event similar to this one could occur in the future, no matter how remote it may appear to be. This issue is discussed in more detail in Section 7.15 of the FEIS.

Regarding the potential Mississippi River navigation impacts in the 1976 and 1988 droughts, you have quoted impacts due to the summer low-flow component of four of the six alternatives in Chapter 7 of the RDEIS of 50 percent and 33 percent, respectively. Review of the data for these four alternatives indicates potential impact increases in the 1976-drought year of 15 percent ($23.6 million) for the GP1528 and GP2028 options and 31 percent ($48.3 million) for the GP1521 and GP2021 options. Similarly, for the 1984 drought year, the GP1528 and GP2028 options would have increased impacts of 3 percent ($1.3 million), and the GP1521 and GP2021 options would have increased impacts of 20 percent ($8.5 million). Both of these droughts were summer droughts, whereas others are late fall and winter droughts. Examination of the1939 impacts shows that the GP1528 and GP2028 options would have reduced costs by 33 percent (saved $385 million) and the GP1521 and GP2021 options would have reduced costs by 50 percent ($538 million).

Miss-31

Examination of the flow-duration curves below Gavins Point Dam for the various alternatives does not indicate a major shift in the long-term distribution of flows. As the distance from the Gavins Point Dam increases, the influence of releases decreases; therefore, sedimentation rates/patterns downstream of Gavins Point Dam would be similar for all alternatives. As a result, additional sediments would not be carried into the Mississippi River for ultimate deposition in that river or the Gulf of Mexico.

Miss-32

Data on stages for the 66-year period of analysis at St. Louis provide insight on how often one could anticipate movement of commodities by truck or train versus barge. Navigation is suspended at –4.5 feet on the gage according to the Corps analysis. This stage would be reached 0.01 percent less often with the Corps' PA. This equates to 2 fewer days over the 66-year period. If one assumes pollutants would increase at a 2-foot stage, this stage would be met about 0.27 percent less often with the PA, or 60 days out of the 66-year period. Because both of these situations are met less often with the PA, neither of these situations would result in additional tons of pollutants being released in the St. Louis Metropolitan Area with a change to the PA. All of the alternatives to the CWCP in Chapter 7 increase the number of days that these stages are met; however, the increased number of days is relatively minor for these alternatives.

Miss-33

This comment is only partially correct. Overall, the Mississippi River navigation costs are reduced more by the GP options than they are by the MCP. The primary reason they are reduced more is because in 2 or 3 critical years, the "guaranteed" longer season length through the droughts of the GP options results in flows from the Missouri River supporting Mississippi River navigation at a higher flow level because the season length of the CWCP in those few years is shorter. The true issue here is not that more water is available in the fall if less is released in the summer, but that the shorter-than-7-month seasons of the CWCP in major droughts increases the risk that Mississippi River navigation can be adversely affected greater by the CWCP than the MCP or four GP options. Generally, the CWCP does a better job in more years because the service level is greater earlier in droughts and the season length is also longer in more drought years. It is shorter in only 7 years of the 100 years modeled. Another factor that does not seem to be as critical in the period modeled is that the MCP and GP options all have more non-navigation years than the CWCP. They have 5 non-navigation years versus only 1 year for the CWCP. In the non-navigation years, the summer release for the CWCP would be only 9 kcfs, whereas it would be 18 kcfs for the MCP and four GP options. These types of details are presented in Section 7.12 of the RDEIS and FEIS.

Miss-34

The USFWS has already completed a BiOp on the operations along the Middle and Lower Mississippi River. You may contact the Mississippi Valley Division office in Vicksburg, Mississippi for more details on that BiOp.

Miss-35

The Corps has been aware of concerns regarding the powerplant near Cape Girardeau and the potential low-flow impacts. Review of the flow duration plots for St. Louis in the RDEIS and FEIS (Section 7.15) and a plot of the daily Cape Girardeau flows shows that there is very little difference in the duration plots of river stages among the alternatives. This means that the harbor problems would be similar and the powerplant

operator would have to make adjustments in its intake or operations to keep the plant fully operational under any of the alternatives.

Miss-36

No, the Corps cannot guarantee that there will never be any adverse impacts, even if the Water Control Plan were to remain the CWCP.

Miss-37

The Corps has not been provided the information indicated in the comment; however, the Corps would agree that it can operate for the Mississippi River as long as these operations are not detrimental to the operating requirements on the Missouri River.

Miss-38

An analysis of St. Louis flows under the various alternatives determined that the frequency of dredging and the initiation of dredging would not change among the alternatives; however, the amount of dredging may be somewhat greater for the alternatives with the lowest summer flows.

Miss-39

The five alternatives to the CWCP would result in more days that the river would be closed to navigation. The number of days that the stage at St. Louis is less than a –4.5 feet is 104 days for the CWCP for the 66 years analyzed. This would increase an additional 12 days for the five alternatives to the CWCP. Many of these extra days occur in the same years as those under the CWCP. Consequently, the impacts of these differences are likely to be indistinguishable between the CWCP and any of the five alternatives. One or two fewer days at a low flow will likely not be advantageous because arrangements to move the commodities must be made days in advance. A shutdown on the Mississippi River would likely be treated very similarly no matter if the shutdown is 8 days or 10 days. The economic analysis conducted, however, included differences in costs associated with the extra days of the shutdown.

Miss-40

Flow changes in the Mississippi River are essentially the same for all of the alternatives by the time they reach New Orleans. Impacts were quantified downstream from New Orleans based on delays in moving commodities in the St. Louis and Cairo reaches to New Orleans for loading onto deep draft movements to the Gulf of Mexico.

Miss-41

Dredging on the Mississippi River would not begin until after July 1 for two reasons. First, lower Gavins Point Dam releases beginning June 20 would not reach St. Louis until July 1. Second, the Biological Opinion for the Middle and Lower Mississippi River reaches limits the initiation of dredging to July 1 to limit adverse impacts to endangered species on the Mississippi River.

Miss-42

The Corps is required to identify impacts associated with any changes to the CWCP as part of its responsibilities to respond to NEPA. As part of the scoping process that must be followed, Mississippi River interests and some of the Missouri River basin States asked the Corps to identify potential impacts to the Mississippi River. We have done so, and these impacts were considered as the Corps selected the PA. Even though the Corps has a responsibility to identify impacts, the Corps is also aware that it cannot operate solely for the Mississippi River when operational decisions are made for the Mainstem Reservoir System.

Miss-43

The St. Louis District of the Mississippi Valley Division conducted additional environmental analyses following the RDEIS to better understand potential impacts for changes from the CWCP on Middle Mississippi River resources. Studies of shallow water habitat, tern and plover habitat, side channel to main channel connectivity, and water quality within the chutes were conducted. The findings of all of these studies were that the differences between the CWCP and each of the other five plans addressed in Chapter 7 of the RDEIS and FEIS were either very small or minimal with and without some statistical significance.

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4.14 MISSOURI RIVER THERMAL POWERPLANTS RESPONSES

MoPower-1

The RDEIS discusses thermal energy at risk due to low summer flows. There are 18 thermal plants along the Missouri River below Gavins Point Dam that rely on cooling water. EPA regulates the amount of waste heat from the cooling water that can enter the Missouri River. If the temperature, or amount of waste heat, of the discharge water is too high, thermal plants have to reduce generation or completely shutdown. The RDEIS identified 387 MW of capacity and 203 thousand MWh of energy that could be lost if Gavins Point Dam releases were to drop to 21kcfs during the summer. The updated thermal impacts analysis included in Section 7.10 of the FEIS identifies 838 MW of capacity and 347 thousand MWh of energy that could be lost on an average annual basis for the same alternatives. Losses in both power categories vary dramatically year to year, and losses in specific years are much larger than the average annual values.

MoPower-2

Iowa thermal plants at Sioux City could be at greatest risk according to the Corps' analysis. The Neal plants are most at risk because of their close proximity to Gavins Point Dam, and inflows from tributaries have not significantly affected the flows in the Missouri River. The thermal power at risk analysis has been revised and updated; however, the conclusions are generally the same and are summarized in Section 7.10 of the FEIS.

MoPower-3

A regional impact analysis on capacity was conducted by Western Area Power Administration (WAPA) to address market concerns when there is both a loss of hydropower and thermal power at the same time. The Corps used graphics prepared by WAPA on the Mid-Continent Area Power Pool (MAPP) (U.S. Region) surplus/deficit capacity for the 2001 to 2010 timeframe to determine if any generating shortfalls would change the MAPP region's need for additional generating capability. This analysis determined that there was no difference among the alternatives as to when additional capability needed to be online to offset the lost generating capability determined for all of the alternatives under consideration at that time for the PA for the FEIS. For this reason and the complexity associated with describing the analysis, the Corps elected not to include a discussion on the analysis in the FEIS.

MoPower-4

Executive Order 13211 does not apply to the Master Manual Review and Update.

MoPower-5

Thank you for sharing your opinion.

MoPower-6

The Corps appreciates the information and considered it as the decision was made on the PA for the FEIS.

MoPower-7

The RDEIS understated the thermal generation impacts for the one reason—use of average monthly flows. The FEIS includes the results of a revised analysis that used the daily data, and the resulting impacts are greater. Refer to Section 7.10 to see the revised impacts for capacity and energy.

Ameren staff was also given the opportunity to identify potential impacts versus flow when a concerted effort was conducted with all of the Lower River utilities in late 1992. At that point in time, the flow at which impacts were to begin was adjusted downward from what had been used previously. Ameren did provide input to the analysis. Model output at this time has reduced generating capability beginning at about 25 kcfs. If the impacts start at a higher flow, then the model understates the impacts. The summer of 2002 may have provided Ameren with additional insight, as the flows were as low as about 40 kcfs in August and the ambient air conditions were very hot and windy.

MoPower-8

The FEIS includes a NED benefits analysis for thermal power in Section 7.9, Water Supply. It is included in this section to eliminate the potential double counting of benefits for the powerplants because the analysis looks at intake limitations (water supply) and thermal discharge limitations (water quality). The water supply economic model

checks both limitations and selects the greater of the two limitations before computing the water supply NED benefits.

MoPower-9

The Hermann gage is one of several gage stations that the Corps has analyzed in detail for stage trends. The trends at Hermann may reflect the river trends for locations upstream and downstream some distance away. Caution should be exercised when using the Hermann gage to make absolute statements about other location along the river. At the Hermann gage for a river flow of 40,000 cubic feet per second (cfs), the stage in 1930 was about 5.2 feet. Aggradation occurred up to 1954 where 40,000 cfs had a stage of 7.0 feet. From 1968 to 1988, the channel has slowly, and with some flux, degraded from 7.0 feet to about 5.2 feet. This is where the channel was in 2002 for 40,000 cfs. Since 1988 the channel has, therefore, degraded 1.8 feet. Since 1930, the channel has not degraded.

For lower flows such as 20,000 cfs, the channel at Hermann has experienced greater degradation. The highest stage since data were taken was in 1959 with a stage of 3.4 feet. The data show a fairly constant degradation rate to 2001, where the stage for 20,000 cfs is about 0.3 feet. This is a 3.1-foot stage fall. The stage for 20,000 cfs in 1930 was 1.5 feet.

The flood of 1993 was a record flood. The impacts of that flood on stage trends at the Hermann gage are minimal to none. The trends do not display a spike or rapid change in the stage.

From the data, it appears that it is the flows below 40,000 cfs that may contribute to greater degradation. Flows around 40,000 seem to have stable stages.

Higher flows of 70,000 cfs and 100,000 cfs have, since the early 1960s, been fairly stable. Flows from 200,000 cfs to 500,000 cfs have displayed aggradation. This shifting of the stage-discharge relationship is due to the reduced conveyance in the floodplain to carry the higher overbank flows. This implies that the spring rise, upon reaching Hermann and adding 15,000 to 20,000 cfs, would have minimal to no impacts when added to flows within 40,000 to 200,000 cfs. Flows higher than 200,000 are at flood stage and the Corps would more likely be constraining the spring rise releases.

4.15 NAVIGATION RESPONSES

Nav-1

You are correct in that the RDEIS Summary on Page 15 for Navigation did not correctly State the tonnage story. The RDEIS Summary on Page 15, the second sentence should have read, "In 1994 the total commercial barge tonnage on the river was 8.5 million tons. In that year the commercial barge tonnage excluding sand, gravel, and waterway materials was 1.5 million tons." In the analysis of navigation benefits, the Corps looked at all commodities. Commercial tonnage, excluding sand, gravel, and waterway materials, includes commodities such as grain, fertilizer, cement, asphalt, and steel. This tonnage is considered long haul. These commodities use the entire river from Sioux City to the mouth. Sand and gravel mining occurs in the Missouri River from St. Joseph, Missouri to the mouth. The haul distance for the mined sand and gravel is 1 to 5 miles. Waterway material is generally stone that is part of the maintenance of the Missouri River bank stabilization and navigation structures. By separating out sand, gravel, and waterway materials, a clearer picture of the full usage of the river via the long haul commodities is attained. The FEIS Summary has separated out the total tonnage appropriately.

Nav-2

Two outcomes are presented for navigation for the GP1521 and GP2021 options in the RDEIS. For the first outcome called (H), long haul navigation would stay in business and would operate on either side of the summer low-flow period. The second outcome called (L) assumes that all long haul navigation would go out of business. Sand and gravel operations for both H and L would operate the same. Under both H and L, sand and gravel would be operating at reduced draft and production during the low summer flow period. Even at the reduced draft and reduced production, the sand and gravel companies would continue to thrive. This double presentation for navigation was somewhat confusing; however, it was uncertain whether the long haul navigation industry would absolutely go out of business. Additional analysis following the RDEIS determined that navigation would likely continue on the Missouri River under all of the GP options; therefore, only one set of benefits is provided for these alternatives in the FEIS.

The Corps is aware of the high water limitations on the four sand and gravel companies. For example, one company has stated that it cannot dredge sand when the river is 5 feet above flood stage. The spring rise in the GP options would occur on average once every 3 years. To make this happen, it is assumed that it would occur every year unless prevented by severe droughts or downstream flooding. The spring rise would increase downstream stages 3 to 4 feet at "normal" flows. Modeling suggests that there would only be a few days in the 100 years of record that the spring rise would coincide with downstream high water that would limit sand and gravel production.

The Corps will meet with the navigation industry and your agency as necessary.

Nav-3

The GP1520 and GP2021 options' low summer flow period would not provide the authorized navigation channel size to support long haul navigation. These alternatives also would increase costs to the sand and gravel industry because of reduced barge drafts and reduced production rates. The Corps is aware of the economic impacts of these alternatives.

Nav-4

The RDEIS does include National Economic Development (NED) benefits for navigation by the sand and gravel industry.

Nav-5

The RDEIS uses 100 years of flow data, and the flood analysis has been updated to include information after the 1993 flood. All river dikes and revetments damaged by the 1993 flood, 1995 flood, and the 1997 high water event have been repaired. In the year 2000, river engineers from the Corps' Kansas City District identified 100 damaged structures between Kansas City and the mouth that require repairs beyond normal maintenance. These structures are not associated with any channel conditions that have compromised the Corps' navigation or bank stabilization mission. The repairs of these structures are ongoing. All Federal levees have been repaired since the 1993 flood. Most private levees were repaired. As a result of the repairs, the river channel and floodway are generally similar to the pre-1993 configuration.

Nav-6

To better understand the navigation economics, the Corps entered into a contract with the Tennessee Valley Authority to conduct an updated analysis for the FEIS. The completed analysis includes an update of navigation NED benefits based on 1999 navigation movements, a Water Compelled Rates benefits update, a sand and gravel analysis, and a quality of life through modal shift analysis. This overall analysis was different from the previous Missouri River navigation studies because it included an analysis of all barge movements in the year analyzed. Corps economists from Walla Walla District in Walla Walla, Washington and the Hydropower Analysis Center, Portland, Oregon conducted an Independent Technical Review of the overall analysis. Updated navigation economic impacts are included in the FEIS.

Nav-7

Compared to the CWCP, all the other alternatives analyzed in the RDEIS would increase shipping costs on the river. The MCP alternative would increase the costs the least. The Corps NED analysis comparison shows a 1 percent reduction in navigation benefits for this plan. The four GP options in the RDEIS showed reduced navigation NED benefits of 24 to 32 percent. The minimum service or no navigation periods during the summer months for the GP options could cause reduced barge drafts or a shifting of river tonnage away from the river by truck or rail. To the farmers that rely on Missouri River transportation, they could see a direct increase in costs to ship their products. These farmers generally live within a 15- to 50-mile corridor along the river. Less than 1 percent of the total production of grain in South Dakota, Nebraska, Iowa, Kansas and Missouri move by way of the Missouri River. Farmers outside that corridor would most likely not see any change in the prices for corn and soybeans for any of the alternatives presented. The PA in the FEIS shows a 6 percent increase in NED benefits.

Nav-8

Earlier analyses conducted by TVA indicated compelled rates benefits for Missouri River navigation based on 1992 data at $203 million and based on 1995 data at $81 million. These analyses were included in the Draft EIS, dated July 1994, and the Preliminary Revised Draft EIS, dated August 1998. The latest compelled rate update for the FEIS is based on 1999 data and shows fewer water compelled rate benefits at $38.7 million. The analysis suggests that a once-significant competitive relationship between Missouri River navigation and railroad rates within the Missouri River basin is now relatively less important. Only corn and metallic ores showed benefits of $4.7 million and $2.5 million, respectively. Interestingly, coal, which is not transported on the river, has a benefit of $31.5 million. Also, the high-value product asphalt does not demonstrate a compelled rate along the Missouri River corridor. Possible factors contributing to the total lower compelled rate benefits based on the 1999 data are the strong rail-to-rail competition and the growth of local or regional processing such as alcohol plants.

Nav-9

The NED analyses for each of the economic purposes of flood control, navigation, recreation, water supply, and hydropower are determined specifically. The NED Policies and Procedures for each purpose do not relate to each other. The purpose of the NED analysis for each purpose in the RDEIS was to compare the relative differences that resulted for the various alternatives presented. Using the relative differences, those reviewing the EISs can see just how the alternatives affect a project purpose as well as total NED benefits. To attain the biggest NED number to operate the Missouri River would require that hydropower operations be optimized and all other uses become secondary because the hydropower NED benefits to the Nation outweigh the others.

Nav-10

None of the project economic or environmental purposes are sole driving forces on the management of the river. The Corps operates the Mainstem Reservoir System for all the purposes, as spelled out in the Master Water Control Manual and each Annual Operating Plan. When the Master Water Control Manual Review and Update is completed, the Corps will operate the Mainstem Reservoir System, based on that document and future Annual Operating Plans. The 2003 ruling of the 8th Circuit Court recognized that flood control and navigation were dominant functions of the Missouri River Mainstem Reservoir System. The Court also stated that recreation and other interests and secondary uses should be provided for.

Nav-11

Congress authorized the project purposes for the Missouri River Mainstem Reservoir System projects and assigned the Corps to implement its charge. The Corps will continue to support all project purposes until Congress changes the law.

Nav-12

The impact of changing the navigation season on shippers, terminal operators, and towboat operators on the Missouri River can be expressed three ways. First, the closure and modal shifting of the various industries that make up the navigation sector will be discussed. Next, geographic changes in the structure of the navigation industry will be identified. And last, commodity specific modal shifting will be identified. One basic thought in this commentary is that changes in navigation cost, and the associated modal shifting, will not change the total regional output. Area industry adapts to the navigation reality.

While closure and consolidation of the firms that make up the navigation component is devastating to local firms, the efficiency gains through consolidation will guide the survival of the sector. The survey results identified four truck-only terminals that would most likely close with a split navigation season (Blair, Rock Bluff, Atchison, and Kansas City); however, the remaining river terminals that had rail access stated that they would shift modes when the land mode was cheaper and use navigation when available. As for towing and barge companies, the most likely outcome would be for a consolidation of the two small carriers that serve the Missouri River into larger national towing and equipment providers. Already, one carrier, Phoenix, has been sold to MEMCO, a large corporation that owns towboats and barges.

Geographically, the NED shipper savings from navigation in a split season are concentrated in the reach from Kansas City to the mouth of the river. This means that shippers at or below Kansas City would continue to use navigation in a split season at the same annual tonnage levels provided similar market conditions for grains and fertilizer continue into the future, i.e., the export market for grain remains strong and the import market for nitrogen fertilizers remains the same. As for shippers above Kansas City, they generally would shift modes or geographically shift in their transportation selection preference, but they would continue to use navigation on an opportunistic basis.

Last, one specific commodity, asphalt, which is very dependent upon barge transportation is discussed. Currently, three terminals are in operation on the Missouri River, one at Sioux City and two at Kansas City. During a split season, it is highly likely that the Sioux City terminal would receive only one third of the asphalt tonnage by way of the river. Kansas City presents a slightly different problem for asphalt receivers. With a higher volume, typically 250,000 tons, shortening the shipping season would require adaptation through the construction of increased tank storage and increasing the market area served by rail or truck from St Louis. One unknown is the reaction of the refinery at Kansas City and its ability to produce increased quantities of asphalt for the local market. Asphalt is a supply-constrained and transport-limited commodity. The asphalt receivers in the Missouri River basin would continue to use navigation with a split season, and all cost increases would be passed on to the contractors and batch plant operators.

Nav-13

The authorization for the navigation channel from Sioux City, Iowa to the mouth is found in the Rivers and Harbors Act of 1945. The Act authorized a 9-foot-deep by minimum of 300-foot-wide channel during the navigation season. The system support for the navigation season is April 1 to December 1 at the mouth. Alternatives MCP, GP1528, and GP2028 presented in the RDEIS would provide full or partial use of the authorized navigation channel by modern towboats and barges. The GP1528 and GP2028 options include a low summer flow of minimum navigation service. This service reduces barge drafts by 1 foot from mid-June to mid-September. The navigation channel maintained during this period without reconstruction is 8 feet deep by 200 feet wide. For the GP1521 and GP2021 options, the low summer flow period from mid-June to mid-September would not support modern towboats or barges.

The design of the navigation project will not support the authorized channel at any flow less than full service. The design of the project can provide a minimum channel during periods of drought down to the minimum service levels. During periods of drought and using the CWCP, the Corps provides navigation support from full service to minimum service. As the drought gets worse, the Corps then reduces season lengths. The reservoir storage criteria for navigation support during a drought are

identified in the Master Water Control Manual and in the EISs.

Nav-14

The Waterborne Commerce Statistics Center (WCSC) of the Institute of Water Resources of the Corps is located in New Orleans, Louisiana. This office is responsible for accumulating and processing inland waterway commodity tonnage, among many other data collection activities. The tonnages collected represent upbound and downbound transits. Tonnages along reaches are not cumulative. Tonnages in reaches represent all tonnage that passes. For example, the 1984 data for Sioux City to the mouth reach show Farm Products at 873,297 tons. The tonnage for the Kansas City to the Mouth reach for Farm Products was also 873,297 tons. The Kansas City to the Mouth reach got credit for all the tons that went to Sioux City and also all the tonnage that went from Sioux City through the Kansas City to the mouth reach. The data show that there was no inter-reach traffic between Sioux City and Kansas City. For example, if a barge originated in Sioux City and ended up in Omaha, that tonnage would not be included in the Kansas City to the Mouth tonnage. This is the case for 1994 and 1995, when the Kansas City to Mouth tonnage is 1,000 tons less than the Sioux City to mouth reach tonnage.

Nav-15

Figure 3.13-1 shows the monthly tonnage on the river during 1994. The trend indicated by the figure shows tonnage moving throughout the navigation season. This figure is typical of how the tonnage moves. Other charts, such as a 5-year averaging chart, could be presented, but the results would be the same. Tonnage on the Missouri River moves in all months during the navigation season.

Nav-16

River Barge Excursions tour the Mississippi, Cumberland, Atchafalaya, Ohio, and the Missouri Rivers. This company first operated on the Missouri River in 1999 with a capacity to carry 198 passengers. Rather that one big powerful vessel, two 54-foot by 295-foot barges are pushed by a towboat. The barges draft 5.5 to 6 feet. The towboat MISS NARI drafts 8.5 feet. This draft is common for the towboats that use the inland waterway system on these rivers for safety, handling, and adequate propulsion. It is not the barges that limit usage of the Missouri River. It is the towboats and the required draft that they are built to. The company has advised the Corps that it could not come up the Missouri River with its strong current pushing 600 feet of barges full of passengers with a towboat that would compromise safety.

Nav-17

The Corps is authorized and funded to operate and maintain the Missouri River Bank Stabilization and Navigation Project from Sioux City, Iowa to the mouth. If Congress were to authorize and fund a study to eliminate Federal operation and maintenance support to navigation in specific reaches of this project, the Corps would conduct it.

Nav-18

In August 2000, the Navigation and Water Resources Applications Division of the Institute for Water Resources of the Corps completed a study entitled “Projected and Actual Traffic on Inland Waterways.” The Missouri River section is presented below. To clarify a point, there is no record of any traffic projection that suggests that Missouri River tonnage was expected to reach 20 million tons.

3B: Missouri River

Introduction

The current Missouri River Bank Stabilization and Navigation Project, providing for a 9-foot navigation channel, Sioux City to the mouth, was authorized by the River and Harbor Act of 1945 in accordance with House Document (HD) 214. This authorization expanded earlier authorizations, which provided for a 6-foot channel and initially provided for a navigation channel from Kansas City to the mouth. The following discussion provides a comparison between actual Missouri River traffic as reported by Waterborne Commerce of the United States and projections and estimates in HD 214 and other studies developed shortly after authorization.

Summary of Traffic Projections

HD 214 identifies several Missouri River tonnage estimates, two of which apply to the entire reach of the 1945 authorization, Sioux City to the mouth.

a. The earliest, a report by the United State Department of Commerce, March 1928, identifies 8,445,355 tons as available for transportation on the Missouri River, Sioux City to the mouth.

b. Two estimates by the Kansas City District Engineer, a 1929 report estimating tonnage between Kansas City and the mouth, and a 1933 estimate of tonnage between Kansas City and Sioux City, were combined in HD 214 to arrive at an estimate for the Missouri River of 12 million tons annually.

The Missouri River Division completed a report in 1950 including an extensive economic evaluation of both the navigation and bank stabilization impacts of the 1945 authorization. This report identifies 4 million tons as a reasonable estimate of probable commerce that could be assigned to the Missouri River between Sioux City and the mouth under present economic conditions. The report goes on to note that with industrial expansion in the region, navigation tonnage is estimated to increase by 25 percent to 5 million tons 20 years after project completion.

The Missouri Basin Survey Commission (MBSC), in compliance with Executive Order No. 10318, dated 3 January 1952 and modified on 9 February 1952, presented a report with an estimate of expected Missouri River tonnage. These studies identified 1,930,000 tons that could be shipped economically by barge and after adjustment for other commodities not specifically analyzed, the total volume would not exceed 2,100,000 tons.

Summary of Initial Missouri River Navigation Traffic Projections

Source	Date(s)	Projected Tonnage
U.S. Department of Commerce (HD 214)	1928	8,445,355
Corps of Engineers (HD 214)	1939 (1929,1933)	12,000,000
Corps (Missouri River Division) Report 1950	1950	4,000,000*/5,000,000**
Missouri River Basin Survey Commission (MBSC)	1953	2,100,000

* 10 years after project completion
** 20 years after project completion

Consideration of Alternative Projections

Of the various projections, the estimate of 12 million tons from HD 214 and the 4 to 5 million ton estimate from the Corps 1950 study are the two which have been quoted repeatedly. The 12 million-tonnage estimate gains its legitimacy because it is the primary projection in the authorizing document. In reality however, the Corps never seems to have been comfortable with that number as evidenced by the extensive economic evaluation conducted in 1950, only five years after authorization of a project not expected at the time to be completed until 1960. Further, it has also been determined, after research by the division historian, that the 12 million-ton figure was not based on a Corps study, but was given to the Corps by an organization of private barge owners. In contrast, the Corps 1950 study is based on extensive research and analysis including nearly 1500 field contacts encompassing over 40 commodities. The MBSC 1953 projection of tonnage to be reached by 1970 was derived from studies of waybill rail shipments from and into the region surrounding the river, interviews with prospective users of barge transportation, and information on prospective savings by waterway use.

Actual Tonnage

Actual Missouri River tonnage is provided below including major products, total tonnage, and what is identified as "commercial" tonnage, which is total tonnage excluding sand and gravel and waterway material. On the Missouri River sand and gravel movements are largely a local activity consisting of mining sand from the river bed and transporting the sand by shallow draft barges to a nearby storage location on the bank, generally within 1-3 miles. Therefore while sand movements currently account for most of the Missouri River tonnage, they contribute little to ton-miles or benefits and were not included in historical projections.

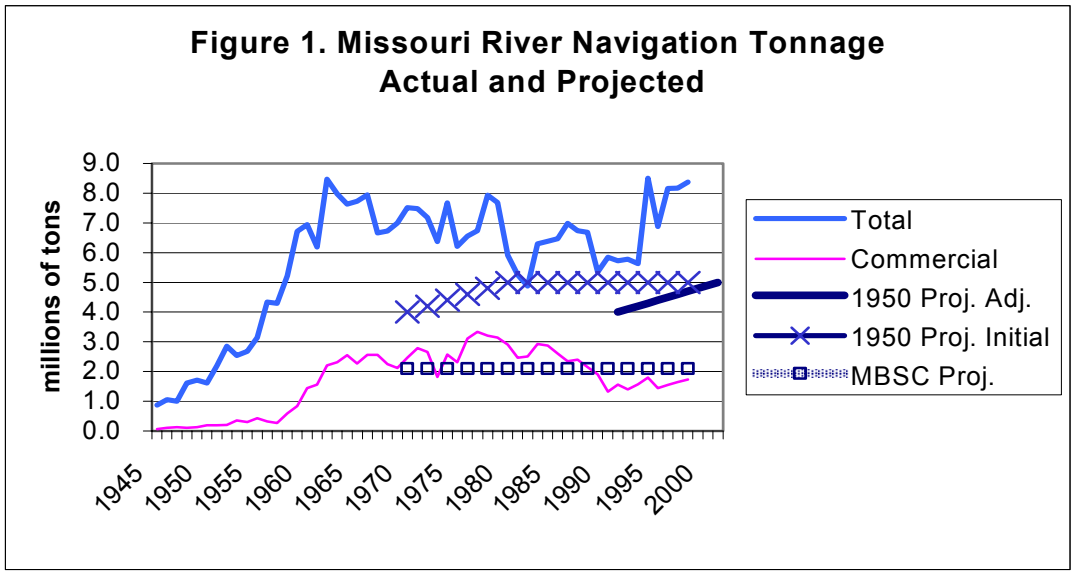
Table 1. Missouri River Tonnage, 1945-1998 (thousands)

Year	Farm & Food	Chemicals	Sand/Gravel	Waterway Material	Commercial*	Total
1945	64	0	155	645	70	870
1950	80	1	283	1,130	197	1,610
1955	119	2	414	2,291	435	3,140
1960	1,197	21	1,462	4,046	1,441	6,949
1965	1,771	80	2,449	3,006	2,271	7,726
1970	1,429	526	2,678	2,377	2,463	7,519
1975	1,291	461	2,744	1,147	2,317	6,208
1980	1,671	502	2,715	290	2,909	5,915
1985	1,139	688	3,393	472	2,607	6,472
1990	432	345	4,240	272	1,329	5,841
1995	443	452	5,222	224	1,439	6,884
1998	705	472	6,478	167	1,733	8,378

* Commercial: Total tonnage excluding sand, gravel, and waterway material

Comparison of Projections and Actual Tonnage

Actual tonnage and the projections from the 1950 Corps study and the 1953 MBSC study are combined and provided in Figure 1. The projected tonnages in the 1950 report, originally estimated to occur in 1970 and 1980, 10 and 20 years respectively after project completion, have been adjusted to 10 and 20 years after the actual completion date of 1981. Total tonnage peaked to date in 1994 at 8.5 million tons and commercial tonnage peaked in 1977 at 3.3 million tons.



Commercial: Excludes sand/waterway material.

Adj. Projection: Per 1950 study adjusted for actual project completion.

Initial Projection: Per 1950 study expected project completion.

Although total tonnage for the Missouri River has exceeded the projections in the 1950 Corps report and the 1953 MBSC report and approached within about 70 percent of the 12 million tons estimated in the authorizing document, the product mix is dramatically different than foreseen. Neither the Corps 1950 report nor the MBSC

study includes sand/gravel or waterway material in their estimates. The dramatic differences in the product mix is illustrated in Table 2 comparing tonnage for several major products from the most recent estimate as provided by Waterborne Commerce of the United States with tonnage forecasted by the Corps 1950 report and the MBSC 1953 study.

Table 2. Missouri River Actual and Projected Tonnage (thousands) - Major Products

	1998 Actual	Corps 1950 Report*	MBSC 1953 Study
Farm and Food Products	705	3,166	1,270
Chemicals	472	120	75
Coal	0	90	200
Sand/Gravel	6,478	0	0
Waterway Material	167	0	0
Other	556	698	555
TOTAL	8,378	4,074	2,100

*10 years following project completion

A historical perspective on actual movements provides further insight for comparing forecasted and actual tonnage (Figure 2). Until about the early 1980's, with farm and food product movements frequently approximating 2 million tons, actual tonnage generally seemed to be validating the forecasts, particularly those from 1950 and 1953. However, since then farm and food product movements have declined along with total "commercial" tonnage.

Farm product tonnage has declined in recent years for a variety of reasons. These include introduction of low-cost unit train rates to high capacity Pacific Northwest ports in the late 1970's, decline in agricultural exports in the early 1980's, growth in local consumption including the feed and processing markets, and the drought of the late 1980's and early 1990's, which shortened the Missouri River navigation season by 5 weeks for 4 years in a row. The most dramatic reduction has been in wheat tonnage. Until the introduction of the unit train rates to the Pacific Northwest ports, the Missouri River often moved over one million tons of wheat, peaking at over 1.7 million tons. In contrast, in 1998 the Missouri River moved 64,000 tons of wheat. The bottom line is that agriculture remains the primary industry over much of the Missouri River Basin and although the Missouri River moves a variety of other commodities, farm products remain the dominant regional output. For farm products navigation primarily serves the export market and the Missouri River Basin is in an unfavorable competitive position as measured by both distance and cost relative to other production regions. The risk and uncertainties of this position likely will continue to constrain Missouri River navigation tonnage.

Sand and gravel movements now increasingly dominate Missouri River navigation tonnage, producing traffic levels exceeding most historical traffic forecasts and even approaching the undocumented 12 million ton figure in the authorizing document.

Current navigation on the Missouri River is distinctly different from that forecasted by any of the early projections. Missouri River navigation is exceeding the total forecasted traffic levels prepared in 1928, 1950, and 1953, but the actual commodity traffic contrasts with the 1950 and 1953 forecasts.

Nav-19

The Missouri River tonnage peaked in 1999 at 9.25 million tons. That year, long haul tonnage called Commercial Tonnage not including Sand, Gravel and Waterway Materials was 1.58 million tons. The maximum Commercial Tonnage peaked in 1977 at 3.3 million tons.

Nav-20

On any given navigation day there can be 3 to 8 towboats with 10 to 30 barges in transit. On the river there are 30 to 50 barges moored at terminals loaded, empty, or in the process of loading or unloading.

Nav-21

The Operating Manuals for Tuttle Creek, Milford, and Perry Dams provide for navigation support

flows whenever Missouri River support to navigation is challenged due to drought. Tuttle Creek has a multipurpose storage allocation of 185,000 acre-feet for low-flow regulation, navigation, and recreation. It will require Congress to change the law waving the navigation authorization, operation, and allocations.

Nav-22

The Missouri River Master Water Control Manual EIS does not discuss the detailed operational changes of the Kansas River system. The Corps Kansas City District is in the process of developing models and preparing a study of the system operations.

Nav-23

To better understand the navigation economics, the Corps entered into a contract with Tennessee Valley Authority (TVA) to conduct an updated analysis for the FEIS. This includes a NED benefits analysis of 1999 movements on the Missouri River; Water Compelled Rates benefits update; sand and gravel analysis; and quality of life through modal shift analysis.

The quality of life portion of the Study looked at only truck modal shifts. Rail shifting from a quality of life perspective was considered negligible. Costs associated with quality of life effects were determined for traffic delays, accidents, emissions and pavement wear as a result of more trucks on the highways. Total costs were determined to be about $1 million per year for the next 5 years. An approximate breakdown of the costs is: delays 34 percent, accidents 51 percent, emissions 13 percent, and pavement 0.0004 percent.

Nav-24

The Missouri River navigation historically has had a national security mission. The river was used by the military from the early steamboat days to support distant Army forts to the World War II support efforts. As the river exists today, it provides the ability to move great quantities of products from America's heartland if a calamity such as a worldwide famine or war occurred. If there was a time of great national emergency, such as a war, significant earthquake, or weather calamity, where there is significant disruption of rail and highway transportation, the navigation project would likely survive and provide an additional transportation alternative to support U.S. citizens' needs. National security benefits are mentioned in the navigation economics supporting technical report to the EIS.

Nav-25

In March 1945 Congress passed the Rivers and Harbors Act that modified the previously authorized Missouri River Bank Stabilization and Navigation Project from Sioux City, Iowa to the mouth to include a 9-foot-deep by minimum of 300-foot-wide navigation channel. The Corps completed this project in September 1980. The sinuous course of the channel consists of reverse bends. The bends run from 2 to 4 miles in length. The river widths are controlled by dikes (perpendicular to the river flow) and revetments (parallel to the river flow) made of rock or rock and wood piling constructed on both sides of the river. The controlled flows and the natural forces of the river scour the bed. As a result, a consistent and reliable navigation channel cross-section through the entire project reach is provided.

The project is essentially a huge sediment management project. Twenty percent of the sediment that is transported by the river is in the form of bed load. This bed load creates dunes and ripples. These dunes and ripples create humps at times that cause transient channel shoaling conditions that do not meet the authorized channel. This can narrow or shallow up the authorized channel. Shoaling conditions can happen under any flow condition or target management on the river. If the shoaling is persistent enough that it halts navigation, the Corps will conduct, with proper coordination with other agencies, emergency dredging or construct emergency dike or revetment structures.

It is true that, for most of the length of the navigation channel, the river conditions exceed Congressional requirements of a 9-foot-deep by minimum of 300-foot-wide channel. That is because the bend ways are river pools that often are 10 to 15 feet deep. The crossings between bends are where the sediment tends to accumulate as it moves from one side of the river to the opposite side. It is the crossing design and the shoaling conditions from sediment surges from tributary rises or low mainstem flow conditions that compromise the authorized channel in 1 to 10 percent of its 735-mile length. The shoaling conditions generally occur in the crossing locations in the river. There are 240 crossings between

Sioux City and the mouth. Only one crossing location that persists with a shoal that is less than 8 feet deep across the river will halt navigation. The Missouri River has about 10 crossing locations that are chronic in not supporting the authorized channel under nearly all navigable flow conditions or targets. The shoaling at these locations generally reduces the width of the channel and the location of the channel sailing line. There are several tributary confluence locations that provide other navigation challenges.

If an alternative is selected that changes the design flow hydraulics and the Corps is authorized and funded to begin modifying the river navigation training structures to provide a reliable navigation channel, the Corps anticipates that the Missouri Department of Conservation will cooperate and coordinate with the Corps on any regulatory requirements that the Corps must comply with to accomplish the missions that Congress authorizes the Corps to conduct.

Nav-26

Typical barge configuration for towboats with barges on the river is three single file, four in a 2x2 shape, six in a 3x2 shape, nine in a 3x3 shape and twelve in a 4x3 shape. An 8-barge tow at full 8.5-foot draft represents a unit train, which is 100 rail cars loaded at 110 tons, or 450 large semis at 26 tons each.

Nav-27

At the bottom of the page is a listing of the tonnage of all the Farm and Food products shipped on the Missouri River. Since 1989, the total Farm and Food products has decreased.

Nav-28

The Corps is aware of the impacts to navigation under the various alternatives to the CWCP.

Nav-29

Table 7.12-2 shows the GP1521 and GP2021 options with more years of full service navigation support than the CWCP, MCP, and GP1528 and GP2028 options. This table shows the March 15 and July 1 system reservoir storage checks. It is true that the GP1521 and GP2021 options provide full service navigation support more often, but only for the period on either side of the summer 25/21 split. On the same table, note that, for the GP1521 and GP2021 options, the season length is 5.5 to < 6 months for 95 years.

Nav-30

For all the resources considered in the RDEIS, navigation takes the greatest NED loss for any of the GP options compared to the CWCP. Percentages vary from a 24 to 31 percent loss. The MCP alternative for navigation has a 1 percent loss compared to the benefits of the CWCP. The Corps' PA results in slight benefits to Missouri River navigation.

Nav-31

In 2001, total grain produced in the States of Iowa, Missouri, Nebraska, Kansas, and South Dakota was 175.4 million tons. The grain and grain products transported in 2001 on the Missouri River total about 508,000 tons. Using total grain tonnage, 0.29 percent moves by barge on the Missouri River. This analysis, however, should account for the direction that the grain would most likely move in these States, either along the Missouri River corridor or away from it. For example much of the export grain in Kansas goes to the Arkansas River. To be correct, a more reasonable analysis for comparison would consider all of the grain in Nebraska and one-half of all of the grain in Missouri, Iowa, Kansas, and South Dakota. Based on 2001 data, this grain adds up to 102 million tons. Using this total, 0.5 percent of the grain that most likely could move on the Missouri River moves by barge.

There is another comparison that gets overlooked. This comparison looks at how much of the total grain produced along the 20- to 25-mile river corridor from Sioux City to the mouth actually gets shipped on the Missouri River. Assuming half of the acreage along the river corridor produces corn and soybeans, about 13.8 million tons could be produced. The 508,000 tons of grain and grain products shipped would represent approximately 3.7 percent of the total grain produced along the corridor.

AGRI	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
(1000) TONS	904	432	769	539	563	551	443	502	589	704	730	530	508

Nav-32

The Missouri River Bank Stabilization and Navigation Project from Sioux City to the mouth was first authorized in 1912. The authorization provided a 6-foot-deep channel from Kansas City to the mouth. This authorization was revised in 1917 to extend the reach upstream to Quindaro Bend. In 1925, the authorization was revised to provide a minimum of a 200-foot-wide channel. In 1927, Congress extended the authorization to include the reach up to Sioux City, Iowa. By 1930, significant work had been accomplished in the Kansas City to the mouth reach. By 1940, nearly 100 percent of the work had been accomplished below Omaha, Nebraska. The Omaha to Sioux City reach was about 70 percent complete. During World War II, new construction was halted and only essential maintenance was accomplished. This left the project vulnerable to flood damage. By 1955, there was significant damage to the reach above Omaha where the river had changed course in about 26 locations. The Lower River below Omaha also suffered considerable damage. The 1945 Rivers and Harbor Act authorized the 9-foot-deep by minimum of 300-foot-wide channel from Sioux City to the mouth. Work began in 1955 after the devastating 1952 flood brought attention to basin water development needs envisioned at the time. On September 30, 1980, the project was considered complete. The completed project prevents meandering of the river and provides a navigation channel that is 734.8 miles beginning just upstream of the Big Sioux River confluence at Sioux City, Iowa.

Nav-33

The statement "shortened the river below Sioux City by 127 miles" is not accurate.

The Missouri River Commission's survey of 1890 provides the most accurate river mileage before the Corps began construction of the Missouri River Bank Stabilization and Navigation Project that began in 1912. All of the Corps' river structures constructed from 1912 to the present are based and numbered on the 1890 mileage. The official river mileage for the navigation project was established in 1960. The last upstream river structure for the project is Revetment Rev 810.3A. The mileage of a revetment (a structure parallel to the river flow) is taken at the upstream end. This structure is located at river mile 734.8(1960 mileage). The Missouri River was shortened by 75.5 miles (810.3 - 734.8). Shortly after Lewis and Clark completed their famous journey, the Atkinson-O'Fallon expedition of 1824-26 was accomplished. This was a famous wheelboat expedition. Brigadier General Henry Atkinson and Indian Agent Benjamin O'Fallon were sent to negotiate peace treaties with Tribes along the Missouri River up to the Yellowstone River. Approximately 475 troops accompanied Atkinson and O'Fallon to impress the Indians with the U.S. Army's ability to enforce treaties. It seems Americans of the time blamed Canadian fur companies for inciting the Indians and with trade infractions. During that trip, the river was very different in several locations from that described in the Lewis and Clark journals. Another journey was conducted by Joseph N. Nicollet to retrace some of the Lewis and Clark footsteps plus explore the Upper Mississippi basin. The river had changed course and it was difficult and next to impossible to follow Lewis and Clark's original journal. Nicollet completed maps of the Missouri River and Upper Mississippi River in 1839. To say that Lewis and Clark would not recognize the Missouri River after their trip is true. Between the journeys, the changes were the result of natural, not manmade changes.

A researcher named Towl reported in 1935 that the length of the Missouri River from the mouth of the Big Sioux River to the mouth of the Platte River was about 250 miles at the time of the Lewis and Clark expedition. In 1935 the distance between these two Tributaries was about 150 miles. Towl attributes this change to the cutting of timber on the floodplain and the great flood of 1881. It is necessary to remember that, from about 1850 to 1890, steamboats consumed significant timber along the river. Other thinking suggests that a change in the weather patterns since 1804 caused conditions of more frequent flooding that caused the cut off of meander loops effectively shortening the river. This was most pronounced in the Sioux City to the confluence of the Platte River of Nebraska.

Nav-34

Commercial tonnage on the Missouri River peaked in 2001at 9.732 million tons. Commercial tonnage not including sand, gravel, and waterway materials for 2001 was 1.29 million tons. The peak for Commercial tonnage (not including sand, gravel, and waterway materials) was 3.3 million tons in 1977. It is true that the long haul tonnage has dropped to about 1.5 million tons on average since 1990. The Corps' portion of waterway materials is

50,000 – 100,000 tons per year. This is stone that is used for project maintenance.

Nav-35

The RDEIS discusses the NED benefits for navigation as an average annual benefit of $6.97 million. The average annual Federal cost to maintain the navigation portion of the Missouri River Bank Stabilization and Navigation Project is $3 million for Operation and Maintenance by the Corps and $2 million for buoy support by the Coast Guard. The Net NED is, therefore, $2 million. This means that to the Nation navigation on the Missouri River is still paying its way. Since the RDEIS was completed, the NED benefits have increased based on a new navigation economic analysis that was used for the FEIS. The updated average annual NED benefit for navigation under the CWCP is $8.8 million. Operation and maintenance by the Corps and buoy support by the Coast Guard remains the same total of approximately $5.0 million. The updated net NED benefits for navigation is $3.8 million.

Nav-36

The part of the navigation industry that uses the inland waterway pays a users tax. This tax is applied to diesel fuel used to power the towboats. Presently the tax has peaked at $0.20 per gallon. The tax is for new navigation projects and major rehabilitation of existing navigation projects. These projects are cost shared 50/50 between the Federal government and the industry. This tax is collected and managed by the Internal Revenue Service, and the prioritization of funding to projects is via the Inland Waterway Users Board made up of industry and Corps representatives. For the Missouri River the fuel tax paid is as follows:

1995	$411,514
1996	$607,537
1997	$649,796
1998	$775,865
1999	$697,986
2000	$696,552
2001	$770,966

Nav-37

Section 7.15.4 Navigation discusses the lost efficiencies to Mississippi River navigation for the various alternatives compared to the CWCP. From the information discussed and described in Table 7.15-3 all the other plans have less lost efficiencies compared to the CWCP.

Nav-38

The statement "National Academy of Sciences found that actual benefits are closer to $3 million annually and that net benefits are eliminated when flows reach 30,000 cfs." is a statement based on opinion and is not from an independent NED benefits analysis. Refer to Response Nav-35 for more information on net NED benefits for Missouri River navigation.

Nav-39

Agricultural, grain and grain products, and fertilizer tonnage tend to be transported in the spring and fall. The Missouri River has other commodities that move at different times; asphalt, cement and steel. These products move all navigation season, especially during the summer. Some grain and fertilizer also moves in the summer. On average the tonnage by month is generally the same from April thru November, as shown in the Figure D1-1.

Nav-40

The Missouri River Bank Stabilization and Navigation Project is just as its name implies. It is a dual-mission project. The project, as authorized by Congress, was to restrict movement of the river so that it would never change course and meander away from communities that rely on the river. Navigation was the other mission. The dike and revetments that control the river for these missions can be split out as bank stabilization structures or navigation structures. There is no plan to systematically remove these structures for environmental purposes that would threaten the two authorized missions. If the Corps is authorized and funded to modify the river structures and floodway to improve shallow water habitat, the missions of bank stabilization and navigation will be maintained. Only Congress can change the Corps' mission authorities.

NAv-41

The 28 thousand cubic feet per second (kcfs) is a flat release from Gavins Point Dam that was used in the hydrologic model for minimum service navigation flows at the downstream gaging

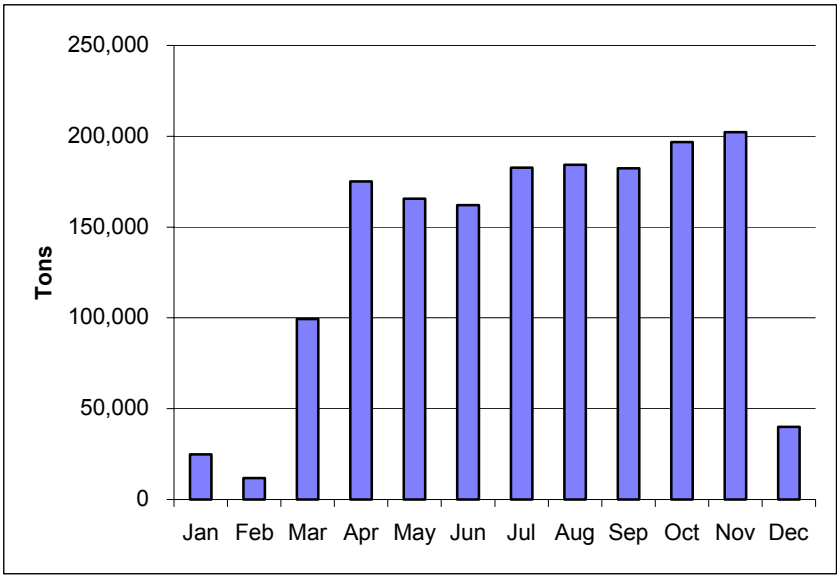


Figure D1-1. Missouri River navigation tonnage excluding sand/waterway material—average monthly, 1996 to 1999.

locations of Sioux City, Omaha, Nebraska City and Kansas City throughout the navigation season during a summer low flow period of Jun 20 to September 1. In real time operations the Gavins Point release may be different, based on the anticipated inflows from lower basin Tributaries. At times the 28.5 kcfs would provide an intermediate service for navigators, however in August this flat release will generally only provide minimum navigation service.

Nav-42

For Missouri River navigation the RDEIS shows that $6.97 million is the average annual NED benefits for the CWCP. NED is an economic analysis that takes the river away and analyzes the costs or benefits of transporting the commodities by the next least costly mode. An update to the navigation economics for 1999 for the FEIS shows that the average annual NED for navigation is $8.8 million.

The NED benefits in the RDEIS for recreation under the CWCP are $84.7 million per year. Approximately $20 million of the Missouri River recreation NED benefits are for recreation below Gavins Point Dam. There are 1,350 boat slips in six marinas for example that have reliance on navigation supported flows. For the other alternatives in the RDEIS, the Recreation NED benefit are higher by $3 to $4 million. Conservation measures provide the relative gains in recreational NED benefits primarily in the upper three lakes. In the river section below Fort Randall Dam and the Lower River below Gavins Point Dam minor losses in recreational NED benefits occur for the increased conservation during droughts.

NED economic benefits analysis follows prescribed policies and procedures. The analysis is used to determine the wisdom of Federal investment in construction of long-term public projects. The Corps used the NED methodology to develop economic numbers for the economic purposes of navigation, flood control, hydropower, and recreation to show relative differences when different water flow alternatives were studied. The NED numbers for each purpose are determined differently.

If the Corps were to use absolute NED benefits numbers to maximize economic benefits for the nation then hydropower, with a NED benefit under the CWCP of $741 million per year, would be maximized, as these benefits increase more in terms of absolute value with increased conservation during droughts. Water Supply would come in second at $610 million per year. Maximization of these purposes would be at the expense of the others. The Corps is not in the position to maximize hydropower over recreation or recreation

over navigation. For the Corps not to support a purpose, Congress must provide for the de-authorization of that purpose.

Nav-43

Navigation passengers are in the NED benefits analysis of the RDEIS for navigation. In the updated Navigation NED benefits analysis, the 1999 navigation-related passengers on the Missouri River totaled 75,833. These passengers were on the riverboat casino vessels, Argosy V, Kanesville Queen, and Ameristar; the river tour boats Belle of Bellevue, Spirit of Brownville, and Spirit of St. Joseph; and the excursion vessel River Explorer. This information is included in the navigation economic analysis for the FEIS for the Missouri River Master Water Control Manual Review and Update.

Nav-44

The CWCP is normally an 8-month navigation season from April 1 to December1 at the mouth. During some years when there is extra water in storage in the lakes, the navigation season can be extended up to 10 extra days. During long-term droughts, the CWCP first reduces the service flows from full service down to minimum service. As the drought gets worse, the CWCP calls for shortening the navigation season. The other alternatives, MCP and the GP options, all have the 8-month navigation season during normal years plus the 10-day extension if extra water is available. During droughts, however, these plans differ. They immediately change navigation service levels to intermediate and shorten the navigation season approximately 4 weeks. All the plans in Chapter 7 shorten the navigation season, but only during a drought.

Nav-45

There are six off-channel marinas with harbors on the Missouri River below Gavins Point Dam, all between Sioux City, Iowa and Bellevue, Nebraska. These marinas have 1,350 boat slips. Besides those tied up to these marinas during the summer, hundreds of other boats use these marinas. These marinas support powerboats of all styles and dimensions. Fishing boats sometimes use the marina facilities, but public ramps are available for them throughout the entire river. Most all of the Missouri River boat ramps are built to launch boats safely, relying on commercial navigation support flows. These ramps would be challenging to use by all except for the smallest fishing boats during the lower-water period of the two GP options with a 21-kcfs summer low flow period.

During these split-season periods, the marina operators are reporting that they would likely have to shut down operations. Most do marginal dredging just to get by throughout the navigation season. Over dredging is always required and is usually followed with more sediment deposition and the prospect of more dredging. Marina operators would have to dredge an additional 2.5 to 3 feet for them to operate. Most report that their boat ramps would have to be either modified or abandoned and relocated. All report that they operate on thin margins, and the prospect of the additional dredging and infrastructure modifications would cause financial stress or closure.

Nav-46

Power boaters are worried about access and the risk of damage to their vessels during the split season of the GP1521 and GP2021 options. Corps underwater structures, called sills, will be closer to the surface. These 100-foot-long underwater dike extensions are hard to see and many boaters may run over them, potentially knocking out their lower units.

The switch to other types of recreation boats that would fill the powerboat void may not happen. The river velocity for a current of 31 kcfs at Sioux City is nearly identical to that at 21 kcfs. Non-powered vessels such as canoes and kayaks will have the same problems of swift current during navigation flow and split-season flows. Only the most physically capable persons would be taking advantage of this mode of recreation. It is possible that more fishing recreation would occur, but many of the power boating public have indicated that they would leave the river.

Nav-47

Under the CWCP there are two distinct drought operational considerations. As the basin enters a drought, based on reservoir storage on the March 15 and the July 1 checks, the downstream navigation service level (flow) is reduced from full service to intermediate service to minimum service. These storage checks for March 15 range from 54.5 to 46.0 million acre-feet and the July 1 checks range from 59.0 to 50.5 million acre-feet. The

reduced service levels change the ultimate draft for barges from 8.5 feet at full service to 7.5 feet at minimum service. When the reservoir storage reduces to 41 million acre-feet or less on the July 1 check, the season length is reduced gradually down to a 5.5-month navigation season.

The MCP navigation criteria consist of navigation trigger points (storage levels) of 54.5 MAF of water in storage on March 15 and 59.0 on July 1. If the amount of water in storage were at or below those levels on those dates, navigation service would be cut from the full service level and an 8-month season. Instead, an intermediate service level 3 kcfs less than full service (and 3 kcfs more than minimum service) and a season length of 7.1 months (7 months and 3 days) would be followed in that year. A second navigation criterion would be checked on July 1. If there were no storage gain between March 15 and July 1, navigation support releases would be further cut to minimum service (6 kcfs less than full service). This minimum service level would be provided for the remainder of that 7.1-month season and for the period from April 1 through August 20 of the next season.

The GP options operate the same as the MCP, with the exception that during the low summer flow period the service levels are at minimum service for the GP1528 and GP2028 options, and (at 25/21 variable release split season) for the GP1521 and GP2021 options.

Even with the conservation measures in the MCP, navigation benefits increase slightly. The GP options seriously affect navigation economics, and this fact was considered in the selection of a PA.

Nav-48

For the GP options, only GP1528 and GP2028 provide minimum service navigation support flows. Navigation can operate during minimum service flows at barge drafts of 7.5 feet.

Nav-49

Your information is appreciated and was considered as the Corps identified its PA for the FEIS.

Nav-50

A detailed Regional Economic Development (RED) analysis was not completed for the RDEIS or FEIS. An updated navigation economic analysis was completed for the FEIS that was based on 1999 navigation movements.

Nav-51

Thank you for sharing your opinion.

Nav-52

The Fort Peck full test will have no impacts on the commercial navigation industry.

Nav-53

The following summarizes the value of navigation to South Dakota.

FERTILIZER

According to the manager of the Big Sioux Terminal in Sioux City, Iowa, two-thirds of the fertilizer through the terminal moves into South Dakota and penetrates as far as Pierre, Murdo, and Chamberlain.

Beyond the price advantage of fertilizer brought by barge, barges are floating warehouses. There is limited rail and truck capacity to bring fertilizer to southeastern South Dakota from points of origin. Barges provide the warehousing capacity and efficiency to guarantee adequate and quick delivery of the needed fertilizer to the farmers during the planting season.

CORN

Corn is grown in eastern South Dakota. Barged fertilizer helps make that happen in the southeastern part of the State. South Dakota corn generally does not go by barge on the Missouri River. During 2000, it was railed to 18 different States, with the majority of tonnage going to export via Seattle, Washington, where it was loaded onto ships to the Far East. Some tonnage went to the Great Lakes, and a little found its way to the Gulf.

SOYBEANS

Soybeans are grown in eastern South Dakota. The soybeans that are railed go to direct export, such as through the North Pacific (40 percent of the South Dakota soybeans in 2000 were railed to the North Pacific for export via ship), or processing plants throughout the region. About 8 percent of the railed soybeans were delivered to Sergeant Bluff,

Iowa, where soybeans are processed into meal and loaded into Missouri River barges for export.

ASPHALT

Asphalt comes into the southeastern region of South Dakota via Jebro, Inc at Sioux City by rail or barge along the Missouri River corridor or by rail from Montana to Sioux Falls, South Dakota (Corson). The price for asphalt according to the Jebro manager is $2 to $3 per ton cheaper by rail to Sioux City even though there are three rail transfers on the Sioux City leg compared to two transfers on the Sioux Falls leg. This demonstrates a price advantage for this rail movement due to competition from barging.

Asphalt from Jebro, Inc penetrates in a 100-mile radius. This penetration is important to the State of South Dakota highway departments. The Jebro manager mentioned that Jebro delivered asphalt as far as Sturgis, South Dakota on several occasions.

Storage at Jebro is limited. Any shipping delays especially during the early construction season will cause it to not meet contract obligations for delivery to contractors or State agencies such as South Dakota.

Nav-54

The Missouri River Bank Stabilization and Navigation Project is a dual mission project. The project, as authorized by Congress, stabilizes the alignment of the channel so that it will not meander away from communities that rely on the river. Navigation was the other mission. The dikes and revetments that control the river for these missions can be split out as bank stabilization structures or navigation structures. The Corps did an economic analysis in 1997 of the Federal cost of the navigation portion of the project. This included the construction of the project, the operation and maintenance of the project and the navigation allocation of the construction and operation and maintenance of the six mainstem dams. The total navigation costs from 1912 to 1997 are $610,380,386. There is no detailed update to 2003 at this time.

Nav -55

Fort Peck Dam was authorized differently from the five downstream mainstem dams. The project was originally authorized by House Document 238, 73rd Congress PL 74-409. The authorization provided for the construction of an earthen dam, as recommended by the Chief of Engineers on September 30, 1933, and it was approved by Executive Order by the President and included in Public Works Administration program on October 14, 1933, as authorized by the National Industrial Recovery Act of 1933 and adapted by the Rivers and Harbors Act of 1935 (PL 74-409). Power authority was added on May 18, 1938 by PL 75-529. On December 22, 1944 the project was modified to authorize multiple purpose operation. The Water Resources Development Act of 1986 modified authorization to include recreation as a project purpose.

Nav-56

The navigation industry of the United States has often been characterized as being highly subsidized. In reality, the Federal government built the inland waterway system and invited investors to use the system. The inland waterway is a direct link to foreign trade, which provides low-cost transportation for producers to compete in the world market. The railroad industry was provided the lands along their routes. The recreation industry in Montana, North Dakota, and South Dakota was provided the lakes created by the six mainstem Missouri River Dams without user fees or taxes. The navigation industry pays a user tax through taxation of diesel fuel of $0.20 per gallon, with the revenue to be used to improve existing or build new navigation improvements on the inland waterway system.

Nav-57

The navigation industry requires a stable and reliable navigation channel to operate efficiently and effectively. To accomplish this, the Corps changed the Missouri River from a meandering river to a stable river by the construction of dike and revetment structures along a series of reverse bends from Sioux City to the mouth. To provide the authorized navigation channel, certain minimum flows are necessary. Flows less than minimum service flows will greatly hamper or completely stop the navigation industry from using the river. The navigation industry is much more interested in habitat creation for the very reason that flows are so important to their industry.

Nav-58

From July 3, 2002 to August 14, 2002, the Corps could not increase releases from Gavins Point Dam to support downstream target (minimum river flows at key river stations) locations. The eggs and chicks of the endangered least tern and threatened piping plovers that nested on islands downstream of Fort Randall and Gavins Point Dams were not allowed by the USFWS to be moved, relocated, or taken to the Corps' Captive Rearing Facility (Bird House). As a result, the Corps missed the minimum navigation targets from Nebraska City to the mouth. This resulted in half of the towboats leaving the river by mid-July. Blaske Marine took one of two towboats off the river for use on the Illinois on July 12. MEMCO, with two Missouri River towboats, took one towboat off the river on July 18 and the second on July 23, not to return until navigation service flows returned. Three other towing companies, Blaske Marine, Magnolia, and Jefferson River Terminal remained in the river operating under extreme conditions. They lightened their barges to minimum reasonable loads and lightened their towboats with less fuel to continue operation. Jefferson River Terminal tied up its towboats on August 8 until adequate river flows returned. Magnolia eventually left the river on August 10 after the river became impassible at river mile 51. Blaske Marine was the only company left operating. This company had the only super light draft towboat, 6.5-foot draft, and remained in the river. On August15, the tow grounded at river mile 51 and had to unload a grounded and damaged barge before proceeding downstream. This experience demonstrated that navigation below minimum service would result in an unusable river conditions for the towing industry.

Nav-59

To date, the Missouri River has not been operated for the Mississippi River. It would take additional Congressional authorization for the Corps to operate normally for Mississippi River concerns. During the 1988 low-water period along the Mississippi River, no additional flows were released from Gavins Point Dam to support the bottleneck reach between the Missouri River confluence and Cairo, Illinois. It was the normal operational flows that the Mississippi River received from the Missouri River that provided the needed flows. The Corps, however, understands the importance of the Missouri River to the Mississippi River and has conducted several studies to understand the impacts any flow changes will have. Results of economic studies were included in the RDEIS and FEIS. In general, the impacts are not significant in light of the annual benefits Mississippi River navigation provides to the nation.

Nav-60

Coal is not shipped on the Missouri River; however, from Tennessee Valley Authority's compelled rate update for 1999 movements, coal has a water compelled rate benefit of $31.5 million. This is because along the Missouri River corridor the price of coal is held down as coal customers have the alternative of the river. The Missouri River corridor is 10 miles wide from Sioux City to the mouth. Coal delivered to powerplants outside the corridor is priced higher.

Nav-61

Although agricultural products are very important to the Missouri River, your comment did not consider cement and asphalt. Cement will be a growing commodity on the Missouri River. The high value asphalt will hold its own and may even increase in the foreseeable future.

Nav-62

Initiation of drought conservation measures on July 1 when system storage is less than 59 MAF under the MCP (and GP options) may seem severe; however, this is the same storage level that drought conservation measures are initiated under the CWCP. Admittedly, the initial measures of the CWCP are not as severe as under the MCP; however, more severe measures are needed to provide the level of drought conservation desired in the extreme droughts. If a drought does not persist into a second year, the measures may have been unwarranted, but it is difficult to tell if a drought year will stand alone or mark the beginning of a multi-year drought.

Nav-63

The navigation target at Kansas City (and Nebraska City) is not always met under the flat release simulation runs. A flat release of 34.5 kcfs was modeled because it represents the long-term average release for the summer months. Because 34.5 kcfs is the long-term average, there will be times when it is not enough to meet the targets. For example, the August 2002 release requirement to

meet minimum service (6 kcfs less than full service) was 31.5 kcfs, which is 3 kcfs higher than modeled for minimum service. Use of a long-term average is one weakness of modeling the flat release alternatives. Also, in some years, Kansas River water would also be available to make up for some, if not all, of the shortfall at Kansas City.

NAv-64

The methodology for making the depletion runs was consistently applied to all alternatives for which future depletions were evaluated. The first depletion runs were conducted on the CWCP, which had the minimum allowable pool at the permanent pool of 18.1 MAF. All of the other alternatives had a minimum allowable pool for the base run (no future depletion) that was well above the permanent pool. The decision selected at the time the depletion runs were made was to raise the navigation preclude values to ensure that the minimum pool of the base run was not violated, just like the CWCP plan run was conducted. Other alternatives are potentially available, and they may be considered in the future, as depletions become a reality. This decision will likely be coordinated with considerable input from basin interests with a diverse background and area of interest.

Nav-65

The NED benefits analysis is used to help decide on long-term investing. Consistent with all of the basic economic analyses of the project purposes, a NED evaluation was conducted. The NED number is basically the national benefit navigation has over other competing transportation modes. The average annual NED benefit for navigation shown in the RDEIS for the CWCP is $6.97 million. An update to the NED analysis was completed in 2002 based on 1999 navigation movements on the Missouri River for use in the FEIS. This update shows the average annual NED benefit for the CWCP is $8.8 million.

Regional economic development benefits are those affecting a small region much smaller than represented by the total Missouri River basin. It would look at the economic impacts of, in this case, navigation in terms of local economic impacts. For example, if a terminal were to close, jobs may be lost that would have roll-over effects in the community or surrounding counties. This type of analysis identifies some areas of economic interest that are not picked up in a NED analysis. The Corps did not prepare a RED analysis for navigation. Another example of a regional benefit would be the compelled rates benefits analysis. This analysis looks at shipper savings of moving commodities by railroads when there is and is not competition provided by navigation.

Nav-66

Perhaps, you meant low water levels in the summer.

Nav-67

The 1944 Flood Control Act, sometimes called the Pick/Sloan Plan, focused on the construction of the Mainstem Reservoir System as having multiple purposes, with the primary purposes then identified as flood control, navigation, irrigation, and hydroelectric power. The phrases “and other uses” or “and other purposes” were used to indicate there would be additional purposes to be included in the multiple purposes of the Mainstem Reservoir System. It is reasonable to conclude that those “other purposes” and “other uses” were those then named in the final paragraph of the portion signed by the Corps of Engineers Chief and Bureau of Reclamation Commissioner. It States that the unified plan for the entire development of the Missouri River basin includes “maximum benefits for flood control, irrigation, navigation, power, domestic, and sanitary purposes, wildlife, and recreation,” presented in that order. Although authorized in 1944, funding and construction did not begin until the mid-1950s. Fort Peck Dam, authorized in April of 1933 and completed in 1940, was only authorized for flood control and navigation. It was later authorized to include other purposes. The 2003 United States Court of Appeals for the 8th Circuit decision stated that, for the Mainstem Reservoir System, flood control and navigation are dominant functions to the other multiple uses.

Nav-68

It is true that a primary vector for transporting the zebra mussel is by towboat and barges. To date there have been only two confirmed sightings on the Missouri River. The first was on April 12, 1999 at the Neal Energy Center, Neal Four Station about 15 miles south of Sioux City. One attached mussel was on the intake structure traveling screen and it was not alive. The second was on May 16, 2001 at the Quindaro Power Station in Kansas City, Missouri. Mussels were found in the intake filter

basket and in the sediment within the intake. All were dead. Both incidents probably happened due to barge transport. There is an active terminal just upstream of the Neal Energy Center. At the Quindaro Power Station, they contract for a deflection barge each fall. This barge originates from the Mississippi River. The Missouri River's physical nature seems to be a barrier to successful settlements. The velocity is high, and the water is turbid. Most important, research States that impoundments are the greatest concern. So far the upstream lakes have not become infested. If they were, the lakes would produce considerable infestation opportunities to the Lower River. It is most likely that infestation of the upper lakes will come via recreation boats that originated from infested lakes.

Nav-69

Although it may seem to you that the Corps is focusing its efforts only on navigation and recreation concerning the EIS, the Corps is fully engaged in an evaluation of all economic and environmental purposes.

Nav-70

The existing towboat and barge fleet on the Missouri River operates in a channel that ranges from 9 feet deep by 300 feet wide to 8 feet deep by 200 feet wide. During severe drought conditions, navigation is supported at minimum service by base flows from Gavins Point Dam. The minimum service channel is 8 feet deep by 200 feet wide. The Mississippi River and the Missouri River both have the same authorized 9-foot-deep by 300-foot-wide navigation channel. The towboats and barges that currently use the Missouri River also use the Mississippi River. All of the barges used on the Missouri River eventually are used on the lock system of the Mississippi. Any barge design would have to match all of the inland fleet infrastructure. It makes business sense to invest and construct the Missouri River towboats and barges to match the Mississippi River fleet. If you have specialized towboats and barges only for the Missouri River and you go out of business, there will be few buyers. The cost of constructing specialized towboats and barges to operate at the very low river conditions on the Missouri River has been considered and rejected by the industry. When investment decisions are made, generally those making them look at a 20- to 30-year life or more. As far as they are concerned, with the present unreliable future created by recent legislation, they will not invest in the short run to light draft towboats or barges.

Nav-71

The information you have provided is appreciated.

Nav-72

The Coast Guard is the agency that has the oversight for safety concerns on the inland waterway system. You may contact the Marine Safety Office in St. Louis, Missouri at 314-539-3091.

Nav-73

Presently, the Corps supports target flows for navigation at Sioux City, Omaha, Nebraska City, and Kansas City. The nature of the Missouri River is that, for any given flow, the stage can change. For example for the same flow there is a river stage shift of 1 foot in the late spring and early fall as the riverbed forms change triggered by water temperature. In summer, the river stage is, therefore, 1 foot higher for the same flow. To maintain the authorized navigation channel flow is the most important factor, not stage. Presently, for full service navigation of 31kcfs at Omaha, the stage is about 15.5 feet. To target Omaha at a stage of 16 feet would often require the additional release of water that is not necessary for navigation or other purposes. The Corps rarely operates with the target at Omaha. It usually receives more flow than required as we target Sioux City, Nebraska City, or Kansas City.

Nav-74

Waterways transportation is the safest mode of commercial freight transportation, with the least number of accidents of any mode. The Coast Guard – American Waterway Operators Safety Partnership has launched more than 25 quality action teams that are improving safety and training throughout the industry's operations. This close relationship has resulted in a dramatic 82 percent reduction in oil spills since 1994. The following graph (Figure D1-2).

For a picture of the complexity of oil spills, the National Academy of Sciences report *Oil in the Sea III: Inputs, Fates, and Effects* presents appropriate information. The report is available on the National

Academy of Science Web site, www.nap.edu, by typing in the title of the report. The report is available as a read-only from the site or by ordering a hard copy. The report states that 9,100 tons of petroleum inputted into North American waters by petroleum transportation represents about 9 percent of the total by anthropogenic activities. Of real interest is the great quantity of petroleum that is inputted to North American waters by natural processes.

NAV-75

The Missouri River Bank Stabilization and Navigation Project was completed in September 1980, and the authorized navigation channel is now fully maintained by the dike and revetment system. The Corps' last maintenance dredging using Corps Missouri River dredges was completed in 1979. The Corps has had three 36-inch dustpan dredges available for use on the river since the 1930s. All the big dredges were later sold or excessed. The only dredging that is accomplished now is emergency dredging. The last emergency dredging was accomplished in May 2003.

During construction of the project, dredging was only accomplished in the river channel or to assist in the construction of pilot cannels to force a new river alignment. There was never any dredging or excavation to clear the floodway. Because maintenance dredging is rarely required, there is no connection between the lack of maintenance dredging and the siltation that is deposited on the overbank due to flooding.

Nav-76

Based on a look at who would be potentially affected, more than just buying out the companies that transport commodities on the Missouri River would require some form of payment. There are the 87 terminals with substantial river investment. There are the farmers that may have to be subsidized for the decreased price paid for corn and soybean along the river corridor. Subsidies would also have to be paid to the power companies along the river. The coal they buy, which is shipped in by rail and not on the river, is cheaper because of the river, by $31.5 million per year.

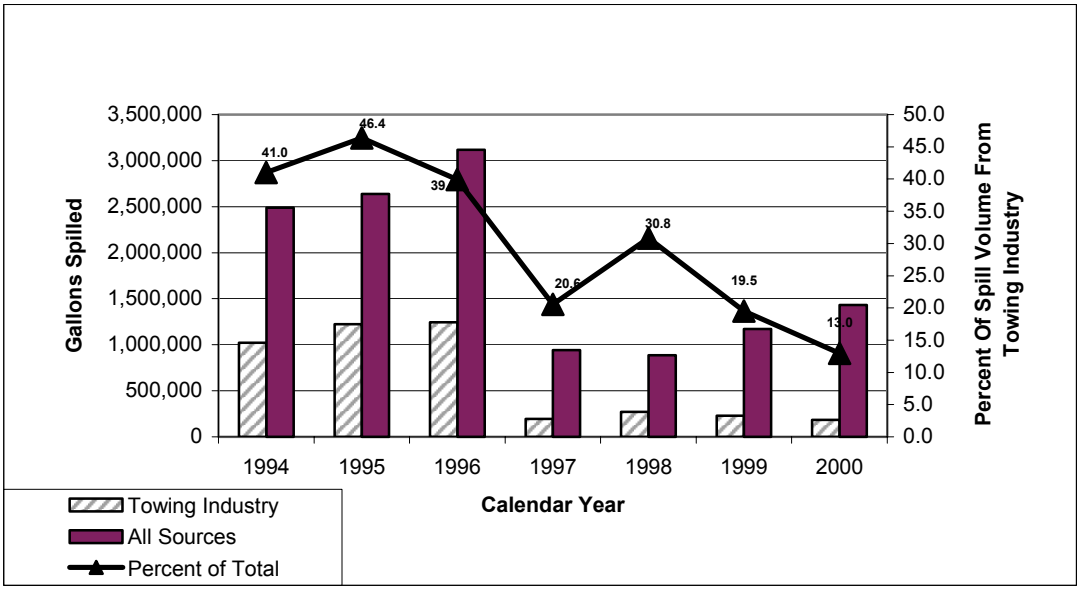


Figure D1-2. Towing industry oil spills versus all sources of spills.

Nav-77

The Corps' last maintenance dredging was completed in 1979. The Missouri River Bank Stabilization and Navigation Project was completed in September 1980 and the channel was fully maintained by the dike and revetment system. All of the big dredges were later sold. The only dredging that is accomplished now is emergency dredging. The last emergency dredging was accomplished in May 2003. To date there has been no discovery of contaminated sediments in the Missouri River within the navigation channel from Sioux City, Iowa to the mouth. Because there is virtually no dredging accomplished in the Missouri River by the Corps, except the occasional emergency dredging, there is little chance in stirring up possible contaminant sediments that could be transported to the Mississippi River.

Also, four major sand and gravel dredging companies mine materials from the Missouri River. They dredge from just north of St. Joseph, Missouri to the mouth. They all have Section 10/404 permits and are required to monitor their production for quality. The discovery of contaminated sediments has not been brought to the attention of the Corps or other Federal, State or local offices responsible for receiving such reports.

Nav-78

Because of concerns regarding impacts of Missouri River operations on the Mississippi River, an analysis was conducted to determine potential impacts of the alternatives on the Mississippi River. For example consider the MCP alternative.

Redistributing the annual Gavins Point Dam releases under the MCP lowers costs (positive benefit) by about $6.1 million relative to those for the CWCP. When viewed in light of the total benefits for Mississippi River navigation (in the billions of dollars), this impact is insignificant. For Missouri River navigation, the 2002 update NED benefits analysis shows for the CWCP approximately $8.8 million in average annual navigation benefits. The same analysis shows that the GP options provide approximately $5.39 million annually, which is 39 percent less than for the CWCP. This is a major impact to Missouri River navigation. If the gain in Mississippi River NED for the GP options is compared to the NED loss for Missouri River navigation, the result is a net increase of $3.79 million. This comparison, although showing a positive result, does not explain the very negative effects to Missouri River navigation in relationship to the insignificant gains in Mississippi River navigation benefits.

Nav-79

Thank you for your statement.

Nav-80

Other than the loss of water that could be conserved for future navigation, the spring rise does offer navigation a benefit. The greater-than-normal release can help clear the river of stubborn shoals that create navigation challenges early in the navigation season. Also, it is possible that the navigator or shipper can load barges for the down bound trip at higher drafts to take advantage of the potentially deeper channel conditions.

4.16 RECREATION RESPONSES

RE-1

The Corps agrees with the comment. There is a misperception that when lake levels are low, access to the lake is not available. In fact, all of the Missouri River mainstem lakes have extended boat ramps that accommodate low lake levels.

RE-2

Low water levels in Fort Peck Lake can affect boat access to the lake; however, seven boat ramps have been extended and boaters do have access to the lake during low water periods. Release changes from Fort Peck Dam have not been included in the PA.

RE-3

The Corps agrees that the recreational industry alone could never provide the economic benefits to justify the construction of the mainstem dams. However, recreation is a Congressionally authorized project purpose of the Mainstem Reservoir System.

RE-4

Lower summer releases from Gavins Point Dam have not been included in the PA.

RE-5

See Response RE-4.

RE-6

See Response RE-4.

RE-7

We have noted that the actual average annual recreation benefits may be understated. It is important to understand that the estimated economic benefits are used for comparative purposes only and do not represent actual economic returns under the different alternatives.

RE-8

Low water levels in the upper basin lakes have had negative impacts on recreational use; however, recreation use has not been eliminated. With the construction of 37 low-water-level boat ramps, recreation users have access to the upper three lakes during low water periods.

RE-9

The RDEIS and FEIS describe the methodology for determining National Economic Development benefits to recreation. Visitation computations are based on visitation surveys completed in the early 1990s. For a more detailed methodology, Volume 6C: Economic Studies (Recreation Economics) should be reviewed. The Tribal recreation benefit was derived by using the same methodology used for computation of non-Tribal recreation benefits.

RE-10

All of the alternatives analyzed in detail in Chapter 7 of the RDEIS result in negative impacts to recreation on the Lower River when compared to the CWCP. The GP2021 option, which included the lower summer releases from Gavins Point Dam included in the USFWS November 2000 RPA, had the greatest impact on Lower River recreation. Lower summer releases from Gavins Point Dam have not been included in the PA. The PA results in slightly less benefits to Lower River recreation than the CWCP (0.3 percent). This is due to the inclusion of more stringent drought conservation measures that keep the upper three lakes slightly higher in droughts than under the CWCP.

RE-11

Your comment is noted. Under the CWCP, an $84.69 million recreation industry has developed. The $84.69 million figure includes all lakes and river reaches. Under the PA, an increase of $2.7 million to recreation benefits results from the inclusion of more stringent drought conservation measures that keep the lakes slightly higher during droughts when compared to the CWCP. The PA results in a slight negative impact to Lower River recreation. The Corps' recreational benefits were not limited to fishing; other recreational activities, such as boating, were included within the economic analysis.

RE-12

Your comment is noted. Recreation is a large economic benefit of the mainstem lakes. Under the CWCP, the lake levels fluctuate in order to meet all

of the authorized purposes of the 1944 Flood Control Act. These changing water levels are normal operational activities that take place in a Mainstem Reservoir System. The Corps and State Parks have many low water boat ramps that provide access to the lakes during low water periods. Under the PA, during a drought the conservation of water would start earlier than under the current Master Water Control Manual.

RE-13

During low water conditions, safe boating is always an issue, with tree stumps and sandbars being a hazard.

RE-14

Under the CWCP, which has fluctuating water levels, recreation has developed into an $84.69 million dollar industry. This figure includes recreation benefits for all of the lakes and river reaches. The mainstem lakes will continue to have fluctuating water levels. Only two Missouri River mainstem lakes have fairly stable pools, and they are Gavins Point and Big Bend.

RE-15

The low-flow cycle has several contributing factors. The first factor is drought, which produces low flows of less than 18,000 cubic feet per second in the Bismarck reach. The second factor contributing to low flows in the summer is for the threatened and endangered species (interior least tern and piping plover). The third factor is the drought conservation measures, which would keep the lakes higher during drought periods. More stringent drought conservation measures would result in lower releases from the lakes. The lower releases from the lakes may expose sandbars and some suggest the sandbars would enhance the river recreation diversity and participation. The study findings indicate that the PA will result in a slight reduction of recreation benefits in the Garrison to Oahe reach as compared to the CWCP.

RE-16

Recreation is a large economic benefit of the Missouri River lakes. Under the CWCP, the lakes fluctuate in order to meet all of the authorized purposes (recreation, flood control, hydropower, water supply, water quality, navigation, irrigation, fish and wildlife) of the 1944 Flood Control Act. These changing water levels are normal operational activities that take place in a mainstem reservoir system. The Corps has also operated the lakes for the threatened and endangered species (interior least tern and piping plover).

RE-17

The Missouri River mainstem lakes have boat ramps that have been extended. These extensions will accommodate low lake levels. In some cases, boat ramps have been relocated to provide access during low lake levels.

RE-18

Impacts to river recreation visitation on the wild river below Fort Peck Dam in Montana have not been evaluated. The 130 miles of the Wild and Scenic corridor near Fort Benton had 50,000 visitor days recorded in 1998. The Montana Department of Tourism stated that total nonresident visitation in the year 2000 was 9 million for the entire State of Montana.

RE-19

The Corps made a determination to use the NED benefit analysis as the standard of measurement for each economic purpose. The NED is a standard national economic analysis that uses established policies and procedures accepted by economists. The NED results were used to determine the relative differences between the CWCP and alternatives evaluated, including the PA. Regional analyses vary, and are difficult to measure from one area to another area, as data collection and analysis may differ, and they are subject to differing interpretations.

RE-20

Visitation records at undeveloped sites are collected by the Corps and are a part of the total visitation count of the Missouri River mainstem lakes. Fishing tournaments start from within developed recreation areas and are included within the visitation count of the area. The Lewis and Clark Bicentennial will be a 3-year commemoration and will affect recreation on the Missouri River for a 3-year period. The economic benefits for the Lewis and Clark commemoration have not yet been determined by the States.

RE-21

Recreation is not the determining factor for holding or releasing water from the Mainstem Reservoir System. Rather, the Corps strives to meets all Congressionally authorized project purposes including flood control, navigation, recreation, fish and wildlife, water quality, water supply, hydropower, and irrigation. Low flows are usually attributable to drought, or the protection of the threatened or endangered species (interior least tern and piping plover) that are using the Missouri River.

RE-22

The alternatives evaluated in the RDEIS and FEIS have more stringent drought conservation measures that the CWCP. This means that during extended drought periods, the navigation service level would be reduced earlier under these alternatives than it is under the CWCP. This would allow for more water to be stored in the upper lakes. This would benefit recreation on the upper three lakes.

RE-23

Lower summer release from Gavins Point Dam included in the GP1521 or GP2021 options have not been included in the PA. Under those plans, the NP Dodge Park Marina docks would not have had the water necessary for them to be operational. Similarly, the lower summer release included in the GP1528 and the GP2028 options have not been included in the PA. Under these alternatives, minimum service to downstream uses, including recreation would have been provided and the NP Dodge Park Marina docks should have had enough water to be operational.

RE-24

Your comment is noted. Under the CWCP, benefits to recreation are $84.69 million. This figure includes recreation benefits at all of the mainstem lakes and river reaches. Under the PA, the increase of $3 million in recreation benefits is achieved at the mainstem lakes, with slightly negative impacts to Lower River recreation.

RE-25

More stringent drought conservation measures included in the alternatives presented in Chapter 7 of the RDEIS increase recreation benefits when compared to the CWCP. While more stringent drought conservation measures have been included in the PA, lower summer release from Gavins Point Dam have not been included in the PA. The more stringent drought conservation measures in the PA increase recreation benefits by 3 percent over the CWCP because lake levels would be slightly higher during droughts.

RE-26

Recreation on the Missouri River lakes provides a large economic benefit to the States in which the lakes are located.

RE-27

Your comments have been considered in the identification of the PA.

RE-28

The Omaha District is developing the Implementation Plan for the USFWS December 2003 Amendment to the November 2000 BiOp. We have forwarded your comment to the Omaha District.

RE-29

The Missouri River generally has a slope of one foot per mile, which makes for a swift current. Recreational boaters in small watercraft, such as canoes, must be extremely careful when using canoes on a major river such as the Missouri River.

RE-30

Wildlife is generally sensitive to human disturbance. Depending upon the particular species needs, some wildlife can successfully transition to other areas while other species decline.

RE-31

Your environmental concerns about the river are noted.

RE-32

Rivers are not static, but are living, dynamic systems. Shifting of channels and the creation of sandbars are natural river processes. Recreationists who use the river must be aware of the dangers

associated with recreational use of the river and follow safety measures.

RE-33

Release changes from Gavins Point Dam, recommended in the USFWS November 2000 RPA to avoid jeopardy, including an increase in spring releases and decrease in summer releases, have not been included in the PA.

RE-34

Release changes from Gavins Point Dam, recommended in the USFWS November 2000 RPA to avoid jeopardy, including an increase in spring releases and decrease in summer releases, have not been included in the PA.

RE-35

Your recreational concerns about the Missouri River are noted.

RE-36

The formation of the Missouri River Recreation Corridor for the improvement of recreation on the Missouri River is noted.

RE-37

Release changes from Gavins Point Dam, recommended in the USFWS November 2000 RPA to avoid jeopardy, including lower summer releases, have not been included in the PA.

RE-38

Release changes from Gavins Point Dam, recommended in the USFWS November 2000 RPA to avoid jeopardy, including an increase in spring releases and decrease in summer releases, have not been included in the PA.

RE-39

Under the Missouri River Bank Stabilization and Navigation Project Fish and Wildlife Mitigation program, lands are being purchased from willing sellers to provide wildlife habitat along the Missouri River in Iowa, Nebraska, Kansas, and Missouri. Where possible, cutoffs and oxbows are being reconnected to the river.

RE-40

Regulation of watercraft on the Missouri River is a State and U. S. Coast Guard responsibility.

RE-41

The Corps and the four Lower Missouri River basin States are currently implementing the Missouri River Bank Stabilization and Navigation Project Fish and Wildlife Mitigation program. The Corps acquires the land and constructs mitigation features, and the States then manage the areas. Availability of public access is determined by the States.

RE-42

The Corps and the four Lower Missouri River basin States are currently implementing the Missouri River Bank Stabilization and Navigation Project Fish and Wildlife Mitigation program. The Corps acquires the land and constructs mitigation features, and the States then manage the areas. Availability of public access is determined by the States.

4.17 TRIBAL RESPONSES

TR-1

The EIS baseline is with the dams in place and the request to perform a thorough analysis of social effects of the construction and operation of the dams on Tribes and other minorities is beyond the scope of this EIS.

TR-2

This comment deals with compliance with EO 12898. Throughout the RDEIS process, the Tribes expressed concerns about the Tribal impacts resulting from the construction of the mainstem dams. Construction of the mainstem dams resulted in the loss of cultural sites, wildlife, medicinal plants, cottonwood bottomland forest, and the changes to Tribal way of life. These issues have been major focal points for all consultation meetings with the basin Tribes. The Study cannot correct the negative impacts of the construction of the mainstem lakes. The RDEIS discusses the environmental and economic impacts to the Tribes, including impacts due to probable increased power rates to Tribal users. The scope of this Study is limited to the elevation of impacts associated with alternative flow management plans for the operation of the Missouri River Mainstem Reservoir System.

TR-3

The request for a separate document to provide additional information to better understand the Corps Missouri River Basin Multi-regional Variable Input-Output Model (MRVIO) is noted. To the extent possible, the Corps has tried to identify impacts to the Tribal resources. In some cases, information is not available. The best that could be done for some of the economic uses and environmental resources was to assume Tribes would be affected similarly to other people occupying similar areas along the same reach of the Mainstem Reservoir System and Lower River.

TR-4

We have noted your request that a comprehensive analysis of socioeconomic trends for the Tribes be performed. This analysis is beyond the scope of the Study.

TR-5

The request for the RDEIS to clarify the disparity between the positive impacts of the project to the economies of the first-tier counties versus the economies of the Tribes is noted. High unemployment on Indian Reservations existed before the Mainstem Reservoir System was in place. During the construction of the dams, the construction companies employed many Tribal members. Since the construction, the Tribes have derived minor employment benefits from the lakes being in place but not to the extent of the non-Indian economies. This disparity appears to be the result of the Tribes' existing infrastructure

TR-6

A comprehensive analysis of socioeconomic trends for the Tribes is beyond the scope of the Study.

TR-7

The Corps is aware of the Council on Environmental Quality Guidance on Environmental Justice and NEPA, and the Corps believes that it has followed the guidance.

TR-8

Your comment is noted. Indian Tribes may exercise water right claims to the Missouri, as described in the Draft Summary of Indian Water Rights as Enunciated by the Mni Sose Intertribal Water Rights Coalition.

TR-9

All lands that have been eroded by the operation of Fort Randall Dam are lands that the U.S. Government had purchased for the operation of the dam. No land currently owned by the Yankton Sioux Tribe is being, or has been, eroded due to the operation of the dam.

TR-10

Impacts to Indian trust assets were carefully considered in the decision- making process and the selection of a PA.

TR-11

We concur that the alternatives presented in the RDEIS have negative impacts to the Tribal and individual allotted lands.

TR-12

The Study does not attempt to define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty, but rather to set up the framework for future relations for protection of Tribal trust resources.

TR-13

Until such time as the Tribes quantify their water right and consumptively withdraw their water from the Mainstem Reservoir System, the water is in the system. As a responsible public entity, the Corps must operate the system to reflect the fact that the water is in the system.

TR-14

The Wind River Tribe in Wyoming and the Montana Tribes have quantified their water rights and are in various stages of receiving the ratification of these rights by the U.S. Congress.

TR-15

Under the MCP and four GP options in Chapters 6 and 7 of the RDEIS and FEIS, the Fort Peck Dam flow changes would have increased releases of 23,000 cubic feet per second for 3 weeks from Fort Peck Dam in the mid-May through June timeframe approximately every third year. However, release changes from Fort Peck Dam have not been included in the PA. The Corps is proposing flow tests from Fort Peck Dam as a component of MRRIP.

TR-16

The 6-month comment period for the RDEIS was not extended to allow the Corps to maintain its approved schedule at that time. In addition, the usual comment period for an EIS is 45 days. A four-fold extension was considered sufficient for the size and complexity of this EIS.

TR-17

The Corps is no longer compiling data for the FEIS for the Missouri River Master Water Control Manual.

TR-18

The Corps holds Government-to-Government consultation with one or more of the Missouri River basin Tribes when the Corps' action may affect those Tribes.

TR-19

The effects of the categories of actions contemplated in this EIS are not anticipated to be borne predominantly by any particular low-income or minority group such that the effects would be considered disproportionately high and adverse with respect to low-income or minority populations.

TR-20

The BiOp is a USFWS document.

TR-21

Government-to-Government consultation on the RDEIS and the mini-test was held on February 13, 2002 with the Fort Peck Tribes at Poplar, Montana.

TR-22

To the extent possible, the Corps has tried to identify impacts to the Tribal resources. However, for some resources, information is not available. The best that could be done was to assume Tribes would be affected similarly to other people occupying similar areas along the Mainstem Reservoir System and Lower River.

TR-23

Your comment is noted and was considered in identification of the PA.

TR-24

The Corps Omaha District has no record of receiving the subject Memorandum of Agreement from the Lower Brule Sioux Tribe.

TR-25

The Corps understands the importance of Title VI funding to the Tribes, but Title VI is outside the scope of the Study. Title VI implementation was authorized separately, and is funded separately from the Missouri River Master Water Control Manual Review and Update.

TR-26

The Corps has offered Government-to-Government consultation to the Oglala Sioux Tribe and met with the Tribe to have Government-to-Government consultation on the EIS for the Missouri River Master Water Control Manual on November 22, 1999. Further, the Oglala Sioux Tribe has participated in several Tribal Summits conducted as a part of the consultation process.

TR-27

On April 29, 2002 at Macy, Nebraska, the Corps and the Omaha Tribe had Government-to-Government consultation on the EIS for the Missouri River Master Water Control Manual. The meeting was also held to establish a working relationship between the Omaha Tribe and the Corps.

TR-28

On July 27-28, 1999 and on August 24, 1999, consultation meetings were held on the EIS for the Missouri River Master Water Control Manual at the Standing Rock Reservation between the Corps and Standing Rock Sioux Tribal representatives.

TR-29

The Wakpala, South Dakota floodplain study was completed by Corps, and it was determined that Lake Oahe was affecting the flooding problem at Wakpala.

TR-30

Lands on the Standing Rock Reservation were purchased by the Federal government under Public Law 85-915, which was signed into law on September 2, 1958 and specified the number of acres to be purchased. The land on the East Bank of the Missouri River was purchased under the 1944 Flood Control Act. Most lands on the East Bank of the Missouri River were appraised as agricultural lands (farm lands) and the majority of the lands on the West Bank of the Missouri River were grazing lands. Farm lands garnered higher appraised values than grazing lands, thus the price difference. Your statement that more land was taken within the Standing Rock Sioux Reservation than on the East Bank is correct. Land on the East Bank from Mobridge, South Dakota north was purchased under the Eisenhower Administration, whose policy was to reduce the amount lands to be taken by a Federal project.

TR-31

The Tribe can file a compensation claim with the Corps for lands eroded by the lake.

TR-32

The funding for the two Federal laws is not dependent upon the completion of the EIS for the Missouri River Master Water Control Manual.

TR-33

A map of water intake sites was provided by the Corps Pierre Real Estate office in February 2002 to Harold Frazier, Vice Chairman of the Cheyenne River Sioux Tribe at the time.

TR-34

The Forest City name was given to this recreation area in 1965 by a naming committee that used geographic features, names of people who had historic significance to the area, and historic events. This area is now managed by the Cheyenne River Sioux Tribe and can be renamed.

TR-35

Tribal property rights are beyond the scope of the EIS for the Missouri River Master Water Control Manual. The Corps recognizes that the Tribes have certain property rights granted by Treaties and Public Law. The EIS has no authority to increase or diminish such property rights.

TR-36

Public Law 85-915 was signed into law on September 2, 1958. This Law provided the United States acquisition title to the entire interest, excluding the interest in oil, gas, and all other minerals of any nature whatsoever, in

approximately 55,993.82 acres of land within the taking area described in the act on the Standing Rock Reservation in South Dakota and North Dakota, in which Indians have a trust or restricted interest. Title to any interest Indians may have in the bed of the Missouri River so far as it is within the boundaries of the Standing Rock Reservation were taken by the United States for the Oahe Project. .

TR-37

When the cemeteries were moved by the contractor, grave markers that were broken were not moved. The Operations Manager for the Oahe Project looked into the Mr. Urban LaCompte headstone matter and found out that a new headstone was placed at Mr. Urban LaCompte's new gravesite. The Oahe staff and Tribal representatives, working together, have tried to recover the old broken head stone, but have been unable to locate it.

TR-38

The U.S. Congress enacted Public Law 102-575 to return lands to the Three Affiliated Tribes; however, Congress rescinded the land-return portion of this Act. It is not within the authority of the Corps to return lands unless they are deemed excess to the project. Under the Joint Tribal Advisory Committee hearings, the Corps agreed to assess the need for lands and determine if there were excess lands that could be returned to the Three Affiliated Tribes. This assessment was completed in August 1988, and 5878.25 acres of land were returned on October 28, 1992.

TR-39

Thirty Tribes within the Missouri River basin were identified and offered the consultation on the EIS for the Missouri River Master Manual. They have expressed many concerns about the operation of the dams on the Missouri River.

TR-40

Your comment that economic benefits to the Missouri River lakes are dependent upon water levels is correct. Under the CWCP the lakes fluctuate to meet all of the authorized purposes of the 1944 Flood Control Act. These changing water levels are normal operational activities that take place in a Mainstem Reservoir System. Under the alternatives to the CWCP in Chapters 6 and 7 of the RDEIS and FEIS and under the PA, the conservation of water would start earlier in a drought than under the CWCP.

TR-41

Recreation provides a large economic benefit of the Missouri River lakes. Under the CWCP, the lakes fluctuate in order to meet all of the purposes (recreation, flood control, water supply, water quality, navigation, irrigation, and fish and wildlife) authorized by the 1944 Flood Control Act. These changing water levels are normal operational activities that must take place in a mainstem reservoir system. The Corps has modified releases for the threatened and endangered species (least interior tern and the piping plover).

TR-42

The Corps does not have a fence-rebuilding program to keep cattle out of the lakes with any of the Tribes in South Dakota.

TR-43

Approximately 152,519 acres of Indian lands were taken under Public Laws 86-437, 79-374, and 80-296 from the Three Affiliated Tribes for the Garrison Project.

TR-44

The Western Area Power Administration (WAPA) determined that the greater the dependence on hydropower for energy, the greater the impact on the purchase power cost to each consumer. The PA does not include operational changes that would increase rates for WAPA's firm power customers.

TR-45

The Omaha District will respond to this request.

TR-46

In the RDEIS, Chapter 7 gives a detailed analysis of the impacts of the five alternatives that were evaluated in detail. Changes from releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam have been proposed by the Corps as a component of MRRIP. The Omaha District will respond to the mini-test and potential full test impacts in separate

environmental analyses conducted under the NEPA. .

TR-47

Lands taken from the individual Tribes were authorized under separate public laws than those lands taken on the East Bank.

TR-48

The Corps has offered Government-to-Government consultation to the Missouri basin Tribes and met with the nine Tribes in Government-to-Government consultation on the revision of the Missouri River Master Water Control Manual.

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4.18 WATER QUALITY RESPONSES

WQ-1

Several commenters requested further information on the effects of Lower River discharges on river temperatures and impacts to thermal discharges from powerplants. At the request of the Nebraska Department of Environmental Quality, the Environmental Protection Agency is currently evaluating thermal mixing zones focused on four powerplants in Nebraska: Cooper Nuclear (NPPD); Fort Calhoun Nuclear (OPPD); North Omaha (OPPD); and Nebraska City (OPPD). Nebraska's water quality standards include both a maximum temperature limit (90 degrees Fahrenheit) and maximum change in temperature (5 degrees Fahrenheit) based on guidance from the Federal Water Pollution Control Agency (1968). The standards also specify a maximum mixing zone length. Existing NPDES permits have limits based on modeling the temperature at which the effluent must be recorded to comply with the State temperature criterion at the edge of the mixing zone downstream. Given the mixing dynamics allowed, permits allowed discharges up to 105 degrees Fahrenheit to comply with a water temperature of 90 degrees Fahrenheit at the edge of the mixing zone. The ongoing study by EPA is designed to look at river flow and the heat load contributions of tributary streams to the Missouri River. The study model is based on a flow of 23.5 kcfs out of Gavins Point Dam, adjusted downstream for tributary flows. The flow record is limited to the last 20 years and the critical low flow is further limited to the June to September period to reflect the same time period as maximum power product/thermal discharge load (i.e., Summer Heat Season). The study's ambient temperature data did not show exceedances of the temperature criterion at the end of the regulatory mixing zone and the resulting models support the use of greater discharge-induced mixing, albeit with the higher ambient water temperature of 87 degrees Fahrenheit. The study suggests that, if the ambient water temperature of the river goes to 88 degrees Fahrenheit under low flows, there will be exceedances of the temperature criteria.

WQ-2

The Corps conducted detailed analysis of lower releases from Gavins Point Dam on several water quality parameters and published those results as Volume 3B: Low Flow Studies, Appendix B, Water Quality Impacts, Missouri River Master Water Control Manual Review and Update, July 1994. This analysis included summer flow releases lower than the GP1521 option. The overall conclusion of that study was that reducing flows in the Missouri River affected water temperature and water quality constituents, but the concentrations of all constituents were within the standards for State limits.

WQ-3

There are several factors that influence the mainstem Missouri River waster temperatures. These include air temperature, solar radiation, amount of flow, thermal plant releases, and water temperatures of Tributaries and other runoff. While the Corps attempts to provide releases to meet downstream uses, there is no guarantee that the releases will be provided at all times. It is beyond the control of the Corps to ensure that water temperatures not exceed 90 degrees Fahrenheit.

WQ-4

The Corps understands that the chemical costs for treating hardness of the Missouri River water depends upon the percentage of river flow at the intake from Gavins Point Dam versus the tributaries. The percentage of flow from Gavins Point Dam will vary over the year due to the uncontrolled runoff from the tributaries. The Corps recognizes that changes in the percentage of river flow from Gavins Point Dam affect the treatment cost at Council Bluff Water Works.

WQ-5

Contaminant concentrations from tributary runoff are not within the control of Corps operation on the Missouri River Mainstem Reservoir System.

WQ-6

Each State is responsible for establishing its respective State standards.

WQ-7

No response is required.

WQ-8

Data are available from the USGS for its sampling sites at www.usgs.gov

WQ-9

The Corps did not mean to imply that data do not exist concerning water quality conditions in the lakes. The limited data do support the conclusions.

WQ-10

The Corps recognizes that algal blooms of varying sizes do occur in Lake Sakakawea at different locations in any given year.

WQ-11

The Corps agrees with the observation.

WQ-12

The effects of river fluctuations on water quality in water supply wells would depend on a variety of factors. The only factor that is within the influence of the Corps operations is the effect on the water quality of the river. The Corps considered the effects of the alternatives on water quality of the river. The higher river releases in the spring under the various alternatives are within the range of flows that have historically occurred under the CWCP. An analysis of low summer flows on river water quality was also conducted and reported in Volume 3B: Low Flow Studies, Appendix B, Water Quality Impacts, Missouri River Master Water Control Manual Review and Update, July 1994. This analysis included summer flow releases lower than the GP1521 option. The overall conclusion of that study was that reducing flows in the Missouri River affected water temperature and water quality constituents, but the concentrations of all constituents were within the standards for State limits.

WQ-13

No response is required.

WQ-14

The effects of the alternatives on elevation of Lake Sakakawea and resulting impacts on water quality, cool water fishery, and sediment re-suspension were analyzed in the RDEIS. Figures 7.2-4, 7.2-5, and 7.2-6 estimate the number of days Lake Sakakawea is below elevation 1,825 for all alternatives for the 1930 to1941, 1954 to1961, and 1987 to1993 droughts. For each alternative, the number of days below elevation 1,825 decreased when compared to the CWCP. With higher lake elevations, this would have a positive effect on water quality in Lake Sakakawea. The periods selected for presentation in the RDEIS and FEIS were the three major drought periods, which are the only times during the period of analysis that there was any likelihood of violating the water quality standards relating to low lake levels.

WQ-15

The Corps is participating with the State of Montana Department of Environmental Quality, EPA, and other stakeholders in the Total Maximum Daily Load meetings for the reach below Fort Peck Dam. The Corps is also coordinating a mini-test at Fort Peck Dam for a spillway release. Information being collected as part of the evaluation of spillway releases for pallid sturgeon will be provided to the parties in this total maximum daily load (TMDL). The Corps will consider the results of this process when the TMDL analysis is completed.

WQ-16

Specific impacts to the water quality in Fort Peck Lake and the reach below Fort Peck Dam are discussed in Section 5.4, Water Quality.

WQ-17

There are minimum flow objectives identified for different reaches of the Kansas River. The Corps operates certain Kansas River projects in an attempt to meet those objectives. No changes are proposed for Corps projects in the Kansas River basin in this EIS; therefore, there would be no change to existing water quality conditions.

WQ-18

The only ongoing TMDL analysis associated with the operation of Missouri River Mainstem Reservoir System operation is the TMDL analysis below Fort Peck Dam.

WQ-19

The Corps will work with the appropriate States and EPA to address impaired water bodies that do not meet State standards or beneficial uses through the TMDL process. Operation of the dams may be one of many influences on the beneficial uses of the river and lakes, and the TMDL process is the appropriate one to identify all factors and develop

plans to improve water quality. The only ongoing TMDL analysis associated with Mainstem Reservoir System operations is the one below Fort Peck Dam. The Corps is participating with the State of Montana Department of Environmental Quality, EPA, and other stakeholders in the TMDL meetings for the reach below Fort Peck Dam. The Corps is also coordinating a mini-test at Fort Peck Dam for a spillway release. Information being collected as part of the evaluation of spillway releases for pallid sturgeon will be provided to the parties in this TMDL. The Corps will consider the results of this process when the TMDL is completed.

WQ-20

We concur. The Clean Water Act (CWA) sets national goals and policies to eliminate discharge of water pollutants into navigable water, to regulate discharge of toxic pollutants, and to prohibit discharge of pollutants from point sources without permits. The CWA also authorizes EPA to establish water quality criteria that are used by States to establish specific water quality standards.

The Corps does not consider releases of waters from its dams as point sources of discharge, but does everything practicable to meet State water quality standards. The FEIS identifies the beneficial uses and State water quality standard concerns by river reach. The Corps will work with the EPA and the States to address these impaired water bodies through the TMDL process.

WQ-21

The information in Section 7.2.3 was used to identify the positive effect of all alternatives on the water quality of Lake Sakakawea discussed in Table 7.4.1, water quality effects of the alternatives on the Missouri River mainstem lakes. The Corps does not believe that it needs to repeat that information in another section of the RDEIS or FEIS. Exceedances of water quality standards will continue under certain circumstances. For those water bodies listed by the States as impaired, the appropriate process to address these circumstance is the TMDL process.

WQ-22

The Corps agrees with EPA that the adaptive management approach should examine the current monitoring, and, where appropriate, work with the States, Tribes, and other entities to further examine the water quality issues and potential solutions. The Corps is working with EPA and other Federal agencies to identify approaches to address water quality in the Missouri River basin through the Missouri River Interagency Roundtable. The Corps believes this is the appropriate forum to address this issue.

WQ-23

The Corps does not consider releases of waters from its dams as point sources of discharge, but does everything practicable to meet State water quality standards. Where there are instances of exceedances of water quality standards, the State has identified the water body as impaired in its 303(d) list. The Corps will work with the State and EPA to examine the problem and potential solutions. (See Response WQ-20.)

WQ-24

Point source discharges to the Missouri River are regulated under the Federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permit program. In most cases, authorized States administer the NPDES permit program. NPDES permits can be considered a license for a facility to discharge a specified amount of a pollutant into a receiving water under certain conditions. NPDES permits can either be technology- or water quality-based. Technology-based permits are based on Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) for a particular discharge type or category. Water quality-based permits are based on meeting water quality standards in the water body receiving the discharge. Factors that are considered when developing water quality-based permits are the flow in the receiving water, the discharge flow, and the background concentration of pollutants in the receiving water. Based on these factors, the amount of a pollutant that can be discharged and still meet water quality standards at an appropriate point below the discharge point is determined. The receiving-water flows are typically characterized by defined design flows. Design flows that are commonly used for receiving waters when establishing NPDES permit limits are 1Q10 (compliance with acute water quality criteria), 7Q10 (compliance with chronic water quality criteria), and 30Q5 (compliance with chronic ammonia water quality criteria).

Design flows are established by the appropriate agency in each State. For example, the design flows that the Nebraska Department of Environmental Quality has defined for the development of NPDES permits for discharges to the Missouri River are given in Table D1-2. Missouri has similar standards; however, these standards were not readily available as this response was prepared. The Corps suggests that you contact the Missouri Department of Natural Resources to obtain similar information for your reach of the Missouri River. Currently, some water quality-based NPDES permits are in place for discharges to the Missouri River that mainly involve ammonia and fecal coliform bacteria. There are no "large" dischargers with water quality-based permits at this time; however, the City of Omaha has a draft water quality-based permit in development.

If water quality-based permits were in place, the potential for exceeding in-stream water quality criteria would increase if flows in the Missouri River drop below the design flows utilized for development of the NPDES permit. Whether or not in-stream water quality criteria would be exceeded would depend on the discharge flow and its pollutant concentration. The more the flow in the Missouri River drops below the design flows, the greater the chance of exceeding water quality standards.

The Corps conducted a detailed analysis of lower releases from Gavins Point on several water quality parameters and published those results as Volume 3B: Low Flow Studies, Appendix B, Water Quality Impacts, Missouri River Master Water Control Manual Review and Update, July 1994. This analysis included summer flow releases lower than the GP1521 option. The overall conclusion of that study was that reducing flows in the Missouri River affected water temperature and water quality constituents, but the concentrations of all constituents were within the standards for State limits.

WQ-25

The alternatives under consideration in the RDEIS and the PA in the FEIS do not substantially change the frequency of overbank flooding. Sedimentation that contains agricultural chemicals and low levels of toxic material are from Tributary sources to the mainstem Missouri River, and the influx of these chemicals and material would not change under any of the alternatives under consideration. It, therefore, is not clear how any of the alternatives would add to the exceedances of water quality or increase the problem of Gulf hypoxia from sedimentation from the operation of the Mainstem Reservoir System.

WQ-26

If these two outlets to the Missouri River will be exposed at the low flows identified for the GP options, they may be exposed in years during which the navigation season is shortened due to extended drought under the CWCP. At that time the release from Gavins Point Dam is reduced to a water supply target of 9 kcfs. The release from Gavins Point Dam would, therefore, be at least 12 kcfs less than that made in the mid-July to mid-August timeframe under two of the GP options with the lowest summer flows and approximately 20 kcfs less than made under the other two GP options. If low flows are a major concern relative to water quality at these two sewer plants, the municipality/ies involved may want to lower the outlet structures. Flows were extremely low during the summer of 2002, and this water quality issue may have been a reality. Perhaps you should check with those who may have noticed any water quality problems to see if any surfaced during this low-flow period.

WQ-27

All alternatives to the CWCP evaluated in detail in Chapter 7 of the RDEIS include the drought conservation measures of the MCP, which would increase the number of years that the lake levels are higher, resulting in improved water quality conditions.

WQ-28

The Corps recognizes that the chemical costs for treating turbidity, hardness, and other constituents of the Missouri River water depends upon the percentage of river flow at the intake from Gavins Point Dam versus the downstream Tributaries. This is due to the water quality of the releases from Gavins Point Dam versus the water quality of uncontrolled runoff and tributary flows. The percentage of flow from Gavins Point Dam in the Lower River will vary over the year due to the uncontrolled runoff from the tributaries. The Corps has no control over the water quality of uncontrolled runoff and tributary flows.

Table D1-2. Design flows for the Missouri River currently utilized by the Nebraska Department of Environmental Quality for the development of water quality-based NPDES permits.

USGS Gage Station	Missouri River @ Yankton: 1976-95	Missouri River @ Sioux City : 1981-2000	Missouri River @ Decatur : 1988-2000	Missouri River @ Omaha : 1981-2000	Missouri River @ NE City : 1981-2000	Missouri River @ Rulo : 1981-2000
Summer (March-October)						
1q10	6181	10298	10074	13736	18033	19408
7q10	7303	11170	10577	14597	19574	21290
30q5	13020	18279	16509	22423	27848	30067
Winter (November-February)						
1q10	8614	6957	8227	8801	9053	10367
7q10	9326	10469	10320	12016	12490	13320
30q5	11831	13216	12741	15830	18803	20145
Navigation (April-November)						
1q10		10003	9782	14105	16598	18390
7q10		11281	10000	14667	17579	19176
30q5		17084	15003	21706	25819	27989
Non-Navigation (December-March)						
1q10		7022	8137	8856	9176	
7q10		10937	10697	12244	12798	
30q5		13850	13438	16531	19297	

WQ-29

The Corps recognizes the problems associated with contaminants coming from runoff and tributary flows into the Missouri River. Where those tributaries flow into the mainstem lakes formed by Corps projects, those contaminants deposit with the sediment. With fluctuating lake levels, contaminants in those deltas where the sediments deposited may be resuspended into the water column. Contaminant concentrations from tributary runoff are not within the control of Corps operation of the Mainstem Reservoir System. Under the MCP, with unbalancing of the upper three lakes, minimum lake levels would be higher than under the CWCP (Section 7.2.1). The effect of the MCP would be an overall improvement in water quality over the CWCP. The Corps recognizes, however, that this would not alleviate all of the impacts associated with contaminants from runoff and tributary inflows. The PA in the FEIS results in essentially the same lake levels as the MCP.

WQ-30

The effects of river fluctuations on water quality in the groundwater would depend on a variety of factors. The Corps has a responsibility to identify any potential effect on the water quality of the river due to potential operational changes, which it considered as part of this EIS. The higher river releases in the spring under the various alternatives are within the range of flows that have historically occurred under the CWCP. An analysis of low summer flows on river water quality was also conducted and reported in Volume 3B: Low Flow Studies, Appendix B, Water Quality Impacts, Missouri River Master Water Control Manual Review and Update, July 1994. This analysis included summer flow releases lower than the GP1521 option. The overall conclusion of that study was that reducing flows in the Missouri River affected water temperature and water quality constituents, but the concentrations of all constituents were within the standards for State limits. It would be the responsibility of the agricultural industry to monitor and regulate the effects of pesticide and fertilizer application on the groundwater quality from the leaching of these products.

WQ-31

Point source discharges to the Missouri River are regulated under the Federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permit program. In most cases, the NPDES permit program is administered by authorized States. NPDES permits can be considered a license for a facility to discharge a specified amount of a pollutant into receiving water under certain conditions. NPDES permits can either be technology- or water quality-based. Technology-based permits are based on Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) for a particular discharge type or category. Water quality-based permits are based on meeting water quality standards in the water body receiving the discharge. Factors that are considered when developing water quality-based permits are the flow in the receiving water, the discharge flow, and the background concentration of pollutants in the receiving water. Based on these factors, the amount of a pollutant that can be discharged and still meet water quality standards at an appropriate point below the discharge point is determined. The receiving water flows are typically characterized by defined design flows. Design flows that are commonly used for receiving waters when establishing NPDES permit limits are 1Q10 (compliance with acute water quality criteria), 7Q10 (compliance with chronic water quality criteria), and 30Q5 (compliance with chronic ammonia water quality criteria).

If water quality-based permits are in place, the potential for exceeding in-stream water quality criteria would increase if flows in the Missouri River drop below the design flows utilized for development of the NPDES permit. Whether or not in-stream water quality criteria would be exceeded would depend on the discharge flow and its pollutant concentration. The more the flow in the Missouri River drops below the design flows, the greater the chance of exceeding water quality standards. Ultimately, the appropriate State agency would be responsible for any changes in the NPDES permit.

The Corps conducted a detailed analysis of low-flow releases from Gavins Point on several water quality parameters and published those results as Volume 3B: Low Flow Studies, Appendix B, Water Quality Impacts, Missouri River Master Water Control Manual Review and Update, July 1994. This analysis included summer flow releases lower

than with the GP1521 option. The overall conclusion of that study was that reducing flows in the Missouri River affected water temperatures and water quality constituents, but the concentrations of all constituents were within the standards for State limits.

WQ-32

Higher flows in the spring will tend to dilute the contaminants that enter the Missouri River from tributaries and direct runoff from adjacent lands. Conversely, lower summer flows will provide less dilution of these sources of contaminants. The Corps, therefore, reported in the RDEIS and FEIS that the reduction in flows below those to support full navigation service could increase the potential to exceed existing State standards for recreation and aquatic uses. The GP options would increase flows in the spring and reduce flows in the summer compared to those under the CWCP.

WQ-33

Your comment is noted.

WQ-34

Water quality issues on Lake Sharpe are addressed in Section 7.4 of the RDEIS and FEIS. This section includes Table 7.4-1, which outlines the water quality problems on the six mainstem lakes, including Lake Sharpe. Water quality issues for Lake Sharpe include arsenic concentration concerns, accumulation of arsenic and other contaminants in fish tissue, nutrient enrichment, and sediment deposition in the delta downstream from the Bad River. This table includes a detailed description of the potential impact, the effects of the alternatives relative to the potential impact, rationale for the effect identified, and other ways to address the issue besides water management of the Mainstem Reservoir System.

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4.19 WATER SUPPLY RESPONSES

WS-1

The Powerplant, Municipal and Industrial Supply and Irrigation Intake paragraphs in the Water Supply section of the RDEIS will not be rewritten for the FEIS. You can refer to the Missouri River Master Water Control Manual Review and Update Volume 6B: Economic Studies – Water Supply Economics, July 1994. This volume discusses in more detail the Water Supply analysis.

WS-2

The power at risk analysis was re-analyzed and was rewritten for the FEIS (Section 7.10.2). The analysis shows that there is 2 to 3 times more thermal power at risk than identified in the RDEIS.

EPA should contact the Corps and initiate a meeting with the Corps as you suggested to help in your understanding of the thermal power at risk analysis.

The inclusion costs to mitigate problems associated with cooling as well as costs to construct cooling tower will not be part of the FEIS. The FEIS leaves this effort with the power utilities to share.

Because the GP1521 and GP2021 options have low summer flows of 21,000 cfs, your statement that thermal concerns will not occur until below 21,500 reinforces our analysis below that. However, thermal concerns are not all about flow, but encompass wind considerations too. The combination of flow and wind can rapidly change the temperature of river.

WS-3

The following paragraphs have been added to the FEIS (see page 7-163). There were some edits:

All of the powerplants along the Missouri River rely on the river for cooling water. Given current efficiencies, these powerplants can convert only a portion of the raw fuel (coal or nuclear) into electricity via steam generation. About one-half of the energy from the burning of the fuel is lost as heat to the environment. There are six powerplants downstream from Garrison Dam and 17 powerplants along the banks of the Lower River that use “open cycle,” or one-pass cooling, to dissipate the heat lost to the environment. These plants pump through large quantities of water each day and warm that cooling water as much as 20 degrees Fahrenheit. The heat discharged by the powerplants is limited by the requirement in National Pollutant Discharge Elimination System (NPDES) permits issued by State environmental agencies. Heat limits are based on a number of factors, including dilution, mixing zones, background river temperature, and in-stream temperature caps.

Dilution or, more precisely, the mixing of the heated effluent in the river, is mediated by a large number of variables: river flows, effluent flows, discharge configuration, river morphology, etc. For thermal dischargers, the key factors to consider are: a) the relative size of the plants to the river at low flows, and b) proximity to the upstream dam (the closer, the less augmentation of river flow from tributaries). Another important consideration is the fact that powerplants must operate at peak capacity in the summer months.

Some of the alternatives discussed in this chapter consider a reduction of Gavins Point Dam releases in the summer from those that fully serve navigation (34.5-kcfs flat release modeled). These lower releases vary from a minimum service flat release of 28.5 kcfs (GP1528 and GP2028 options) to as low as 21.0-kcfs flat release in mid-July through mid-August (GP1521 and GP2021 options). Over the past 20 years or so, the gage records have included several summer low-flow events that create a design summer low-flow level equivalent to a release of 23.5 kcfs from Gavins Point Dam. This would lead one to suspect that there are adverse impacts to powerplants at flows less than that design level.

A key variable driving the heat limits for existing powerplants is the question of background heat in the river. Most permit calculations have been based on the assumption of a maximum summer river temperature of 85 degrees Fahrenheit, and maximum temperatures at the end of the mixing zone have been capped at 90 degrees Fahrenheit by State water quality standards. This means that powerplants, when allotted a certain mixing zone for dilution, are allowed to increase the in-stream temperature at the end of the mixing zone by 5 degrees Fahrenheit under worst-case summer conditions.

During the past few years, summer river temperatures have been in the range between 85 and 90 degrees Fahrenheit. This greatly changes the amount of heat that can be discharged from powerplants without violation of the 90 degrees

Fahrenheit cap at either end of the regulatory mixing zone. Studies by EPA Region 7 on four powerplants in Nebraska show that there is sufficient mixing within the State's 5000-foot mixing zone so that plants can discharge at current rates without exceeding the 90 degrees Fahrenheit cap even with background temperatures of 87 degrees Fahrenheit. If background temperatures rise another 1 degree Fahrenheit, then Nebraska's standards would be violated.

While State standards are currently being met, the local impacts from these sources increase as the background temperature of the river increases. Summer heat is a biological stressor to stream ecosystems, and peak summer temperature of the river is moving toward the maximums allowed in State water quality criteria.

WS-4

A key question, not easily answered, is whether the decreased summer flows will cause or contribute to higher temperatures. EPA, in its letter commenting on the RDEIS, stated that it could not find evidence of study on the relation of temperature to flow for the river. The Corps, however, determined, using an EPA water quality model, QUAL2E, that there is a relationship between river flow and river temperature (Corps, 1994a). Based on prior discussions with the utilities and documentation on potential water quality concerns, the Corps decided to conduct a worst-case analysis of potential impacts on the powerplants. Using data coordinated with, or supplied by, the utilities (Corps, 1994b), an assessment of potential cutbacks in power generation was conducted.

WS-5

The water supply measures of the other alternatives do provide higher NED benefits when compared to the CWCP. For example, along the river reach downstream of Garrison Dam, all the other alternatives have an annual NED benefit for water supply that is about $2 million higher than the CWCP.

WS-6

The CWCP and MCP will not affect the water supply to the intake. The GP options will increase water supply during the spring rise from mid May to mid June every three years, or as appropriate. The low summer flow will reduce the water supply past the intake during mid-June to 1 September. The water supply will influence the sedimentation.

WS-7

The Assiniboine and Sioux Tribes should continue their coordination and/or consultation with the Corps' Omaha District, which has the lead on your intake issues concerning the Fort Peck Dam releases.

WS-8

Tribes should continue their coordination and/or consultation with the Corps Omaha District, which has the lead on Lake Unbalancing issues.

WS-9

The mainstem dams on the Missouri River impound water in lakes. The Mainstem Reservoir System was designed to accommodate all the authorized multipurposes during the 12-year drought of 1930 to 1941. The lakes are huge bank accounts of water that the basin draws from during droughts to operate for these purposes. During a drought, the levels of the lakes fall. Designers of an irrigation system withdrawing water from the Mainstem Reservoir System must take into account the falling lake levels associated with dam operations. Risk analyses must be conducted so that the intake system is located in a lake to withdraw water under most likely fluctuations of the lake. To handle the serious drought conditions when the lakes are lowered beyond the irrigation intake invert, the designer must add flexibility to the system. Adding locations in the system to easily extend piping and booster pump placements will save considerable time and money. A contingency plan and pre-investment funding for the modification of the irrigation system during a serious drought is also recommended.

WS-10

If Pickstown is having difficulty now with their water supply from the river below Fort Randall, you will likely have more difficulties with the other alternatives presented in the RDEIS. It is recommended that, if you plan to relocate or modify your intake for lower water conditions, you design your intake system to work for a wider range of flows.

WS-11

There are relatively insignificant national economic impacts when comparing water supply for the CWCP with MCP and the four GP options. However, the Corps understands regional situations where water supply will be negatively affected. These situations were taken into account when the PA was selected. For example, compared to the CWCP with an average annual NED benefit for water supply of $610.08 million, the MCP has a slightly higher average annual NED benefit for water supply of $610.91 million.

WS-12

The Corps' winter operations are the same for all the alternatives. Flexibility will be retained in those operations.

WS-13

The Corps has considered your recommendation.

WS-14

A demonstration is not necessary. Flows at Nebraska City were below your recommended 35,000 cubic feet per second from July 1 through August 15, 2002. Flows have often been below 30,000 cfs for several days. The days have also been quite warm. Analysis of your cooling requirements and these lower flows should provide the calibration you need.

WS-15

The average flows of 100 years of data provides the best method for determining impacts for a study of the caliber of the Master Water Control Manual Review and Update. We know that there will be spikes from short duration floods or low water situations; however, each facility must analyze these details and adapt their operations accordingly.

WS-16

The Corps appreciates your information and has considered it in the selection of the PA.

WS-17

The Fort Peck Test does not change the water supply for irrigation.

WS-18

It is not anticipated that the Fort Peck Full Test will have any impacts on the operation of your irrigation pump site.

WS-19

The initial drought conservation measures of the CWCP are not as severe as under the MCP; however, more severe measures are needed to provide the level of drought conservation desired in the extreme droughts. If a drought does not persist into a second year, the measures may have been unwarranted; however, it is difficult to predict if a drought year is isolated or if it is the beginning of a multi-year drought.

WS-20

For the Corps to operate the Missouri River water for the direct benefit of another basin such as the Mississippi River would require Congressional approval.

WS-21

The Fort Peck mini-test, with a maximum release of 15,000 cfs, is within the limits of the CWCP and there is no evidence to indicate mini-test impacts to irrigation intakes beyond normal operations. However, there may be pumps located along the Missouri River below Fort Peck Dam that will be inundated/affected from higher releases. The Roosevelt County Conservation District, under contract with the Omaha District of the Corps, gathered a variety of data on intakes along the Missouri River from Fort Peck Dam to the Montana-North Dakota border. Data collected during the mini-test, in combination with the intake survey completed by the Roosevelt County Conservation District, will help determine which pumps may be affected. Pumps that are subject to inundation by the Fort Peck spring rise could be relocated, reconfigured, or protected using existing Corps Section 33 authority.

WS-22

More stringent drought conservation measures are included as an element of the MCP and GP options.

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4.20 WAPA RESPONSES

WAPA-1

Alternatives GP2021, GP2028, GP1521 and GP1528 do have increased annual flows when compared to the CWCP. However, this increased flow occurs in the spring and fall. The most significant difference between the GP2021, GP2028, GP1521, GP1528 options and the CWCP impacting the end-use electrical consumer is the shift in water releases and thus the generation of energy from the high costs months to low cost months. In essence, the shift in water releases decreases the amount of energy generated in those months that power is most expensive to buy. Therefore, the end-use electrical customer would pay more for the same service under the GP2021, GP2028, GP1521, and GP1528 options when compared to service under the CWCP and MCP. These effects are discussed on pages 7-150 through 7-151 and shown in Figure 7.10-22 of the RDEIS, and in the corresponding text (Section 7.10-3) in the FEIS.

WAPA-2

WAPA will continue to meet its contract obligations, with purchases if necessary. However, there would be a reduction of power available in the summer months for the region because generation is reduced in the summer months. It is assumed that this additional generation would come from the market. Provided no firming capacity purchase is required, cost associated with this energy is included in the WAPA analysis included in the RDEIS on pages 7-150 through 7-151 and shown in Figure 7.10-21.

WAPA-3

The potential loss of generation in the MAPP US Region due to restricted water flows on the Missouri River could have significant impacts to system reliability. MAPP has projected summer generation capability and demand in the MAPP US region for the 10-year period from 2003 to 2011. This study shows the expected net generation available will just be able to serve the expected demand through 2006 based on new generation presently under construction. The MAPP firm obligation exceeds the available generation in 2006 and succeeding years. The net adjusted capability (net generation plus purchases and sales from outside the region) lags the total firm capacity obligation beginning in 2006 and succeeding years. The MAPP region will be adding approximately 2,700 MW of new generation in the region to meet the expected demand and reserve obligation into the future. Although several new generation facilities have recently been completed, or announced for construction, the amount will not be sufficient to meet the expected load growth rate of the region.

Because the MAPP region capability barely meets the expected demand plus reserves, the loss of any significant amount of generation could result in widespread blackouts almost immediately unless new generation is constructed very quickly to replace the lost capacity. Note that even with the known purchases from outside the region included, the region would be deficit immediately and would have to drop customer load if energy could not be purchased and imported into the region. Our analysis does not quantify the transmission cost variation associated with purchasing and importing energy from neighboring or distant regions. The reduction of MAPP resources could result in significant reliability impacts to customers in the region.

Low summer flows create a large problem with respect to increases in the river water temperature. Water models show that water temperatures would become high enough that the river would not efficiently cool the powerplants resulting in de-rating the powerplants during the summer months. Additionally, more significant de-rating of these plants is expected to avoid violating thermal return limits. These impacts are discussed in the RDEIS Section 7.10.2, pages 7-147 through 7-150.

WAPA-4

The higher lake levels would result in a one-time loss to generation of 3 to 4 million acre-feet of additional water stored in Fort Peck, Garrison, and Oahe. This is a one-time loss of between 1,000 and 2,500 GWh of generation. The most significant difference between the GP2021, GP2028, GP1521, and GP1528 options and the CWCP impacting the end-use electrical consumer is the shift in water releases and thus the generation of energy from the high-cost months to low-cost months. In essence, the shift in water releases decreases the amount of energy generated in those months that power is most expensive to buy. Therefore, the end-use electrical customer would pay more for the same service under the GP2021, GP2028, GP1521, and GP1528 options when compared to service under the CWCP and MCP, as discussed on pages 7-150

through 7-151 and shown in Figure 7.10-22 of the RDEIS. As stated in this comment, statute and regulations dictate WAPA's repayment procedures. Unless altered by legislation, WAPA will have the same repayment obligations regardless of the alternative selected and WAPA's power rates would be affected by changes in cost or revenue. WAPA is a cooperating agency and will continue to provide input as requested by the Corps.

WAPA-5

We agree with this comment. Additionally, customers may also be affected by paying more for their power needs above what WAPA provides, due to supply and demand pricing. The MAPP region does have limited generation and high voltage transmission line constraints, all of which may make alternative sources for power difficult and costly to acquire.

WAPA-6

Projection of hydropower generation long term is a difficult task. For the hydropower studies in the RDEIS analysis, water conditions over the past 100 years were used to determine the possible impact for the future.

WAPA-7

If you consider wind power as a part of the resource mix included within the central part of the United States, it is included in the analysis. The economics of wind development would be reflected in the market price.

WAPA-8

This is beyond the scope of the RDEIS.

WAPA-9

Exploring the use of wind generation in conjunction with the Missouri River basin hydropower is beyond the scope of the RDEIS.

WAPA-10

Exploring the utilization of wind resources in tandem with hydropower is beyond the scope of the RDEIS.

WAPA-11

The Secretary of Energy has responded to your request, as has the Principal Deputy Assistant Secretary of the Army. Neither agency is at liberty to pursue recommendations in the Tribal Energy Self-Sufficiency act, as it has not yet passed the Congress.

WAPA-12

Energy futures markets have fluctuated over the past 3 ½ years (since August 2002). The Cinergy futures are for the Chicago Market, while the California-Oregon border and the Palo Verde futures address the California Market. We have gathered some historical data to compare the Chicago and the California markets. March 9, 2000 Cinergy rates were $168/MWh, California Oregon border rates were $45.5/MWh, and Palo Verde rates were $59.5/MWh for July delivery. The June 12, 2000 rates had risen to $222.5/MWh for Cinergy, $110/MWh for California-Oregon border, and $112.75/MWh for Palo Verde for July delivery. By January 30, 2001 the rates for July delivery were $145/MWh for Cinergy, $130.3/MWh for California-Oregon border, and $285/MWh for Palo Verde. This indicates the Cinergy market is not directly connected to the California market and the January 30, 2001 prices were not the peak Cinergy prices. Table D1-3 shows various market prices for a range of dates.

Table D1-3. Future prices per MWh.

Date of Price	Delivery Date	Cinergy	Cal-Or Border	Palo Verde
3/9/2000	July	$168.0	$45.5	$59.5
6/12/2000	July	$222.5	$110.0	$112.8
1/31/2001	July	$145.0	$130.3	$285.0
5/9/2001	July	$101.5	$420.0	$430.0
10/9/2001	July	$54.8	$52.0	$44.0
2/26/2002	July	$40.6	*	$25.8
7/9/2002	July	$38.4	*	$45.8

*Prices were not posted on Internet source.

The increased pool levels and therefore the increased capacity in the proposed Master Manual changes are unrelated to the GP options. This increased capacity is reflected in the Corps' NED analysis. Because the increased storage option is unrelated to the GP options, it could be implemented for the CWCP, which then makes the capacity difference among all the options negligible. For this reason, the increased storage option was not considered in WAPA's analysis. The analysis by WAPA evaluates the impacts to revenue requirements for WAPA customers. The significant difference between the GP2021 option and the CWCP and MCP is the shift in water releases and thus the generation of energy from the high-cost months to low-cost months. In essence, it decreases the amount of energy generated in those months that power is the most expensive to buy. Therefore, the end-use electrical customer would pay more for the same service under the GP2021 option when compared to service under the CWCP and MCP.

WAPA and the Corps will take every opportunity within the parameters of the final river operating plan to minimize or mitigate the revenue impacts. However, WAPA and the Corps would do that under any option. Therefore, the differences as studied and presented are valid when comparing the options.

The analysis used 100 years of water data in the generation model under each alternative considered. Therefore, the extreme drought and flood events have been included in the analysis. By including all years of data, we have captured the positive and negative impacts of all options.

WAPA-13

Changes proposed will have an impact on the production of power and energy. Re-assignment of costs would require legislation.

WAPA-14

The Three Affiliated Tribes (Tribes) received a Pick-Sloan Missouri Basin Program, Eastern Division firm power allocation of 2,529 kilowatts in the summer and 2,427 kilowatts in the winter during the post-2000 power allocation process. The Tribes began receiving the benefit of this allocation on January 1, 2001. In addition, four electric cooperatives, McKenzie Electric Cooperative, McLean Electric Cooperative, Mountrail-Williams Electric Cooperative, and Oliver-Mercer Electric Cooperative serve the Tribes. These cooperatives have had Federal power allocations since the 1950s and have passed the benefit of their allocations through to the Tribes through lower power rates. WAPA markets power from Corps projects like Lake Sakakawea at the lowest possible rates consistent with sound business principles. WAPA does not market "free power" to preference entities.

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4.21 WETLAND AND RIPARIAN HABITAT RESPONSES

WRH-1

Impacts to wetlands and riparian habitat under each of the alternatives presented in the RDEIS were determined by relating hydrology for the 100-year period of record to potential losses of wetland and riparian acreage inventoried. The results were presented in the RDEIS/FEIS in Section 7.5. Analysis of the changes in these two habitat types is based on the inventory of habitat at 42 representative sites along the Mainstem Reservoir System and the Lower River. Vegetation changes in these sites respond to water surface elevations adjacent to and in the sites. To generate the numbers presented in the EIS, the analysis identifies changes in specific categories of wetlands and riparian habitat (i.e. emergent wetlands, riparian shrub, etc). The consolidation of the various habitat types as either total wetland vegetation types or riparian habitat types allows comparison of the alternatives to the extent needed to understand the impacts on total wetland and riparian acreages. Additional information on wetland and riparian habitat in the existing environment including details on the various categories of both is included in the RDEIS/FEIS in Section 3.6.

WRH-2

Section 3.6 of the RDEIS/FEIS contains a description of the existing environment, including a reach-by-reach description of the riparian habitat including cottonwood trees. All of the alternatives presented in Chapter 7 of the RDEIS result in a loss of riparian habitat in the basin; however, impacts to individual cottonwood stands is beyond the scope of this EIS.

WRH-3

We concur. Sections were rewritten to improve clarity.

WRH-4

The Corps believes that the PA includes features that will ultimately result in an ecologically improved condition.

WRH-5

Loss of riparian habitat, including cottonwood trees, due to the operation of the mainstem system is documented in the RDEIS/FEIS.

WRH-6

The Missouri River Fish and Wildlife Mitigation Project has been established to mitigate, or compensate, for fish and wildlife habitat losses that resulted from past channelization efforts on the Missouri River. The project strives to achieve the healthiest ecosystem possible and will offer diverse terrestrial and aquatic habitats therefore supporting the greatest number of species. The Project extends from Sioux City, Iowa to the mouth of the Missouri River near St. Louis, Missouri, a length of 735 miles. The purpose of this mitigation effort is to acquire, restore, and preserve aquatic and terrestrial habitat on separate locations along the river in Nebraska, Iowa, Kansas, and Missouri. Congress first authorized construction of the Missouri River Mitigation project in Section 334 (a) of the Water Resources Development Act of 1986 (WRDA86). The authorization included acquisition and development of 29,900 acres of land, and habitat development on an additional 18,200 acres of existing public land in the States of Iowa, Nebraska, Kansas, and Missouri. In 1999, Congress passed another WRDA bill. Section 661 (a) of WRDA99 included modifying the Missouri River Mitigation Project by increasing the amount of acreage to be acquired by 118,650 acres.

WRH-7

We concur that loss of local habitat has occurred due to channel degradation.

WRH-8

This observation agrees with the data presented in the RDEIS and FEIS.

WRH-9

The effects of the alternatives on cottonwood trees below Fort Peck Dam are expected to be negligible. An analysis of the flow duration data for Fort Peck Dam indicates very little change in the overall distribution of flows for all the alternatives, and therefore, long-term channel conditions below Fort Peck Dam are considered to be similar to those associated with the CWCP.

WRH-10

The modification or removal of dikes or bank stabilization structures is outside the Master Manual Study process. The Missouri River Fish and Wildlife Mitigation Project acquires land from willing sellers for the purpose of habitat restoration. An EIS has been prepared and distributed for this project

WRH-11

Your comment is noted.

WRH-12

The effects of the alternatives on Lower River ecosystem and Mississippi River side channels are presented in Sections 7.7.7 and 7.15.2 of the RDEIS/ FEIS.

WRH-13

The comments relating to extent of coverage of the field surveys that allow the expansion of the wetland and riparian habitat acreages are accurate. The overall comment does not point out that not all wetland sites were surveyed. The sites surveyed were selected in consultation with resource specialists throughout the basin as sites of concern or importance. Due to these two factors, the RDEIS and FEIS understate impacts; however, the data on the sites surveyed provide considerable insight to potential habitat changes over the 100-year period of record analyzed.

WRH-14

All of the alternatives mentioned in this comment, with the exception of the CWCP, have the same drought conservation measures. The differences, therefore, are not due to the drought conservation measures. Wetland habitat generally increases among the alternatives as the summer flow decreases. This is evidenced by the ARNRC alternative in Figure 7.5-1 having the highest wetland habitat acreage while having the lowest summer flow, 18 kcfs. Because the wetland sites are on lakes and river reaches other factors also play a role. In the case of the ARNRC alternative, it has the greatest conservation measures of all of the alternatives included on Figure 7.5-1; therefore, it could have been a factor for that specific alternative.

WRH-15

The wetland/riparian habitat model generates files on specific vegetation types before combining these vegetation types into either wetland habitat or riparian habitat categories. The more detailed data are available for each alternative; however, these data are far too detailed to include directly in the EIS. Corps staff would be happy to work with you or your staff to look at and discuss the files in which you have expressed an interest.

WRH-16

The connectivity analysis focused on just the low-lying sites (e.g., oxbow lakes and adjacent low-lying land). The analysis was not generated to identify how many acres would be inundated for the run-of-river (ROR) alternative. This alternative obviously inundates considerable land on an average annual basis as it generates over $400 million worth of flood damages on an average annual basis. (Damages prevented become flood control benefits, thus the over $400 million figure.) The purpose for presenting the connectivity analysis was to demonstrate how difficult it is to inundate even the low-lying lands along the Lower River with the spring rises the USFWS identified in its November 2000 BiOp. The much higher flows of the ROR alternative are great enough to inundate the low-lying lands included in the analysis plus considerably more floodplain lands.

WRH-17

The comment agrees with the data presented in Table 7.5-1 of the RDEIS and FEIS. The reduction in average annual wetland habitat in the lake deltas compared to the CWCP values is offset by gains in the riverine deltas by the MCP and GP options.

WRH-18

Your suggested course of action regarding research, monitoring, and evaluation is noted.

WRH-19

The impact of the alternatives on wetlands is presented in Sections 5.5 and 7.5.

WRH-20

Mitigation of environmental resource losses due to the construction of Fort Peck Dam is not required

because this project was completed prior to the passage of the Fish and Wildlife Act of 1958. Future environmental resource losses for a change in the Water Control Plan are addressed in Section 8.3 of the FEIS. This section states that the losses identified in Section 8.3 of the FEIS would not be mitigated because of uncertainties regarding the actual changes in wetland and riparian acreage for changes in the Water Control Plan. This uncertainty results for the set acreage of the wetland/riparian site, and the potential that the total site size may expand or contract as water levels change.

WRH-21

Two wetland/riparian sites were modeled on or adjacent to the Cheyenne River Reservation. These are the Moreau River and Cheyenne River deltas where these two rivers enter Lake Oahe. As Lake Oahe levels change, a variety of vegetative changes occur, among them may be noxious weed growth and inundation.

WRH-22

The same flow or lake level at two different locations on the river or in the lakes may have different impacts. That is why the Study relies on models. There are a variety of relationships among the various habitat types and river uses as the water levels vary. One can generally forecast what may happen to a given resource or use or even multiple uses and resources in a single reach with a set flow or release from a given location; however, it is difficult to identify impacts over a long period over all of the river reaches analyzed because the hydrology coming into the Mainstem Reservoir System and the various river reaches is highly variable. What is good for one resource or use may be bad for other resources or the various uses relying on the Mainstem Reservoir System.

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4.22 OTHER ISSUES RESPONSES

Other A, B, C, D, E, F

The Corps' PA reflects the need for changes in the operation of the Mainstem Reservoir System. The Corps believes that the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The PA was developed in consideration of impacts to both upstream and downstream key uses and resources. The Corps believes the PA represents a balanced approach to operation of the Mainstem Reservoir System.

In conjunction with the PA, the Corps has proposed MRRIP, guided by an overall adaptive management strategy. MRRIP includes habitat restoration and creation, increased pallid sturgeon propagation support, population assessment, a strong research monitoring and evaluation program, flow tests, and MRRIC that includes diverse stakeholder representation. MRRIC would provide recommendations to the Federal agencies regarding recovery measures. Both MRRIP and MRRIC are consistent with NAS recommendations in the January 2002 report entitled *The Missouri River, Exploring the Prospects for Recovery*. Release changes from Gavins Point Dam and Fort Peck Dam were not included in the PA..

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other G

Your support for the CWCP is recognized. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. The Corps believes that the PA serves Congressionally authorized project purposes, complies with environmental laws including ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

The PA includes more stringent drought conservation measures. During drought periods, such as that experienced during the 1980s, more water would be conserved in the upper three lakes in a drought. This results in slightly higher lake levels. The higher lake levels would not impact downstream water supply needs for irrigation and drinking water. The more stringent drought conservation measures would result in reductions in releases to support Missouri River navigation service levels and season length.

Impacts to agriculture resulting from Gavins Point Dam flow modifications were thoughtfully considered by the Corps in arriving at our decision on the PA. The PA does not include release changes from Gavins Point Dam that would increase the risk of crop damages.

In conjunction with the PA, the Corps has proposed MRRIP guided by an overall adaptive management strategy. MRRIP includes habitat restoration and creation, increased pallid sturgeon propagation support, population assessment, a strong research monitoring and evaluation program, flow tests, and MRRIC that includes diverse stakeholder representation. MRRIC would provide recommendations to the Federal agencies regarding recovery measures. Release changes from Gavins Point Dam and Fort Peck Dam were not included in the PA.

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas

River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

An update on the navigation analysis was conducted following the release of the RDEIS using 1999 data on navigation movements on the Missouri River. The primary reason for this re-analysis was to better understand the potential impacts of having reduced summer flows, especially those that would require the suspension of navigation during the period from mid-June through mid-September (when the increased releases make it to the Missouri River mouth near St. Louis). Results of this analysis were documented in a report by the Tennessee Valley Authority (TVA, 2002). A primary finding of this analysis was that navigation could continue on the Missouri River even with a split navigation season. Another important finding was that navigation benefits would be dramatically lower in minimum service years. The updated numbers were incorporated into the analysis of Missouri River navigation benefits for the FEIS. The PA does not include lower summer releases from Gavins Point Dam.

The RDEIS and FEIS discuss thermal energy at risk due to low summer flows. There are 18 thermal plants along the Missouri River below Gavins Point Dam that rely on cooling water. The EPA regulates the discharge temperature of the cooling water. If the temperature of the discharge water is too high, thermal plants have to reduce generation or completely shut down. The RDEIS identified 387 MW of capacity and 203 million MWh of energy could be lost if Gavins Point Dam releases were to drop to 21 kcfs during the summer, as recommended by the USFWS in their November 2000 BiOp. An update of the thermal energy at risk analysis is included in the FEIS. That update shows that there is 2 to 3 times more thermal energy at risk than was identified in the RDEIS for summer releases of 21 kcfs. The PA does not include reductions in summer releases from Gavins Point Dam.

Rather than limiting public input into changes in river management, the Corps is committed to development of an adaptive management process that includes participation by a diverse range of basin stakeholders through MRRIC.

Your support for habitat restoration is noted. The Corps is committed to meeting the habitat recommendations included in the USFWS December 2003 Amendment to the November 2000 BiOp and will use all available authorities to accomplish habitat goals. Acquisition of property for habitat restoration is on a willing seller basis only.

Other H

See Response Other A.

Other-1

The NEPA process being followed for the Missouri River Master Manual Review and Update has been a very open and public process, to ensure that the information is fully disclosed and that the views of all parties are considered in the process. U.S. Department of Transportation, Maritime Administration comments received in response to the RDEIS have been included in the public record.

Other-2

The Corps recognizes that while the USFWS role is more narrowly focused on their responsibility to administer the ESA, the Corps' responsibilities are much broader. The Corps believes that the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

The Corps does not believe that we have taken any actions that are contrary to Section 116 of the Fiscal Year 2002 Energy and Water Appropriations Act. The RDEIS published in August 2001 analyzed two alternatives in detail that did not include the prescribed release modifications from Gavins Point Dam recommended by the Service in their November 2000 Biological Opinion. Further, the RDEIS analyzed the impacts of all six of the alternatives on authorized project purposes. The PA does not include release modifications from Gavins Point Dam.

Other-3

The RDEIS presents six alternatives: the CWCP, MCP, GP1528, GP2028, GP1521, and GP2021. The GP options presented encompass the full range of Gavins Point Dam flows modifications recommended by the USFWS in their November 2000 BiOp. The PA documented in the FEIS does not include release modifications from Gavins

Point Dam. The Corps recognizes that there are scientific uncertainties associated with species response to operational changes. All of the alternatives presented in the RDEIS as well as the PA embrace the concept of adaptive management. The Corps is committed to an adaptive management strategy through MRRIP. MRRIP includes development of a MRRIC that would include participation by the diverse range of basin stakeholders. MRRIC would make recommendations to the Federal agencies regarding what actions should be taken to protect the species as better scientific information becomes available.

Other-4

The operational features of the PA differ from the CWCP. The PA includes the more stringent drought conservation measures that conserve more water in the upstream lakes during a drought such as that experienced in the 1980s and in severe droughts such as the 1930s drought. Benefits of the PA as compared to the CWCP are shown on Table 8.13-2 found in Chapter 8 of the FEIS and in the FEIS Summary.

Other-5

Your comments reflect the challenge associated with the Master Manual Review and Update. The Corps is required to operate the system of mainstem dams and lakes on the Missouri River for the Congressionally authorized purposes of flood control, navigation, hydropower, water supply, water quality, irrigation, recreation, and fish and wildlife. Additionally, the Corps is required to fulfill our responsibilities to Federally recognized Tribes, and comply with Federal environmental laws, including the ESA. Under the ESA, actions undertaken by the Corps cannot jeopardize the continued existence of species provided protection under the ESA or their critical habitat. The USFWS has the primary responsibility for administration of the ESA and is considered the Federal expert on threatened and endangered species. As required under Section 7 of the ESA, the Corps has consulted with the USFWS on the operation of the Missouri River projects. The Corps believes that the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-6

Your support for the CWCP is recognized. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. The Corps believes that the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-7

The Corps' PA reflects the need for changes in the operation of the Mainstem Reservoir System. The Corps believes that the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The Corps believes the PA represents a balanced approach to operation of the Mainstem Reservoir System.

Other-8

The recent NAS report entitled "The Missouri River Ecosystem: Exploring the Prospects for Recovery" was completed at the request of the Corps and the United States Environmental Protection Agency (EPA). The Corps agrees with the NAS that action is needed to reverse the decline of the Missouri River and its ecosystem. The Corps believes that the PA, as well as several additional measures that comprise the initial MRRIP, when implemented in the context of an overall adaptive management strategy which allows for change as additional scientific information is gained, would not jeopardize the continued existence of Missouri River species provided protection under the ESA.

Other-9

The depletion analysis is found in Chapter 7 of the RDEIS and Chapters 7 and 8 of the FEIS. The RDEIS analyzed the impacts of the GP1528 and GP2021 options with four levels of potential depletions. Impacts of depletions on Missouri River uses and Mississippi River navigation economics were evaluated. In response to comments received during the RDEIS comment period, the Corps has conducted a similar depletion analysis of the CWCP, MCP, and PA.

An update on the navigation analysis was conducted following the release of the RDEIS using 1999 data on navigation movements on the Missouri River. The primary reason for this re-

analysis was to better understand the potential impacts of having reduced summer flows, especially those that would require the suspension of navigation during the period from mid-June through mid-September (when the increased releases make it to the Missouri River mouth near St. Louis). Results of this analysis were documented in a report by the Tennessee Valley Authority (TVA, 2002). A primary finding of this analysis was that navigation could continue on the Missouri River during the months before and after the split in the navigation season. Another important finding was that navigation benefits would be dramatically lower in minimum service years (73 percent lower than the CWCP). Overall, this analysis determined that navigation benefits (transportation cost savings) had gone up since the previous analysis. For a full service, 8-month-season year, the transportation cost savings would be $15.31 million. The updated numbers were incorporated into the analysis of Missouri River navigation benefits for the FEIS.

Other-10

Rather than limiting Tribal and public input into changes in river management, the Corps is committed to development of an inclusive adaptive management process that includes participation by a diverse range of basin stakeholders through MRRIC. In addition to expanding public involvement in the Corps' review of annual operations (AOP process), the FEIS also presents a broader concept of adaptive management directed toward recovery of protected Missouri River species and the ecosystem on which they depend. Social and economic considerations would be an integral component of such an adaptive management process. Release changes from Gavins Point Dam have not been included in the PA.

Other-11

The scope of the Missouri River Master Manual Review and Update is limited to review of changes to the current operation of the Missouri River Mainstem Reservoir System. Rather than using a cost/benefit analysis, the Corps has evaluated relative differences in impacts between alternatives for 13 key use/resources. For economic uses, the Corps followed its Principles and Guidelines to determine National Economic Development benefits and compare benefits among the alternatives reviewed in the RDEIS. The FEIS Summary compares the impacts of the PA on economic and environmental values for the key uses/resources to the CWCP.

Other-12

Your opposition to the spring rise is noted. The PA does not include a spring rise from Gavins Point Dam. The Corps believes that the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The Corps does not believe the PA sacrifices the needs of commercial interests for the exclusive benefit of environmental groups, but rather, was developed in consideration of all basin interests as well as the Corps' responsibilities to comply with environmental laws, including the ESA.

Other-13

Subsequent to publication of the 1994 Draft Environmental Impact statement (DEIS) that included a PA, and the public comment period that followed the PA, the Corps conducted several additional analyses in response to comments received. In 1998, the Corps published a Preliminary Revised Draft Environmental Assessment (PRDEIS) and additional technical reports. The PRDEIS analyzed the impacts of eight representative alternatives. Following publication of the PRDEIS, the Corps conducted numerous workshops throughout the Missouri River basin and at some locations on the Mississippi River in an effort to foster ongoing basin efforts to develop a consensus flow management plan. In April of 2000 the Corps entered into formal ESA consultation with the USFWS on the current operation of the Missouri River Mainstem Reservoir System, the Bank Stabilization and Navigation Project that extends from Sioux City, Iowa to St. Louis, and the Kansas River Projects. In the November 2000 BiOp, the USFWS concluded that the Corps' current operation jeopardizes the continued existence of three species provided protection under the ESA. The November 2000 BiOp identified RPA that included prescribed flow recommendations including the "spring rise" from Gavins Point Dam referenced in your comments. The GP options evaluated in the RDEIS represented the full range of flows prescribed by the USFWS. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps

provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

The Corps has analyzed the spring rise recommendation proposed by the USFWS in the November 2000 BiOp. The recommendation did not meet all of the attributes the USFWS and the Corps have agreed are necessary for survival of the three protected species. The recommended rise provided little floodplain connectivity and shallow water habitat, and was not of sufficient magnitude, frequency, and duration to create or maintain sandbar habitat for the two bird species. The reader is referred to Chapter 7 of the RDEIS and FEIS for analyses of the impacts of the USFWS recommendation (GP2021) on these attributes as well as the BA included as Appendix C to the FEIS.

In order to better understand the limiting factors that may be affecting pallid sturgeon spawning and recruitment in the Missouri River, the Corps is committed to a comprehensive and rigorous research, monitoring, and evaluation effort in addition to implementing several other measures. The Corps is also committed to extensive monitoring and assessment of the interior least tern and piping plover.

Other-14

The recent NAS report entitled "The Missouri River Ecosystem: Exploring the Prospects for Recovery" was completed at the request of the Corps and the EPA. The Corps agrees with the NAS that action is needed to reverse the decline of the Missouri River and its ecosystem.

As you have indicated in your comments, the NAS report also indicated that the greatest area of scientific uncertainty relates to species response to changes in system operation. Because of this uncertainty, the PA incorporates an overall adaptive management strategy through MRRIP, which includes an intense research, monitoring, and evaluation program.

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-15

The Corps believes that the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The PA was developed in consideration of both upstream and downstream interests. A summary of the impacts resulting from the PA is included in Chapter 8 of the FEIS and in the FEIS Summary. More stringent drought conservation measures included in the PA, which provide for slightly higher lake levels during drought, would result in a 3 percent increase in average annual recreational benefits over the CWCP. The PA results in a 6 percent increase in benefits to Missouri River navigation.

Other-16

Response provided by BG Fastabend letter of October 25, 2001.

Other-17

None of the alternatives analyzed in the RDEIS and FEIS would affect the microclimate around the lakes. Unbalancing of the upper three lakes, which is included as a feature of the PA, would fluctuate lake levels 3 to 5 feet. When viewed in the context of total lake volumes and fluctuations that occur

under the CWCP, there would be no impact. Substantial draw down of the lakes during droughts does result in the invasion of opportunistic species such as the Salt Cedar.

Other-18

The Corps does not believe that modification of intakes and subsequently permits would result from unbalancing of the upper three lakes. Fluctuation of Fort Peck Lake, Lake Sakakawea, and Lake Oahe would be 3-5 feet, which is well within the fluctuations that occur under the CWCP.

Other-19

Response provided previously by Mike Parker, former Assistant Secretary of the Army for Civil Works.

Other-20

Your support for the CWCP is recognized. The Corps believes that the PA is a balanced approach to operation of the Mainstem Reservoir System, serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. Impacts to agriculture resulting from Gavins Point Dam flow modifications were considered thoughtfully in arriving at our decision on the PA. The PA does not include an increase in spring releases or lower summer releases from Gavins Pint Dam.

Other-21

The PA was developed in consideration of impacts to the agricultural community and in light of all the comments received in response to the DEIS and the RDEIS. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. The Corps believes that the PA serves Congressionally authorized project purposes, including flood control, and fulfills the Corps' responsibilities to Federally recognized Tribes. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-22

The PA is based on the best science and engineering available, and includes a rigorous research, monitoring, and evaluation program. Additionally, the PA embraces the concept of adaptive management for dealing with change and scientific uncertainty. Adaptive management promotes an environment for testing hypotheses and exploring promising changes based on sound scientific data and analysis. Diverse stakeholder input into potential operational changes through MRRIC and availability of independent scientific review are essential in an adaptive management process.

Other-23

The commenter is referred to Chapter 8 of the FEIS and the FEIS Summary, which summarize the impacts of the PA on key uses/resources as compared to the CWCP. Models developed for the Study examine relative differences between alternatives, and the commenter is encouraged to focus on differences rather than absolute values. Generally, for economic resources, the PA results in positive impacts to downstream navigation, while there are upstream benefits to recreation. Both the upstream and downstream receive a slight increase in hydropower benefits. In terms of environmental benefits, the commenter is again referred to the FEIS and FEIS Summary. The PA results in significant increases in tern and plover lake and river habitat.

Other-24

The GP options encompass the full range of system releases recommended by the USFWS in their BiOp of November 2000. The PA does not include these recommended release changes. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps

provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-25

Today in the Missouri River basin we are dealing with the legacy of almost two centuries of basin development, more than 100 years of bank stabilization and channel development, and more than 50 years of dam construction and Mainstem Reservoir System management. Individuals, families, communities, and industries have adapted to this system and it has become an integral part of both the ecosystem and the economy. Stakeholders make their decisions within this ecosystem and within this economy based on the Missouri River Master Manual. The Corps believes the PA is one more step in the evolution of the Missouri River and offers a real opportunity for the basin to move forward in a balanced, comprehensive, basin-wide approach to restore the ecosystem and maximize the resource value of the Missouri River watershed. The Corps believes that the PA is a balanced approach that serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-26

The Summary of the RDEIS was made available on the Northwestern Division Web site on August 31, 2001 and was mailed to the approximately 4,000 parties on the mailing list on the same date. Alternative simulation files were available on the Web site on September 27, 2001. Further, Chapter 7 of RDEIS, which is a detailed analysis of the alternatives and is the heart of the RDEIS, was made available on the Web site on September 28, 2001. Hard copies of the RDEIS were mailed on September 29, 2001 to key Federal, State, Tribal and local agencies.

NEPA requires a 45–day comment period. Due to the complexity, controversy, geographic extent of impact, and public participation to date, the Northwestern Division concluded that a 6-month public comment period extending from August 31, 2001 through February 28, 2002 was appropriate. This 180-day comment period far exceeded the requirements of NEPA. A total of 20 public and Tribal workshops and hearings were held throughout the Missouri River basin and at some locations on the Mississippi River. Further, oral testimony given at public hearings was only one venue for public comment. Written, faxed, and electronic comments were considered equally with oral testimony. Parties had until February 28, 2002 to submit any additional comments they may have had following scheduled and added workshops and hearings.

The Northwestern Division is very proud of the open and extensive public participation that has taken place during the 14 years since the Missouri River Master Manual Review and Update was first undertaken. Sharing of information and public involvement throughout the process has been unparalleled. The Northwestern Division understands that in very complex and contentious issues of this nature, efforts that are inclusive and enjoy a broad base of understanding are much more likely to succeed and meet intended objectives.

Other-27

The depletion analysis is found in Chapter 7 of the RDEIS and FEIS. The RDEIS analyzed the impacts of the GP1528 and GP 2021 options with four levels of potential depletions. Impacts of depletions on Missouri River uses and Mississippi River navigation economics were evaluated. In response to comments received during the RDEIS comment period, the Corps has conducted a similar depletion analysis of the MCP alternative, the CWCP, and the PA.

Other-28

The Corps believes that the PA complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that

identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-29

Rather than limiting public input into changes in river management, the Corps is committed to development of an inclusive adaptive management process that includes participation by a diverse range of basin stakeholders including navigation interests through MRRIC. In addition to expanding public involvement in the Corps' review of annual operations (AOP process), the Corps' November 2003 BA, which is included as Appendix C to the FEIS, also presents a broader concept of adaptive management directed toward recovery of protected Missouri River species and the ecosystem on which they depend. Social considerations including impacts to navigation would be an integral component of such an adaptive management process, and good science is essential to such a process. Your support for the CWCP is noted. Habitat restoration and hatchery support are prominent measures included in the initial MRRIP. The Corps is committed to implementation of these measures.

Other-30

Your support for the CWCP and MCP are noted. The Corps believes that the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. System release changes included in the GP options have not been included in the PA.

Other-31

There is considerable scientific uncertainty regarding species response to changes in operation, and release changes from Gavins Point Dam have not been included in the PA. The Corps' PA provides for an overall adaptive management strategy to reduce scientific uncertainties prior to implementation of actions intended to benefit protected species. Under the PA, a comprehensive and rigorous research, monitoring, and evaluation effort would be conducted to determine the essential conditions necessary for survival of the pallid sturgeon, and the interior least tern and piping plover. Construction of habitat for both the pallid sturgeon and the listed bird species has been recommended by the USFWS for the survival of the species. The Corps is committed to this habitat construction as well as other measures directed toward species recovery.

Other-32

Your comment concerning the status of Missouri River navigation is noted. Release changes from Gavins Point Dam, which would significantly affect Missouri River navigation, have not been included in the PA. Benefits to Missouri River navigation increase by 6 percent as compared to the CWCP. The Corps' PA embraces an overall adaptive management strategy to implement actions as more certain science becomes available.

Other-33

Your support for the CWCP is noted. Impacts of the MCP on Mississippi River navigation economics with four potential levels of depletion are evaluated in Chapter 7 of the FEIS and impacts of the PA with four levels of depletion are analyzed in Chapter 8 of the FEIS.

Other-34

The Corps does not adjudicate or quantify water rights. The PA includes slightly modified drought conservation measures from those recommended by the MRBA and included in the MCP and GP options presented in the RDEIS and FEIS (Chapters 4, 5, 6, and 7). Congressionally authorized project purposes, including Missouri River navigation, continue to be served under the PA.

Other-35

The Corps' PA is consistent with the above approach but does not include Mainstem Reservoir System release changes. Rather, as a component of the initial MRRIP, the Corps is proposing flow tests from Fort Peck Dam, Fort Randall Dam, and Gavins Point Dam. Flow tests have been included as an initial component of MRRIP and would be implemented in the context of an overall adaptive management strategy that includes broad stakeholder participation through MRRIC.

A strong research, monitoring, and evaluation program is also a component of MRRIP. This includes research to better understand life cycle needs, spawning activity, recruitment, and survival of sturgeon in existing reaches of the river, including below Fort Peck and the lower Missouri River, that already exhibit variability in natural hydrographs.

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-36

Issues related to the deposition of sediment, and related impacts, in the headwaters of the Missouri River reservoirs has been a concern for the Corps since before the projects were constructed. System constraints exist today and will continue to occur in the future. Due to these concerns, the Omaha District maintains over 640 permanent channel and reservoir rangelines (cross sections) from the headwaters of Fort Peck Lake, Montana to Ponca State Park in northeast Nebraska. These rangelines are surveyed periodically and assessments are made relative to the impacts on system operations. These efforts will continue into the future as resources allow. Development of a system-wide sediment plan would involve coordination and input from diverse basin stakeholders.

Other-37

Your support for the CWCP is noted; however, the CWCP was not identified as the PA. The Corps believes the PA is a balanced approach to operation of the Mainstem Reservoir System and that the PA serves Congressionally authorized project purposes including navigation and flood control, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-38

Detrimental impacts to Mississippi River transportation do not result from the PA. In fact, Corps analysis indicates a slight increase in Mississippi River navigation efficiency would result under the PA.

Other-39

The Corps believes the PA is a balanced approach to operation of the Mainstem Reservoir System, serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. Release changes from Gavins Point Dam have not been included in the PA.

Other-40

More stringent drought conservation measures included in the MCP and GP options presented in the RDEIS and FEIS and in the PA result in a slight increase in NED benefits for hydropower. The PA would not affect rates that WAPA firm power customers pay. Release modifications from Gavins Point Dam that would have resulted in lost revenues used by WAPA to repay the Federal Treasury and potentially resulted in increased rates to firm power customers have not been included in the PA.

Other-41

More stringent drought conservation measures included in all of the alternatives presented in

Chapter 7 of the RDEIS and FEIS and included in the PA, increase recreation benefits at the upper three lakes when compared to the CWCP. The Corps' PA does not include reductions in summer releases from Gavins Point Dam included in the GP2021 option that would affect downstream recreation.

Other-42

Average annual recreation benefits for the upper three lakes affected by proposed operational changes are an estimated $32 million. Average annual recreation benefits on the Lower Missouri River that may be affected by releases less than those which support minimum service to navigation are an estimated $21 million. Average annual benefits for navigation are approximately $9 million. An accurate comparison of benefits would be of the $32 million of average annual recreational benefits on the upper three lakes with the $30 million total of average annual benefits for recreation and navigation on the Lower River. Subsequent to the RDEIS, the TVA completed an analysis of water-compelled benefits resulting from Missouri River navigation using 1999 data. The analysis concluded benefits of $38.7 million.

Other-43

The PA does not include lower summer releases that would leave marinas on the Lower River high and dry. Summer releases below those necessary to support minimum service to navigation included in the GP1521 and 2021 options and experienced during the summer of 2003 would affect downstream recreation facilities. See Chapter 7 of the FEIS.

Other-44

Overall, inclusion of more stringent drought conservation measures in the PA increases recreational benefits on the upper three lakes by approximately 3 percent as compared to the CWCP. Potential impacts to downstream recreation are most directly related to reductions in summer releases below those necessary to support minimum service to navigation. The PA does not include reductions in summer releases from Gavins Point Dam.

Other-45

Impacts of six alternatives are presented in detail in Chapter 7 of the RDEIS and FEIS. Impacts of the PA are presented in detail in Chapter 8 of the FEIS. Inclusion of more stringent drought conservation measures does result in an increase in recreation benefits at the upper three lakes. While an analysis of potential depletions to the Mainstem Reservoir System can also be found in Chapter 7 of the RDEIS and Chapters 7 and 8 of the FEIS, potential marketing of Missouri River water is beyond the scope of the Master Manual Review and Update and is not within the authority of the Corps.

Other-46

The recent NAS report entitled *The Missouri River Ecosystem: Exploring the Prospects for Recovery* was completed at the request of the Corps and the EPA. While the NAS expressed concern about the Master Manual process as the vehicle for change, the NAS indicated, and the Corps agrees, that action is needed to reverse the decline of the Missouri River and its ecosystem. Further, in November of 2000 the USFWS provided the Corps a BiOp that concluded that the Corps' current operation of the Mainstem Reservoir System jeopardizes the continued existence of three species provided protection under the Federal ESA. In that BiOp, the USFWS indicated that the Corps' current operations could only continue until 2003. Therefore, in order to comply with the ESA, the Corps has proceeded with the Master Manual Review and Update. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-47

Your support for the CWCP is noted; however, the CWCP was not identified as the PA. The Corps believes the PA is a balanced approach to operation of the Mainstem Reservoir System and that the PA serves Congressionally authorized project purposes including flood control, fish and wildlife, navigation, hydropower, recreation, irrigation, water supply, and water quality. The PA does not include spring or summer release changes from Gavins Point Dam. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-48

Impacts to agriculture resulting from Gavins Point Dam flow modifications were thoughtfully considered by the Corps in arriving at our decision on the PA. The PA does not included release changes from Gavins Point Dam that would potentially result in increased risk of crop damages due to interior drainage and groundwater impacts.

Other-49

The GP 2021 option, which includes the full range of flows recommended by the USFWS, was not identified as the PA. The PA does not include lower summer releases from Gavins Point Dam included in the GP2021 option. An update on the navigation analysis was conducted following the release of the RDEIS using 1999 data on navigation movements on the Missouri River. The primary reason for this re-analysis was to better understand the potential impacts of having reduced summer flows, especially those that would require the suspension of navigation during the period from mid-June through mid-September (when the increased releases make it to the Missouri River mouth near St. Louis). Results of this analysis were documented in a report by the Tennessee Valley Authority (TVA, 2002). A primary finding of this analysis was that navigation could continue on the Missouri River even with a split navigation season. Another important finding was that navigation benefits would be reduced by 73 percent in minimum service years when compared to the CWCP. Thermal generation capacity at risk increased exponentially as releases from Gavins Dam were decreased.

Other-50

The Corps is committed to creating the shallow water habitat and emergent sandbar habitat recommended by the USFWS and will use all of its authorities to accomplish habitat goals, including the Fish and Wildlife Mitigation Project for the Bank Stabilization and Navigation Project.

Other-51

The Corps will not comment on behalf of the USFWS. The PA does not include release changes from Gavins Point Dam that would increase the risk of crop damages due to interior drainage and groundwater impacts. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-52

Inclusion of more stringent drought conservation measures in the PA will increase minimum lake

levels at Lake Oahe by approximately 2 feet, and at Lake Sakakawea by approximately 4 feet in a drought similar to that experienced in the late 1980s.

OtheR-53

While hundreds of alternative flow management plans have been considered in the course of the Master Manual Review and Update, dam removal has not been considered as an option. The Missouri River Mainstem Reservoir System was authorized by Congress to serve multiple project purposes including flood control, recreation, navigation, fish and wildlife, irrigation, water supply, water quality, and hydropower. Removal of the dams would not provide for Congressionally authorized purposes. The Corps believes the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-54

The Corps believes the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. The PA was developed in consideration of both upstream and downstream interests. A summary of the impacts to economic uses and environmental resources resulting from the PA is included in Chapter 8 of the FEIS and in the FEIS Summary.

Other-55

Your comments have been included in the record and your name added to the Master Manual mailing list. You will be informed of the progress of the Study and notified of the availability of additional documents and meetings.

Other-56

Your recommendation that the Corps adopt the GP 2021 option is noted; however, the GP2021 option has not been identified as the PA. The recent NAS report entitled "The Missouri River Ecosystem: Exploring the Prospects for Recovery" was completed at the request of the Corps and the EPA. The Corps agrees with the NAS that action is needed to reverse the decline of the Missouri River and its ecosystem. The NAS did not endorse any alternative recommended by the USFWS or evaluated in the RDEIS, but did recommend an adaptive management strategy for recovery of the Missouri River ecosystem. The PA embraces an overall adaptive management strategy through MRRIP. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-57

The Corps' PA is based on the best biological and engineering science available and embraces an overall adaptive management strategy through MRRIP.

Other-58

Your support for the GP 2021 option is noted; however, that plan was not identified as the PA. The Corps believes the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. More stringent drought conservation measures included in the PA result in increased benefits to upstream recreation because lake levels would be slightly higher during drought periods.

Other-59

Your support for the GP2021 option is noted; however, that plan was not identified as the PA. The Corps believes the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-60

Release changes from Gavins Point Dam recommended in the USFWS November 2000 BiOp have not been included in the PA. Impacts to downstream uses/resources resulting from the PA are detailed in Chapter 8 of the FEIS. The Draft BiOp Implementation Plan (IP) was prepared by the Corps to inform the USFWS of how the Corps intended to implement the November 2000 BiOp. The Draft IP is not limited to flows, but includes all aspects of the RPA included in the BiOp. The IP will be modified to reflect the PA and the USFWS December 2003 Amendment to the November 2000 BiOp, and will be continually updated to reflect the Corps' progress in accomplishing the measures identified.

Other-61

The Corps has incorporated flow recommendations of the MRBA into the PA, including more stringent drought conservation measures and unbalancing of the upper three lakes. The Corps has proposed flow tests from Fort Peck Dam, Fort Randall Dam, and Gavins Point Dam as components of an initial MRRIP. Flow tests would be implemented in the context of an overall adaptive management strategy that included broad stakeholder participation through MRRIC.

Other-62

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC.

Other-63

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC. Fort Peck flow tests are intended to increases the spawning and recruitment of the pallid sturgeon on the Missouri River in addition to the conditions that exist on the Yellowstone River.

Other-64

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC. Potential impacts to the Fort Peck irrigation facilities will also be considered in an adaptive management strategy. The Corps has concluded that Fort Peck irrigation facilities would not be affected by the flow tests. Should monitoring indicate facilities might be affected, the flow tests may be modified. The Corps will fulfill its responsibilities to Federally recognized Tribes, including the Tribes of the Fort Peck Nation.

Other-65

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC. Assessment of the flow duration data for Fort Peck Dam indicates very little change in the overall distribution of flows for all the alternatives presented in the

RDEIS and FEIS, including the five alternatives that include the Fort Peck flow changes. Long-term conditions below Fort Peck Dam are considered to be similar to those associated with the CWCP. Flow tests from Fort Peck Dam will not affect sedimentation and the vector problem near Williston.

Other-66

Your support for the CWCP is noted; however, this plan was not selected as the PA. Rather than limiting public input into changes in river management, the Corps is committed to development of an adaptive management process that includes participation by a diverse range of basin stakeholders through MRRIC and expands opportunities for public comment. In addition to expanding public involvement in the Corps' review of annual operations (AOP process), the FEIS also presents a broader concept of adaptive management directed toward recovery of the Missouri River ecosystem. Social considerations and public values would be integral components of such an adaptive management strategy.

Other-67

The Corps believes the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. While the PA is based on the best biological and engineering science available, the Corps recognizes that there are scientific uncertainties regarding species response to operational changes. In its November 2003 BA (Appendix C), the Corps has proposed MRRIP, which would be guided by an overall adaptive management strategy. Adaptive management promotes an environment for testing hypotheses and exploring promising changes based on sound scientific data and analyses.

Other-68

Release changes from Gavins Point Dam have not been included in the PA. Examination of the flow duration curves below Gavins Point Dam for the alternatives analyzed in the RDEIS that included a spring rise did not indicate a shift in the dominant discharge or discharge class, and therefore, a long-term increase in overall erosion and/or degradation was not expected. Additionally, the Corps has concluded that the recommended spring rise included in the RPA to jeopardy would neither create nor maintain sandbars for the protected bird species and presented this information to the USFWS in the Corps' November 2003 BA (Appendix C to the FEIS). On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-69

The Corps does not believe the PA causes any harm or loss of rights. Citizens who believe they have been negatively affected by the operation of the Mainstem Reservoir System may file a legal claim against the United States and may subsequently be granted compensation. The Corps currently has no authorization or appropriation that would provide compensation absent damages awarded as a result of a claim.

Other-70

The Corps is committed to meeting the habitat recommendations included in the USFWS December 2003 Amendment to the November 2000 BiOp and is using all of its authorities to accomplish habitat goals, including the Fish and Wildlife Mitigation Project for the Bank Stabilization and Navigation Project. The WRDA of 1999 expanded the BSNP Fish and Wildlife Mitigation Project to included an additional 118,650 acres and directed the Corps to provide Congress a cost estimate for restoration of the existing acreage. The Corps has provided Congress that cost estimate, including cost associated with development of the shallow water habitat acreages recommended by the USFWS.

Other-71

This is true. The more stringent drought conservation measures included in the PA result in a reduction in navigation service level and season length earlier in droughts. Additionally, in severe droughts such as that experienced from1930 to 1941, navigation would be eliminated at a higher total system storage level than under the CWCP.

Other-72

Flow modifications from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC. When conditions permit, the Corps intends to conduct a mini-test test of a Fort Peck flow modification, which will test data collection methodology, gather information on temperature based on various combined flows from the spillway and powerhouse, and test the long-term integrity of the spillway operating at the modified flow. Results from the test will be considered in the implementation of a potential future test (full test). In light of the costs associated with variable levels intakes, the Corps has determined that success of splitting releases between the powerhouse and spillway should be evaluated initially. Evaluation of flow duration curves indicates that the releases should have no impact on degradation or deposition of sediment in Lake Sakakawea from the currently proposed mini- and full tests.

Other-73

The Corps' PA does not include release changes from Gavins Point Dam. While the NAS expressed concern about the Master Manual Review and Update process as the vehicle for change and recommended a moratorium on changes to the Master Manual, the NAS indicated, and the Corps agrees, that action is needed to reverse the decline of the Missouri River and its ecosystem. The Corps believes the PA provides an opportunity for the basin to move forward together to reverse the decline of the Missouri River ecosystem.

Other-74

An aggressive research, monitoring, and evaluation program is an essential component of MRRIP guided by an overall adaptive management strategy, and is critical to recovery of the Missouri River ecosystem. Research, monitoring, and evaluation efforts will be focused on agreed upon methodologies and measures of success developed within an overall adaptive management strategy. Local citizens and groups, and small universities may be involved in monitoring activities.

Other-75

Your support for the CWCP is recognized; however, this plan was not selected as the PA. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. We believe the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. Impacts of the PA on economic uses and environmental resources can be found in Chapter 8 of the FEIS and in the FEIS Summary.

While the PA is based on the best biological and engineering science available, the Corps recognizes that there are scientific uncertainties regarding species response to operational changes. The Corps has proposed an adaptive management strategy that includes rigorous research, monitoring, and evaluation. Adaptive management promotes an environment for testing hypotheses and exploring promising changes based on sound scientific data and analyses.

Other-76

The Corps realizes that the current-day reality of the Pick Sloan project differs from that originally envisioned. The Corps' PA reflects the need for changes in the operation of the Mainstem Reservoir System. We believe the PA evaluated in the FEIS serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-77

The Corps agrees. The PA embraces the concept of adaptive management for dealing with change and scientific uncertainty. Adaptive management promotes an environment for testing hypotheses and exploring promising changes based on sound scientific data and analysis. Diverse stakeholder input into potential operational changes and availability of independent scientific review are essential in an adaptive management process.

Other-78

Flow modifications from Fort Peck Dam have not been incorporated into the PA. The Corps has proposed flow tests from Fort Peck Dam, Fort Randall Dam, and Gavins Point Dam as components of an initial MRRIP. Flow tests would be implemented in the context of an overall adaptive management strategy that includes broad stakeholder participation through MRRIC. Fort Peck flow tests have been recommended by USFWS in the December 2003 Amendment to the November 2000 BiOp and are intended to increases the spawning and recruitment of the pallid sturgeon on the Missouri River in addition to the conditions that exist on the Yellowstone River.

Other-79

Your support for the GP2021 option is noted; however, this plan was not selected as the PA. Release changes from Gavins Point Dam were not included in the PA. Increased benefits to South Dakota recreation resulting from the GP 2021 option primarily result from inclusion of more stringent drought conservation measures that keep the upper three lakes higher in drought periods. The PA results in a 3 percent increase in recreation benefits over the CWCP.

Other-80

None of the alternatives presented in Chapter 7 of the RDEIS and FEIS would result in impacts to recreation at Lewis and Clark Lake because lake levels remain fairly constant even in drought periods. Similarly, the PA presented in Chapter 8 of the FEIS would not affect recreation on Lewis and Clark Lake.

Other-81

Reservoir levels at Lake Francis Case will not vary significantly from those experienced under the CWCP. Subsequently, there should be no additional impacts to the uses and resources referenced in your comment as a result of the PA.

Other-82

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC. Assessment of the flow duration data for Fort Peck Dam indicates very little change in the overall distribution of flows for all the alternatives, and therefore, long-term channel conditions below Fort Peck Dam are considered to be similar to those associated with the CWCP. The report prepared for the Corps by the Roosevelt County Conservation District provided a great deal of information and provided an estimate of the number of pumps that may be affected by the Fort Peck flow modification. The report did not however, provide any details into the extent or nature of the impacts, nor was it intended to. The data collected by the Roosevelt County Conservation District is part of the test plan and will be used to design data collection and assessment efforts for both the mini- and full tests. In the context of an overall adaptive management strategy, flows may be modified if substantial impacts occur.

Other-83

Changes in releases from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC. Assessment of the flow duration data for Fort Peck Dam indicates very little change in the overall distribution of flows for all the alternatives, and therefore, long-term channel conditions below Fort Peck Dam are considered to be similar to those associated with the CWCP. The Fort Peck flow tests are being considered in the context of an overall adaptive management strategy. Flows may be modified if substantial impacts occur. Citizens who believe they have been negatively affected by the flow tests may file a legal claim against the United States and may subsequently be granted compensation. The Corps currently has no authorization or

appropriation that would provide compensation absent damages awarded as a result of a claim.

Other-84

Fort Peck Lake will share the benefits of the more stringent drought conservation measures included in the PA. A review of the modeling input parameters determined that a tern and plover release parameter was set too high. This resulted in Fort Peck Dam releasing too much water on an annual basis in only1992, the last full year of the 1987 to 1993 drought in the GP options. Subsequent modeling was completed with the parameter either reduced or bypassed, and more appropriate lake levels were obtained from the simulation runs of the alternatives that used this parameter in early 1993, when the lowest lake level was attained. The results of the revised simulation are shown in Table 7.2-1. Impacts of the more stringent drought conservation measures included in the PA are presented in Chapter 8 of the FEIS.

Other-85

Several basin interest have been developing adaptive management strategies directed toward restoration of the Missouri River ecosystem as recommended by the NAS in their January 2002 report. While no specific proposals from basin interests have been recommended, and certainly efforts to recover the ecosystem must be considered holistically, due to the geographic diversity and extent of the Missouri River basin, it is likely that regional groups that focus on issues specific to particular river reaches (like the Fort Peck flow tests) would be important participants in MRRIC. Expanded and new authorities and funding for adaptive management remains elusive at this time. If the basin supports the concept of the council and funding is available, the Corps may consider a coordinator position.

Other-86

The Corps agrees and has embraced an overall adaptive management strategy through MRRIP as a feature of the PA. An important component of MRRIP is a strong research, monitoring, and evaluation effort. That effort includes the assistance of an independent scientific entity. Further, the Corps recognizes the importance of independent scientific review in any adaptive management strategy for the Missouri River.

Other-87

The Corps will take measures to minimize impacts to stakeholders. Impacts to stakeholders will be monitored and may be adjusted in an adaptive management strategy. However, currently the Corps does not have the authority and funding indemnify stakeholders. Parties who believe they have been harmed by changes in operation may file a claim against the United States.

Other-88

The Corps agrees with the principles for stakeholder involvement outlined by the NAS in their January 2002 report and included in your comments. The NAS report also recommended legislation that would provide funding for stakeholder involvement, clarify agency authorities, and establish Congressional oversight. Until such time as this legislation is authorized and funded, the Corps will make every effort to maximize stakeholder participation within our existing authorities and funding.

Other-89

The Corps has no authority to adjudicate water rights or authorize out-of-basin transfers. Analysis of impacts resulting from depletions to the system such as out of basin transfers can be found in Section 7.19 of the RDEIS and in the FEIS.

Other-90

The Corps believes the requirements of 36 CFR 800 have been met. The commenter is referred to Chapter 7 of the RDEIS and FEIS as well as the Tribal Appendix (FEIS Appendix A, Parts 1 and 2 in Volumes III and IV). A Cultural Resource Task Force made up of representative of the Corps, basin Tribes, THPOs, SHPOs, the ACHP, and the National Trust for Historic Preservation is currently developing a Programmatic Agreement for protection of cultural resources for the Missouri River Mainstem Reservoir System projects. The Corps anticipates the Programmatic Agreement will be signed prior to the ROD for the Master Manual Revision.

Other-91

The Corps believes the RDEIS and FEIS adequately address the historic values of properties within the Missouri River basin and that a

supplement is not required. Please refer to Technical Appendix 7H, Chapter 7 of the RDEIS and FEIS, and the Tribal Appendix (FEIS Appendix A, Parts 1 and 2 in Volumes III and IV.

Other-92

The Corps believes we have complied with Section 106 of the NHPA. The RDEIS and FEIS adequately address impacts to cultural resources.

Other-93

The Corps acknowledges your Resolution and is considering the issues raised in your Resolution in the Master Manual Review and Update.

Other-94

Your support for the CWCP is recognized; however, this plan was not selected as the PA. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. The Corps believes the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes. Future reductions in the inflows to the Missouri River, or depletions, will result in less water to meet the various needs during droughts. This also applies to the Mississippi River needs. One adverse impact would be to navigation. Depletions analyses on Mississippi River navigation inefficiency costs during low-flow periods indicate that navigation inefficiencies costs will go up as the depletions increase on the Missouri River under any Water Control Plan. The analyses indicate that the losses will average about $10 million per year per every million acre-feet of inflow depletion on the Missouri River for the two GP options fully evaluated for the RDEIS. Additional analyses were completed subsequent to the RDEIS for the CWCP, MCP, and PA. The depletion analyses can be found in Chapter 7 of the RDEIS and FEIS and Chapter 8 of the FEIS.

Other-95

While Tribal and public involvement and comment is extremely important to the Corps, the decision on a Water Control Plan for the operation of the Mainstem Reservoir System is not the subject of a vote. The State of Missouri's support for the CWCP is noted. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. The Corps believes the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-96

The Corps strongly disagrees. Public hearings regarding the Missouri River Master Manual Review and Update held in 1994 were well attended. No complaints regarding access or parking were received and the size of the meeting room was adequate. The November 14, 2001 hearing was advertised well in advance through multiple venues including press releases, a newsletter to Mississippi River interests who have requested to be on the mailing list for the Study, and on the Master Manual Web site.

Other-97

The CEQ has been fully informed of the PA, and has served in a coordinating role to ensure a unified Federal position. CEQ has not expressed objections to the PA to date and the Corps is unaware of any referral of the PA to the CEQ.

Other-98

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-99

The USGS graphics can be found at www.cerc.usgs.gov/rss/visualize/index.htm.

The Corps does not believe that inclusion of the graphics would contribute substantially to the understanding of flow management plans.

Other-100

The Corps believes the PA is consistent with the General Management Plan for the Missouri National Recreational River. The PA, which includes a proposed MRRIP guided by an adaptive management strategy, will ultimately result in restoration of the Missouri River ecosystem consistent with growing societal values of recreation, aesthetics, and cultural history.

Other-101

The PA does not include release changes from Gavins Point Dam. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-102

Concur. Section 3.7.12 will be modified as per your comments.

Other-103

Concur. Section 3.8.1 will be modified as per you comments.

Other-104

Concur. Section 3.8.1 will be modified as per your comments.

Other-105

Concur. Section 3.8.1 will be modified as per your comments.

Other-106

Concur. Section 3.8.1 will be modified to reflect that the USFWS has not mandated unbalancing of the upper three lakes.

OtHeR-107

Concur. Sections 3.2.9 and 3.8.13 will be revised to reflect accurate reach designations.

Other-108

Concur. Section 3.8.13 will be modified to revise the date from 1989 to 1998.

Other-109

Concur. Section 4.1 will be revised to reflect the January 31, 2000 correspondence from the USFWS.

Other-110

Concur. Section 4.2.7 will be modified to reflect initiation of consultation on April 3, 2000.

Other-111

Concur. Section 5.12 will be modified to revise MRDA to MRBA.

Other-112

Concur. Section 6.2 will be modified to reflect that the NAS Report has been completed.

Other-113

The Corps disagrees. The summary of the exemption process found in Section 6.3.5 is accurate. Difficulties in understanding the section reflect the cumbersome nature of the process and governing statutes. The Corps' intent in including the discussion does not diminish our commitment to comply with the ESA or work cooperatively with the USFWS. The exemption process is a course of action provided under ESA and was presented in the interest of fully disclosing all potential

outcomes of ESA consultation to the public. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-114

Concur. Section 6.5.1 will be updated to reflect the Corps' most recent correspondence regarding implementation of the November 2000 BiOp.

Other-115

Concur. The date of the BiOp on the Operation and Maintenance of the Upper Mississippi River will be changed from April of 1999 to April of 2000.

Other-116

The discussion of adaptive management in Chapter 6 is conceptual. Paragraph two is not inconsistent with the recommendations of the NAS. In fact, the NAS report recommends that Federal legislation directed toward recovery of the Missouri River ecosystem define authorities in an adaptive management strategy. That legislation may provide stakeholders a decision-making role. The Corps does recognize that absent authorization and funding of such legislation, the Federal agencies do not abrogate their responsibilities.

Other-117

The Corps believes that the graphs are adequate to determine relative differences between the alternatives.

Other-118

Concur. Appendix C, entitled "Final Biological Assessment on the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, and the Operation of the Kansas River Reservoir System," has been added to the FEIS. The BA includes discussions of the Corps' proposed research, monitoring, and evaluation plan for protected Missouri River species.

Other-119

Should the Missouri River Environmental Assessment Program (MoReap) be authorized and funds appropriated, the Corps will carry out any role defined in the legislation. Absent MoReap, the Corps will conduct monitoring efforts for threatened and endangered species consistent with Appendix C. In addition to population assessment, research, monitoring and evaluation related to endangered species, the Corps monitors several resources at its Missouri and Kansas River projects.

Other-120

Response provided by BG Fastabend letter of October 25, 2001.

Other-121

The RDEIS and FEIS are consistent with the referenced sections of NEPA. Because the Missouri River Mainstem Reservoir system is currently operating, the "no action" alternative is the CWCP. Relative differences in impacts among the alternatives to 13 Missouri River key uses/ resources, and some Mississippi River resources are compared to the CWCP in both the RDEIS and the FEIS.

Other-122

The RDEIS and the FEIS are consistent with the referenced sections of NEPA and the Corps' implementing regulations. The RDEIS and FEIS adequately address environmental effects. The 31 volumes of technical reports for the Study have been available to the Tribes, agencies, and the public since 1994, with some updating of the reports in 1998.

Other-123

The U.S. Department of Transportation, Maritime Administration Regional Offices in St. Louis, Missouri and Chicago, Illinois have participated in the Study and have been consulted with since initiation of the Study in 1989.

Other-124

The USFWS November 2000 BiOp was only one source of information used in the selection of the PA. The PA is based upon the best biological and engineering science available. See Chapter 8 of the FEIS for a more detailed discussion of formulation of the PA.

Other-125

A 30-day comment period will follow publication of the FEIS. This will provide the Tribes and the public an opportunity to comment on the PA prior to a ROD and implementation of the flow management plan.

Other-126

Concur. Section 3.12.13 will be modified to read "DeSoto National Wildlife Refuge."

Other-127

The Corps is aware of the March 22, 2001 correspondence from nine Mississippi River Governors and has conducted the additional depletion analyses requested in their letter. The additional depletion analyses are found in Section 7.19 of the RDEIS and FEIS. The concept of an interagency group including the Secretaries of Transportation and agriculture has been elevated to Corps Headquarters (HQUSACE) for consideration.

Other-128

The additional hearings were held at Cape Girardeau, Missouri on January 21, 2002; Quincy, Illinois on January 23, 2002; and Council Bluffs, Iowa (Omaha Metropolitan Area) on February 19, 2002. The comment period for the RDEIS closed on February 28, 2002.

Other-129

Thank you for the suggestion that the Corps and the Natural Resources and Conservation Service (NRCS) closely coordinate appraisals to ensure owners of agricultural lands who willing sell their property or enter into perpetual easements are fairly compensated. As we complete the remainder of the existing Bank Stabilization and Navigation Project fish and wildlife mitigation program and proceed with the expanded program authorized by the Water Resources Development Act of 1999, cooperation between the Corps, Tribes, NRCS, other Federal and State agencies, and basin stakeholders (including willing sellers) will be critical to acquiring and restoring the additional 118,650 acres authorized.

Other-130

Your conditional support for the Fort Peck Spring rise is noted. Each of the concerns and conditions has been responded to individually. Flow modifications from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC. When conditions permit, the Corps intends to conduct a mini-test test of a Fort Peck flow modification that will test data collection methodology, gather information on temperature based on various combined flows from the spillway and powerhouse, and test the long-term integrity of the spillway operating at the modified flow. Results from the test will be considered in the implementation of a potential future test (full test).

Other-131

Noted. Inclusion of more stringent drought conditions results in slightly higher lake levels at Lake Sakakawea during drought periods.

Other-132

The Corps agrees that changes in total NED benefits from the CWCP are slight for any of the alternatives analyzed**.**

Other-133

Impacts of the alternatives selected for detailed analysis in Chapter 7 of the RDEIS on key economic uses/resources are both positive and negative.

Other-134

The Corps does not concur. Many projects and facilities in the basin are dependent on lake levels and river flows, including the flows on the Lower River. Potential impacts to Lower River facilities and potential projects are presented in the spirit of full disclosure of impacts as required by NEPA. Further, downstream projects and facilities are more dependent on variations in annual flows whereas impacts to the upstream lakes are more periodic in nature.

Other-135

The PA does not include release changes from Gavins Pont Dam. The discussion in Section 7.21.1 of the RDEIS relates to responsible efforts by the Corps to manage risks to downstream users if a spring rise were to be implemented from Gavins Point Dam. A review of the hydrology for the 100-year period of record indicates that there may be some minimization of risks to downstream agriculture by implementing a spring rises from Gavins Point Dam during drought periods. Droughts occur when the Corps drafts storage from the carryover multiple use zone. There may be one-year droughts or multiple year droughts.

Other-136

The revision of the Missouri River Master Manual is both complex and controversial. To date, $29 million has been spent by the Corps for the Missouri River Master Manual Review and Update. The Corps has the authority to flow to target or use a flat release to serve downstream uses without missing targets under the existing Master Manual.

Other-137

The Corps does not believe we are constrained from considering alternatives other than those presented in the RDEIS, but rather believes the RDEIS frames the range of flow plans and impacts under consideration by the Corps. The State of Missouri's concerns about the impacts to downstream users have been considered in the formulation of the PA. The Corps seeks a balanced approach to operation of the Mainstem Reservoir System. The Corps believes the PA serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Other-138

All of the alternatives analyzed in detail in Chapter 7 of the RDEIS and FEIS, with the exception of the CWCP, included more stringent drought conservation measures. The PA includes mores stringent drought conservation measures similar to those included in the MCP, but which have been modified slightly to better meet the Corps' objectives for a PA. Release changes from Gavins Point Dam have not been included in the PA.

Other-139

It is not the intent of the Corps to mislead the public. The Corps does not use the term "water conservation" to describe more stringent drought conservation measures. Drought conservation, for the purposes of the Review and Update, is defined as a reduction in releases from the Mainstem Reservoir System to conserve water in the lakes for authorized project purposes. This definition is included in both the Summaries to the RDEIS and FEIS, and in the reports themselves (Chapter 10 of the FEIS).

Other-140

The Corps has followed the principles and guidelines in formulating alternatives. Throughout the process, literally hundred of alternatives that include permutations of various features have been analyzed. Chapter 7 of the RDEIS and FEIS have most definitely analyzed impacts incrementally, since varying increases in spring releases and decreases in summer releases were added to an alternative (the MCP) that included more stringent drought conservation measures. This incremental

approach allowed the Corps to isolate impacts resulting from the more stringent drought conservation measures from those resulting from Gavins Point Dam release changes, and allowed the Corps to isolate the impacts of various spring rises and lower summer releases.

Other-141

Thank you for your opinion. The material presented in the RDEIS is extremely complex. The Corps made every effort to allow the reader to follow the process and to show the comparison necessary for decision-making. Summary tables are provided throughout Chapters 5 and 7 of the RDEIS and FEIS, in Chapter 8 of the FEIS, and in the FEIS Summary to allow for comparison of impacts.

Other-142

Under the current Master Manual, the Corps has the authority to delay evacuation of water to the fall. Reduced summer flows until approximately September 1 have not been included in the PA. The Corps also supports aggressive habitat restoration for threatened and endangered species.

Other-143

Reservoir unbalancing has been implemented under the current Master Manual and is included in the PA. With regard to monitoring necessary to increase understanding of the ecosystem and the species that depend upon it, Appendix C of the FEIS outlines the Corps' research, monitoring, and evaluation efforts for the listed species. The Corps has embraced the concept of MRRIP guided by an overall adaptive management strategy that includes diverse stakeholder input and independent scientific review through MRRIC. The Corps has expanded its support for pallid sturgeon propagation as a component of the initial MRRIP.

Other-144

The Fort Peck flow modification is also addressed in Chapters 2 and 4 of the RDEIS and FEIS.

Other 145

The Corps has no authorities relative to water rights adjudication or enforcement of the Interstate Compacts and Court Decrees. Revision of the Missouri River Master Manual has no bearing on these issues.

Other-146

Responded to by BG Fastabend letter of April 11, 2002.

Other-147

The Corps' intention is to conclude the NEPA process, revise the Master Manual itself, prepare an Annual Operating Plan that reflects the revised manual, and implement the revised water management plan as efficiently and expeditiously as possible.

Other-148

The Corps' awareness of its responsibilities to American Indian Tribes and the protection of cultural resources have evolved considerably during the past decade, and this evolution is reflected in the 13-year Missouri River Master Manual Review and Update process. A summary of the current activities regarding our Government–to–Government consultation with the Tribes, and efforts to identify and protect cultural resources should allay many of the concerns expressed in your letter.

Several basin Tribes have taken the Corps up on its continuing offer of Government-to-Government consultation for the Missouri River Master Manual Review and Update. While there are several significant issues between the Tribes and the Corps, some of which are directly related to changes in the operation of the Missouri River, and some which are not, the impact of the operation of the Mainstem Reservoir System on cultural resources has been and continues to be paramount in our consultation with the Tribes.

The analysis of cultural resources in the Review and Update process has been based on the best available information and methodology to address cultural resources issues of this magnitude. More information becomes available as the Tribes and Corps make progress in jointly addressing cultural resources issues and this information is incorporated into the NEPA document. For example, at the time the Review and Update was initiated there were no cultural resource management plans for the Missouri River reservoirs and projects. The Corps, in consultation with the Tribes, has now completed all of the cultural

resource plans for the mainstem lakes, with the exception of the plan for Garrison Reservoir. The Garrison Reservoir plan is scheduled to be completed in Fiscal Year 2004. In the course of developing these plans, the Corps and Tribes have reviewed existing sites and added sites as they have been identified. Tribal members are currently under contract to assist the Corps with identification of traditional cultural sites.

In addition, a Cultural Resource Task Force has been established that includes Missouri River basin Tribes, State and Federal agencies, and the Corps. The purpose of the task force is to specifically address cultural resource issues along the Missouri River. The task force is currently developing a programmatic agreement to guide the preservation and protection of cultural resources along the entire Mainstem Reservoir System. It is anticipated that the programmatic agreement will be signed prior to the ROD for the Master Manual Review and Update. The task force is also working on the development of a cultural site monitoring plan and is having input into the development and prioritization of projects within the Cultural Resource Program. Further, the task force is also attempting to secure funding for cultural resources preservation and protection and has had some success. While funding is still far below what is necessary, the Omaha District has committed $3 million dollars for inventory, testing, evaluation, assessment, and mitigation in Fiscal Year 2004.

The analysis of cultural resources in the RDEIS for the Review and Update is based on the impacts of wave erosion on known cultural sites. The Corps does recognize in the RDEIS that shoreline and bluff erosion and exposure of cultural sites during low water periods are also factors that affect cultural resources; however, based on available information, a quantitative analysis of these types of impacts could not be developed.

Cultural resources will continue to be affected by the PA or any other plan the Corps might select. The Corps is committed to expanding our efforts to gain Tribal input into our annual operations. In consultation with the Tribes, the Omaha District geographic information system database should assist in determining which sites may be affected by our annual operations so that decisions regarding protection of those sites can be made by the Tribes and the Corps. Further, the Corps is taking responsible measures to protect resources that may be affected by changes in operation of the mainstem dams. For example, the Fort Peck Tribes have completed cultural resource surveys below Fort Peck Dam to determine if cultural resources would be affected by specific flow tests from Fort Peck Dam for endangered species. If sites would be affected, the Corps and the Tribes would determine what steps need to be taken to protect the sites.

Summarizing, the Corps believes that we are in compliance with Section 10 and Section 106 of the NHPA and believe that the RDEIS is adequate. We also recognize, however, that because our knowledge of cultural resources and their importance continues to evolve, protection of cultural resources must be addressed in an adaptive management context with continued participation by basin Tribes.

Other-149

The Council on Environmental Quality is fully aware of the PA, and has expressed no objection to date.

Other-150

Noted. Congressionally authorized purposes are discussed in Chapter 1 of the RDEIS and FEIS.

Other-151

The CWCP was not selected as the PA. More stringent drought conservation measures identified in the MCP were slightly adjusted to be consistent with the Corps' objectives for a PA.

Other-152

Neither the RDEIS nor the FEIS examine a 48-year period of record. Both documents use a 100-year period of record from 1898 to 1998. The commenter is referred to Chapter 7 of the RDEIS. Figures showing species response for each year were provided.

Other-153

The Corps does not agree. Intended species response was discussed for protected species as well as for other fish habitats analyzed the RDEIS. The commenter is referred to Chapter 7 of the RDEIS and FEIS, and Appendix C of the FEIS.

Other-154

For many of the 13 key uses/resources analyzed, there were no significant differences between the alternative analyzed and the CWCP. This was pointed out in the RDEIS and in the FEIS. Where more substantial differences occur, they are expressed in the RDEIS and FEIS. For the PA, these differences are expressed in Chapter 8 of the FEIS. As an example, the reader is referred to Section 7.8.1 of the RDEIS (and FEIS) that examines the impacts of the alternatives on flood control. The insignificant differences between the CWCP and all of the alternatives are apparent from the discussion. Conversely, the commenter is also referred to Section 7.6 Wildlife Resources. The substantial increase in benefits to riverine tern and plover habitat resulting from the alternatives when compared to the CWCP is very clearly shown in Table 7.6-1 and in the discussion.

Other-155

The Corps is confident that our models meet the intent for which they were developed and are sufficient for NEPA compliance. Models developed for the Study are intended to demonstrate relative differences between alternatives rather than absolute impacts.

Other-156

In response to concerns expressed by EPA on the PRDEIS, as the Corps developed the RDEIS a conscious effort was made to make the document more reader-friendly. The Corps believes we have made substantial progress, and that this is particularly evident by the RDEIS and FEIS Summaries. The vast majority of the public read the Summaries rather than the EIS documents. Throughout the NEPA process for the Review and Update, the challenge has been, and continues to be, the presentation of very complex information in a form that is understood by the public, and to accomplish this in a manner that does not compromise technical accuracy. We believe the RDEIS, FEIS, and their respective Summaries have accomplished both objectives.

Other-157

The Corps agrees that in Figure 7.2-13 the individual alternatives are difficult to discern. This should indicate to the reader that there is very little variability among the alternatives presented in the figure.

Other-158

The Corps cannot predict future conditions that may or may not occur, and does recognize that the next 100 years will not exactly replicate the past 100 years. However, the past 100 years has occurred, is known, and provides the most valid basis for any analysis of impacts.

Other-159

Economic modeling and calculation of benefits followed the Corps Principles and Guidelines. The Missouri River Mainstem Reservoir System is an existing project, and traditional cost/benefit analyses do not apply. Rather, all models were developed to demonstrate relative differences between alternatives. Environmental resource values have not been weighed against economic resources in the Master Manual Review and Update. Rather, the Corps has sought to achieve a balance to serve authorized project purposes, comply with environmental laws including the ESA, and fulfill our trust responsibilities to Federally recognized American Indian Tribes. The Corps believes the PA meets these objectives.

Other-160

Noted.

Other-161

Since the mainstem lakes are finite vessels, and ultimately what comes into the Mainstem Reservoir System must either be evacuated or stored, the differences between the alternatives do not appear significant. Varying impacts among the alternatives result from changed operations during drought periods, and changes in the timing, magnitude, frequency, and duration of releases.

Other-162

The depletion analysis is found at Section 7.19 of the RDEIS and FEIS and in Chapter 8 of the FEIS for the PA. The analysis has been expanded to include analysis of the impacts to Missouri River resources and Mississippi River navigation resulting from four levels of depletions for the CWCP, MCP, and PA.

The cumulative impacts analysis is found at Section 7.18 of the RDEIS and FEIS and includes consideration of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project.

Gulf hypoxia and the Gulf Hypoxia Action Plan are discussed in Section 3.5.8 Page 3-59 of the RDEIS.

Infestation of freshwater emergent wetlands in the Lewis and Clark Lake delta with purple loosestrife is discussed in Section 3.6 of the RDEIS and FEIS. Impacts of proposed flow changes on dispersal of purple loosestrife under the PA are considered to be similar to the CWCP.

The section will be revised to reference the Big Muddy National Wildlife Refuge.

The RDEIS and FEIS consider the long-term impacts resulting from changes in lake operations. Refer to Chapter 7 of the RDEIS.

Other-163

A 30-day Tribal and public comment period will follow release of the FEIS. Comments may be submitted by mail, electronically, or by fax to the Corps. No workshops or hearing are planned during the 30-day comment period.

Other-164

The Corps received nearly 54,000 comment documents in response to the RDEIS published in August of 2001. Approximately 45,000 of those comment documents were electronic form letters. Subject area experts at the Corps have responded to each comment received in response to the RDEIS in the FEIS. Although Tribal and public comments provide valuable input to decision-makers, selection of the PA is not a vote. In selecting the PA the Corps identified primary criteria: the alternative must serve Congressionally authorized project purposes, comply with environmental laws including the ESA, and fulfill the Corps' responsibilities to Federally recognized American Indian Tribes.

Other-165

This comment is directed toward the USFWS. The Corps will not respond for that agency.

Other-166

Because the Corps has described the PA and identified impacts resulting from the PA, entities who rely on the river for their economic livelihood should be able to make long-term economic decisions accordingly. Annual Operating Plans that reflect the guidelines included in the revised Master Manual and their application based on annual conditions will continue to be developed by the Corps with input from the Tribes and the public.

Other-167

All project purposes identified in the Flood Control Act of 1944 are given equal consideration in the Review and Update. This is an outcome of 1991 litigation.

Other-168

The Corps is aware of the resolutions of the Iowa and Montana legislatures opposing changes to the CWCP. Those resolutions have been considered as a part of the Corps' deliberations to identify a PA.

Other-169

There are no studies that would support the theory that a "spring rise" from Gavins Point Dam would accelerate the spread of purple loosestrife or would have any effect on noxious weeds. Release changes from Gavins Point Dam have not been included in the PA.

Other-170

Thank you for the suggestion that the Corps and SIMPCO partner to survey property owners who would be willing to sell their property or agree to conservation easements. The Corps is committed to meeting the habitat recommendations included in the December 2003 Amendment to the November 2000 USFWS BiOp and is using all available authorities to accomplish habitat goals.

Other-171

The PA does not include a stated policy to minimize spills at mainstem dams. Rather, the PA represents a balanced approach that does not favor one Congressionally authorized project purpose over another.

Other-172

The Corps has no authority to adjudicate water rights or authorize out-of-basin transfers of water.

Other-173

Inclusion of daily data in the RDEIS and FEIS is not appropriate because there are approximately 36,500 data points for each station for each factor, e.g., 36,500 data points for Gavins Point Dam releases. To provide the opportunity to examine daily data and to complete any analyses desired, the Corps places the daily data on its Web site for the Master Manual Study. Also, special analyses of these data were conducted and provided to those with special data needs, e.g., Ameren AE, the utility serving the St. Louis, Missouri region received Excel files identifying how many days in each year the flow dropped below three sets of flows. This service was provided to anyone requesting it during discussions with the Study staff at workshops, meetings, etc.

4.23 Other-174

The Corps calibrated the Daily Routing Model. Validation of model results also occurred in numerous ways as specific model simulation runs were completed. Page 11 (where Daily Routing Model discussion is occurring) of Volume 2A: Reservoir Regulation Studies, states, "During calibration studies these factors were evaluated, and it was found that the match between historic and computed flows could be improved in some cases by lowering the factors while in others the opposite was true." This sentence in an appropriate section of a supporting technical report indicates that calibration of the Daily Routing Model was conducted. Calibration of a model to match actual day-to-day operations is extremely difficult as those factors affecting daily flows vary considerably in real-time operations. Trying to put an uncertainty factor on this specific model is virtually impossible because of this variability in real-time operating factors.

Other-175

The Corps attempted to develop models that provided insight into potential impacts as river flows and lake levels varied among the many alternatives modeled. Technical experts from the basin States and other Federal agencies provided technical overview and review of these models as many of them were developed. Results from these models, therefore, became the best available information for use in the preparation of the various EISs for the Master Manual Study. Validation of a specific model's results was completed by determining that the results made sense. For example, one would expect groundwater levels and resulting crop damages to be higher in years in which the river was higher than normal or higher under one alternative in a given year than another alternative. If this were not the case, one would suspect that the model was not able to capture appropriate impacts. This type of effort was better than just saying in the EIS that the spring rise alternatives would have greater crop losses than the current Water Control Plan. The models attempt to quantify the impacts instead of just qualifying impacts. It would be extremely difficult to say that an impact identified was within a certain percent of being a value that could occur in real-time operations; however, it does represent a strong effort to more thoroughly address the issue.

Other-176

The results of all of the simulation runs and the modeling of their impacts were checked to determine if the results made sense. Whether the results were potentially off by a certain percent is not as important as the trends indicated by the model results. If the trends cannot be readily explained, the results become suspect. The models used and the alternatives simulated are numerous, and a thorough review of each impact in detail was not possible. Overall trends, however, were checked to ensure that they were appropriate, and, if not, detailed analyses were conducted to better understand the validity of the results.

Other-177

The HEC-2 model was not used to compute impacts in any of the analyses for the Master Manual Study. The only reference found regarding HEC-2 modeling is on page 17 of Volume 3B: Low Flow Studies, Gavins Point Dam to St. Louis. Missouri. It states, "Normally, QUAL2E applies the same rating curve coefficients to each element within a reach; but since element lengths of 5 miles were used (which for most studies is a reach length), it was determined that a rating curve was needed at each element to better represent depth and velocities. HEC-2 (US Army Engineer Hydrologic Engineering Center (HEC) 1982) simulation results were available approximately

every mile for hydraulic variables (i.e., depth, flow, and velocity) at five different flows. Five-mile averages of these data were used to develop the rating curves (discussed in Part III for the Study." The HEC-2 runs referred to were completed for the Missouri River by the Omaha and Kansas City Districts well before the Master Manual Study was initiated.

Other-178

Thank-you for your comments concerning the nature of the Missouri River at the time of the Lewis and Clark Voyage of Discovery. The Corps recognizes that the Missouri River ecosystem has changed significantly since the time of Lewis and Clark and that approximately 11 million people currently live in the basin. We also recognize that the Missouri River Mainstem Reservoir System and the Missouri River Bank Stabilization and Navigation Project have significantly modified the River.

Other-179

Thank you for your recognition of the Corps' current research, monitoring, and evaluation program for the pallid sturgeon. Under the PA, these efforts will be escalated considerably. Research, monitoring, evaluation, and independent scientific review are critical to the success of MRRIP guided by an overall adaptive management strategy. Refer to Appendix C of the FEIS for a detailed explanation of monitoring efforts.

Other-180

Effects on other wildlife species were not individually modeled; however, changes in the wetland and riparian values provide some insight into the effects of a change from the CWCP to other alternatives analyzed in the RDEIS. Endangered species are given special consideration in the Review and Update due to their protection by law.

Other-181

Consideration of positive impacts to waterfowl management, hunting, and other uses on the Kansas River System as a result of continuing use of water from the Kansas reservoirs for Missouri River navigation is not within the scope of the Master Manual Review and Update Study. Should a study be initiated for revision of the Kansas River Project Manuals, these impacts would be considered.

Other-182

The Corps has always executed the will of the American people, as expressed by their elected representatives in Congress, as directed by the national command authority, and as sanctioned by the courts. The reality is that over time, the American people have given the Corps multiple instructions. In the 1930s and 1940s, the American people told the Corps to operate and maintain the Missouri River Mainstem Reservoir System for multiple purposes. In the 1970s, the Corps was given additional instructions that included the ESA and NEPA. In the 1980s, the NHPA and the NAGPRA were passed. The Corps' challenge is to try to resolve contradictions among the Corps' responsibilities under these laws and faithfully execute the will of the American people. Resolving these conflicts is both complex and controversial.

Other-183

Impacts of modified releases from Gavins Point Dam diminish as you go downstream. This is because the size of the channel increases.

Other-184

Unbalancing of the lakes has been included as a feature of the PA. Under the CWCP, when system inflows are above or below normal, the amount of water in the upper three (largest) lakes is balanced so that the effects are shared equally among these lakes. To preclude jeopardy for the listed species, the USFWS November 2000 BiOp recommends unbalancing the amount of water in these lakes as long as an extended drought (more than 1 year long) or an extremely high runoff into the system is not occurring. Unbalancing also provides benefits to young fish in these three lakes. Unbalancing consists of purposefully lowering one of the upper three lakes approximately 3 feet to allow vegetation to grow around the rim, and then refilling the lake to inundate the vegetation. The unbalancing would rotate among the three lakes on a 3-year cycle. Higher spring releases will fill the downstream lake and provide a rising lake level for game and forage fish spawning. The subsequent 2 years of lower flows would expose that bare sandbar habitat for use by the protected birds. Unbalancing would also provide more bare sandbar habitat around the perimeter of the lakes for the birds. In subsequent

years, the inundated vegetation around the perimeter would be used by adult fish for spawning and by young lake fish hiding from predators.

Other-185

While erosion has been addressed in the RDEIS and FEIS from a systemwide perspective, examination of the individual and cumulative effects of bank stabilization is beyond the scope of the Review and Update. The Corps is committed to restoring natural river processes, including erosion and deposition in some areas. This has and will be accomplished using all authorities available to the Corps.

Other-186

Zoning authorities are the responsibility of local governments, although qualifications and participation in Federal flood insurance programs are the responsibility of the Federal Emergency Management Agency. Within the authorities of the Missouri River Bank Stabilization and Navigation Project Fish and Wildlife Mitigation Program, the Corps is considering levee setbacks at specific locations.

Other-187

Should Congress authorize and fund decommissioning or removal of Gavins Point Dam or any other of the mainstem dams, the Corps would follow the law.

Other-188

Flow modifications from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through a MRRIC. When conditions permit, the Corps intends to conduct a mini-test of a Fort Peck flow modification that will test data collection methodology, gather information on temperature based on various combined flows from the spillway and powerhouse, and test the long-term integrity of the spillway operating at the modified flow. Results from the test will be considered in the implementation of a potential future test (full test). The full test consists of combined spillway and powerhouse releases of 23 kcfs for 3 weeks in the mid-May through June timeframe. This test is intended to trigger pallid sturgeon spawning by increasing both flow and temperature in the river reach downstream from the dam.

Other-189

The Corps will not comment on the NAS report on the Klamuth River.

Other-190

Input from the MRBA is only one source of information used in the selection of the PA. Nearly 54,000 comment documents were received during the Tribal and public comment period. All comments were considered prior to identification of PA by the Corps.

Other-191

Consideration of impacts resulting from the use of water from the Kansas Reservoirs for Missouri River navigation is not within the scope of the Master Manual Review and Update Study. Should a study be initiated for revision of the Kansas River Project Manuals, these impacts would be considered.

Other-192

The Corps is uncertain about the nature of your comment. The RDEIS and FEIS evaluate the full range of flows over the 100-year period of record.

Other-193

Although the PA does not include release changes from Gavins Point Dam, the RDEIS and FEIS discuss thermal energy at risk due to low summer flows. There are 18 thermal plants along the Missouri River below Gavins Point Dam that rely on cooling water. EPA regulates the discharge temperature of the cooling water. If the temperature of the discharge water is too high, thermal plants have to reduce generation or completely shutdown. The RDEIS identified 387 MW of capacity and 203 million MWh of energy could be lost if the Gavins Point Dam release were

to drop to 21 kcfs during the summer as recommended by the USFWS in their November 2000 BiOp.

Other-194

Under the CWCP, Federal and State listed noxious weeds such as musk, Canadian thistle, and leafy spurge grow on exposed mudflats and disturbed areas along the lakes. This vegetation poses a nuisance to adjacent property owners. The Corps currently funds chemical and biological treatment of these noxious weeds. Noxious weeds will continue to be an issue under any of the Water Control Plans analyzed in the RDEIS, and under the PA. The only operational feature of the CWCP and the other alternatives analyzed in the RDEIS that could exacerbate the growth of noxious weeds is unbalancing of the upper three lakes. However, because unbalancing of the upper three lakes is also a feature of the CWCP, no change in impact from the CWCP is anticipated. More stringent drought conservation measures included in the PA may result in a reduction in noxious weeds during drought periods because the upper three lakes would be slightly higher.

Other-195

Purple loosestrife is an invasive species found in emergent wetlands at the headwaters of Lewis and Clark Lake. Invasion by purple loosestrife occurs under the CWCP and will continue under the PA and any of the alternatives analyzed in the RDEIS.

Other-196

Revisions to the Missouri River Master Manual are only pertinent to the operation of the Missouri River Mainstem Reservoir System and have no bearing on tributary streams. The Corps will not comment on behalf of the USFWS or the South Dakota Department of Game, Fish, and Parks.

Other-197

Noted. The Corps is not aware of any special designation effort underway.

Other-198

All of the alternatives presented in Chapter 7 of the RDEIS and Chapter 8 of the FEIS, including the PA, include more stringent drought conservation measures. During extended drought periods, navigation service level would be reduced earlier and season length would be shortened under these alternatives compared to the CWCP. This would allow more water to be stored in the upper lakes. During severe droughts such as the 1930 to 1941 drought, releases for navigation would be eliminated at a higher system storage than under the CWCP. Two consecutive years of non-navigation would require the approval of the Secretary of the Army.

Other-199

The Corps takes its responsibilities relative to dam safety and homeland security seriously. To the best of our knowledge, alternative transportation modes have not been examined from a security perspective. Benefits to Missouri River navigation under the PA increase by 6 percent as compared to the CWCP.

Other-200

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-201

Flow modifications from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided

by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through MRRIC. When conditions permit, the Corps intends to conduct a mini-test of a Fort Peck flow modification that will test data collection methodology, gather information on temperature based on various combined flows from the spillway and powerhouse, and test the long-term integrity of the spillway operating at the modified flow. Results from the test will be considered in the implementation of a potential future test (full test).

Other-202

Fort Peck Lake will share the benefits of the drought conservation measures included in the PA. A review of the modeling input parameters determined that a tern and plover release parameter was set too high. This resulted in the model simulating Fort Peck Dam releasing too much water on an annual basis in 1992, the last full year of the 1987 to 1993 drought in the GP options. Subsequent modeling was completed with the parameter either reduced or bypassed, and more appropriate lake levels were obtained from the simulation runs of the alternatives that used this parameter in early 1993, when the lowest lake level was attained. The results of the revised simulation are shown in Table 7.2-1.

Other-203

Revision of the Missouri River Master Water Control Manual is both complex and controversial, and represents an important public policy decision. These factors are reflected in the length of the Study. The commenter is referred to the History of the Study and National Policy Act Process found in Chapter 1, Section 1.3 of the RDEIS and FEIS. The FEIS Summary depicts the process to date.

Other-204

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-205

The Corps recognizes that construction of the dams resulted in significant direct impacts to the Missouri River and the upstream Tribes and States. Construction and operation of the dams for multiple purposes was authorized by the Flood Control Act of 1944, and the original Master Water Control Manual was completed in 1960. The scope of the current Master Manual Review and Update does not include impacts related to construction of the dams, but assumes the dams are in place and that the Corps is operating under the current manual. The study focuses on the impacts related to changes in the Corps' operation of the Mainstem Reservoir System.

Other-206

The Missouri River and its mainstem lakes are a source of water for municipal water supply; irrigation; cooling water; and commercial, industrial, and domestic uses. Approximately 1,600 water intakes of widely varying size are located on the Mainstem Reservoir System and the Lower River. Access to water is a key concern because low water levels increase the cost of getting water from the lakes or river. Twenty-five coal-fired and nuclear powerplants with a combined generating capacity of 15,084 MW draw cooling water from the Mainstem Reservoir System and the Lower River. The flow in the river and the river's water temperature affect a powerplant's ability to operate within water quality standards for discharges to the river. Low flows in the river may, therefore, force cutbacks in power production. Water supply benefits for the intake facilities along the Mainstem Reservoir System and the Lower River were determined for all lakes and river reaches from the headwaters to the mouth. In addition to the intake of water, benefits associated with potential reductions in powerplant generation when river flows are lower were computed. The PA does not include lower summer system releases.

While the PA has slightly higher benefits than the CWCP, overall this increase is considered to be insignificant. Water supply benefits are increased due to more stringent drought conservation measures included in the PA. More stringent drought conservation measures allow more water to be stored in the upper lakes during drought periods.

Other-207

By correspondence of February 25, 2002 (Comment F0200002) the EPA provided their official comments to the Corps pursuant to their responsibilities under NEPA, CEQ Regulations (40CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

Other-208

Designation of the Missouri River as the most endangered river in North America was made by American Rivers, a not-for-profit environmental organization. The Corps will not comment on the designation.

Other-209

This FEIS includes a PA. A 30-day comment period follows publication of this document to allow for Tribal and public comment on the PA.

Other-210

Your support for the MCP alternative is noted. The PA is a slight modification of the MCP alternative. Models developed for the Review and Update were designed to examine relative differences between alternative flow management plans. The commenter is encouraged to focus on relative differences between the plans rather than absolute values.

Other-211

While non-native species have been introduced into the Missouri River, one of the Corps' statutory responsibilities is to comply with the Federal ESA. The Corps will not respond for the USFWS on the issue of introduction of non-native species.

Other-212

Noted.

Other-213

MRRIP proposed by the Corps in conjunction with the PA will be guided by an overall adaptive management strategy. The Corps would like to work with basin Tribes as the Tribes define their role in MRRIC. Additionally, irrespective of the Master Manual, the Corps and Tribes have many issues that need to be addressed. Although our Government-to-Government consultation on the Review and Update of the Master Manual will conclude at the time of the ROD, Government-to-Government consultation on the numerous issues that the Tribes and Corps must mutually address will continue.

Other-214

WAPA is currently working with basin Tribes to examining the potential for incorporating wind power generation into Missouri River Mainstem Reservoir System hydropower operations.

Other-215

Some existing river training structures have been modified to improve habitat along the river. This effort will continue under MRRIP.

Other-216

Channelization of the lower river under the Missouri River Bank Stabilization and Navigation Project has resulted in a narrow, deep, cold, clear, and fast-moving channel.

Other-217

None of the alternatives evaluated in the RDEIS and FEIS, including the PA, proposes to return the river to its state at the time of Lewis and Clark.

Other-218

Consideration of negative impacts to tax and economic base where significant amounts of properties are in public owner ship is not within the scope of this Study. However, the Corps has recently completed a Supplemental Environmental Impact Statement (SEIS) and ROD for the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project. The SEIS addresses this issue. Information concerning the mitigation project and SEIS can be found at www.nwk.usace.army.mil/projects/mitigation.

Other-219

Responded to by letter of March 20, 2002.

Other-220

The Corps will not respond on behalf of the USFWS.

Other-221

Subsequent to the October 11, 2001 hearing in Sioux City, Iowa, as a part of the Corps Government-to-Government consultation with the Omaha Tribe on the Missouri River Master Manual Review and Update, the Corps met with representatives of the Omaha Tribe on April 29, 2002. A summary of that meeting is found in Appendix A of this FEIS.

Other-222

In addition to serving the purposes referenced in your comment, the Mainstem Reservoir System is also operated for fish and wildlife and water quality.

Other-223

The concept for the Fort Peck Dam flow modification was developed by Federal and State biologists. The Missouri River Natural Resources Committee, a group made up primarily of biologists from the basin States, has endorsed the Fort Peck flow modification. Flow modifications from Fort Peck Dam have not been included in the PA. However, flow tests from Fort Peck Dam to potentially trigger spawning in pallid sturgeon are still being proposed by the Corps as a component of the initial MRRIP. The Corps will continue its close coordination with the State of Montana and parties below Fort Peck who may be affected by modifications in Fort Peck releases. The Fort Peck flow tests would be guided by an overall adaptive management strategy that allows for change as better scientific information becomes available, and includes broad stakeholder participation through a MRRIC. When conditions permit, the Corps intends to conduct a mini-test of a Fort Peck flow modification that would test data collection methodology, gather information on temperature based on various combined flows from the spillway and powerhouse, and test the long-term integrity of the spillway operating at the modified flow. Results from the test will be considered in the implementation of a potential future test (full test). There are no additional costs associated with the actual operation of the flow modification. Costs associated with the tests relate to monitoring the integrity of the spillway, development of methodologies and monitoring protocols in order to accurately measure species response to the modified releases, and monitoring of downstream impacts.

Other-224

There is no plan to cut off water at Fort Peck Dam for endangered species.

Other-225

Concur. The correction has been made.

Other-226

Concur. The correction has been made.

Other-227

Areas sprayed for noxious weeds are outlined on maps that are available at the Lake Oahe Project Office. However, areas of noxious weed infestation are not entered into any geographic information system that the Corps is aware of.

Other-228

Responded to by former Assistant Secretary of the Army for Civil Works, Mike Parker's letter of December 10, 2001.

Other-229

Your concerns regarding cottonwood regeneration are valid. At Lake Oahe, young cottonwoods do not survive below elevation 1620 msl (maximum pool elevation) due to inundation. Older stands of cottonwood are being lost to both inundation and age. A healthy stand of cottonwoods exists west of the Highway 63 bridge on the Cheyenne River Sioux Tribe Reservation. Title VI of Public Law 106 –53 has provided the Cheyenne River Sioux Tribe funding to mitigate wildlife habitat losses including the loss of cottonwoods. This may be accomplished by planting young cottonwoods in suitable areas.

Other-230

When looking downstream**,** the Cheyenne River Reservation is located adjacent to Lake Oahe on the right bank of the lake or west bank of Lake Oahe.

Other-231

Concur. The correction has been made.

Other-232

Concur. Due to a lack of recreational facilities, the Cheyenne River Sioux Tribe receives a proportionately smaller amount of recreation benefits on Lake Oahe.

Other-233

NEPA does not require that a PA be identified in a DEIS. This FEIS includes a PA. A 30-day comment period follows release of this document to provide for Tribal and public comment on the PA.

Chapter 7, as well as the Tribal Appendix A to the RDEIS address Tribal impacts including impacts to cultural resources resulting from the alternatives analyzed in detail. Chapter 8 of the FEIS and Tribal Appendix A to the FEIS identify the impacts of the PA on Tribal resources. The Fort Peck Tribes Water Quality standards are included in Section 1 of the Water Quality Appendix (Appendix B to the RDEIS and FEIS). A qualitative analysis of water quality impacts, including water quality impacts below Fort Peck Dam, is also included in the RDEIS and FEIS.

Other-244

The Corps believes the Tribes must have an active role in any adaptive management strategy directed toward recovery of endangered species and/or the Missouri River ecosystem. Further, the Corps is committed to involve the Tribes in the AOP process, including holding AOP meetings with the Tribes. The Omaha District has consulted with the Fort Peck Tribes for the mini-test of the Fort Peck flow modification. The Tribes have identified cultural resources below Fort Peck Dam and will be involved in monitoring the effects of the mini-test on erosion, intakes, and cultural resources.

Other-245

The Corps believes the RDEIS and FEIS adequately address the Tribes' trust resources. Government–to-Government consultation with the Fort Peck Tribes will continue through the ROD on the Master Manual Review and Update. Further, the Corps recognizes that there are many issues between the Corps and the Fort Peck Tribes beyond changes to the operation of the Missouri River dams, and that consultation on these issues with the Tribes will extend well beyond completion of the Master Manual Review and Update.

Other-246

In addition to using average annual figures, the Corps has conducted additional analyses for several key uses/resources to ensure that impacts are accurately reflected in the RDEIS and FEIS.

Other-247

The Corps acknowledges that the depletion analysis fact sheet incorrectly stated the impacts of future depletions. The RDEIS and FEIS themselves, however, are correct.

Other-248

Changes in operation of the Missouri River Mainstem Reservoir System will not affect flood control for the St. Francis Levee District

Other-249

The Corps recognizes all existing legal land ownership. Some development in the Missouri River floodplain would have occurred whether the Corps had constructed the Mainstem Reservoir System or not.

Other-250

The PA also includes unbalancing of the upper three lakes. Under the CWCP, when system inflows are above or below normal, the amount of water in the upper three (largest) lakes is balanced so that the effects are shared equally among these lakes. To preclude jeopardy for the listed species, the USFWS November 2000 BiOp recommended unbalancing the amount of water in these lakes as long as an extended drought (more than 1 year long) or an extremely high runoff into the system is not occurring. Unbalancing also provides benefits

to young fish in these three lakes. Unbalancing consists of purposefully lowering one of the upper three lakes approximately 3 feet to allow vegetation to grow around the rim, and then refilling the lake to inundate the vegetation**.** The unbalancing would rotate among the three lakes on a 3-year cycle. Higher spring releases will fill the downstream lake and provide a rising lake level for game and forage fish spawning. The subsequent 2 years of lower flows would expose that bares sandbar habitat for use by the protected birds. Unbalancing would also provide more bare sandbar habitat around the perimeter of the lakes for the birds. In subsequent years, the inundated vegetation around the perimeter would be used by adult fish for spawning and by young lake fish hiding from predators.

Other-251

While the Corps does not operate the Missouri River Mainstem Reservoir System solely for the benefit of the Mississippi River, the system does provide some benefits to Mississippi River uses/resources. Citizens along the Mississippi River are concerned about how changes in operation of the system will impact them. The Corps has a responsibility under NEPA to analyze potential Mississippi River impacts and inform the public of them.

Other-252

Impacts to several economic uses of the Mainstem Reservoir System including to flood control, navigation, hydropower, recreation, and water supply, have been analyzed in the RDEIS.

Other-253

The Corps continues to proceed with the Review and Update as expeditiously as possible. The Corps has identified the PA based on the best scientific and engineering information available.

Other-254

There are no alternatives currently under consideration that include removal of any of the Missouri River Mainstem dams.

Other-255

Thank you for your comment.

Other-256

The Corps recognizes that most farmers are excellent stewards of the land and that many farmers have, on their own initiative, undertaken wildlife habitat projects.

Other-257

To respond to RDEIS comments, the Corps also examined the impacts of alternatives on environmental restoration and mitigation projects. A number of these projects have been constructed along the channelized reach of the river from Sioux City, Iowa to the mouth. The projects are designed to optimize the habitat values based on the site-specific objectives and the CWCP. Alternative system release patterns will alter the habitat value of these projects. As with other resources, the impacts of system releases will decrease with distance from Gavins Point Dam. Further, the number, type, and size of the individual projects will also influence the impacts. The data indicate the lower summer releases from Gavins Point Dam result in losses in shallow water habitat; however, these lower summer releases have not been included in the PA.

Other-258

Should Congress authorize and appropriate funds for the decommissioning or deconstruction of the BSNP, or prohibit authorization or funding of dredging or bank stabilization projects along the Missouri River, the Corps would comply with the law.

Other-259

Annual data is presented in the RDEIS and FEIS for many resources.

Other-260

Impacts to structures in the floodplain that existed in 1995 were considered in the analysis of flood control impacts in the RDEIS and FEIS.

Other-261

Adaptive management is an overall strategy for dealing with change and scientific uncertainty. This strategy is used under the CWCP and would guide the MRRIP proposed by the Corps in conjunction with the PA. Adaptive management

promotes an environment for testing hypotheses and exploring promising changes based on sound scientific data and analyses. Monitoring and evaluation of actual results of changes in the operation of the Mainstem Reservoir System and the flexibility to adapt as new information becomes available are key to the strategy.

In January 2002, the National Academies of Science (NAS) completed their report on the Missouri River ecosystem. The NAS proposed a Congressionally legislated adaptive management strategy directed toward recovery of the Missouri River ecosystem. The NAS recommended this Federal legislation to clarify agency authorities, fund recovery actions, fund participation of diverse stakeholders in the adaptive management process, provide independent scientific review, and establish Congressional oversight and evaluation of the success of the adaptive management strategy. Should such Federal legislation be established, the Corps would follow the direction established by Congress in the law.

The Corps has proposed MRRIP, which is guided by an overall adaptive management strategy. MRRIP includes MRRIC made up of diverse basin stakeholders to provide recommendation the Federal agencies regarding recovery actions. The Corps has proposed a strong research, monitoring, and evaluation program under MRRIP and recognizes the importance of independent scientific review of research, monitoring, and evaluation efforts.

Other-262

The Weldon Springs Formerly Used Defense Site is managed by the U.S. Department of Energy, who also monitors the site. Results of monitoring are reviewed by the State of Missouri. In 1999, the Corps removed soil contaminated with TNT and the TNT pipeline from the site.

Other-263

The PA will not result in an increase in flooding along the Upper Mississippi River or Illinois River.

Other-264

The Corps will not address Congressional intent at the time the ESA was authorized or respond on behalf of Congress.

Other-265

The PA will not affect the current municipal, rural, and industrial water supply project under development by the Fort Peck Tribes.

Other-266

The Corps has a responsibility under Section 7 of the ESA to ensure that its actions do not jeopardize the continued existence of threatened and endangered species or their critical habitat. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-267

The commenter is referred to Appendix A, the Tribal Appendix to the RDEIS and FEIS.

Other-268

Tribal water rights are addressed in Appendix A to the FEIS. By letter of June 24, 2002 to the Omaha Tribe, the Corps recognized the Omaha Tribe claims water from the Missouri River for the purpose defined in the establishment of the Reservation for the Omaha Tribe. The Corps understands that Tribal claims to water are defined by Federal law, including the "Winters Doctrine" applied by the Supreme Court in Winters v. United States, 207, U.S.564, 1908.

Other-269

Section 7.16 of the RDEIS and FEIS and the Tribal Appendix (Appendix A) to the RDEIS and FEIS

present Tribal impacts and address Tribal issues. The Corps believes that it has adequately addressed Tribal impacts related to changes in the operation of the Mainstem Reservoir System, and has fulfilled its Trust responsibilities in that regard. Government-to-Government consultation with basin Tribes for the Master Manual Review and Update will continue through the ROD.

Other-270

Environmental justice refers to executing a policy of fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws. Increasing concern with environmental equity or justice evolved from a series of studies conducted in the late 1980s and early 1990s that suggested that certain types of government and corporate environmental decisions may adversely affect low-income and minority populations to a greater extent than the general population. This finding was particularly the case with locally unpopular land uses, such as landfills and toxic waste sites. Recent guidelines addressing environmental justice include President Clinton's 1994 Executive Order 12898 and accompanying memorandum, the 1996 draft guidelines for addressing environmental justice under NEPA issued by the CEQ, and the 1997 interim guidelines issued by EPA.

EPA's Office of Environmental Justice defines environmental justice as:

"The fair and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, State, local, and Tribal programs and policies" (as printed on EPA Web site: http:www.epa.gov/compliance/environmentaljustice).

Federally recognized American Indian Tribes are considered to be the low-income and/or minority population that would potentially be affected by changes in the operation of the Mainstem Reservoir System. Impacts to affected American Indian Tribes resulting from the PA are analyzed in Chapter 8 of the FEIS and in Appendix A, Tribal Appendix to the FEIS. The Corps has examined this issue very carefully, fully disclosed Tribal impacts in this NEPA process, and has concluded that there are no disproportionate impacts to American Indian Tribes or other low-income and/or minority populations, and no impacts that require mitigation.

Other-271

The Corps did not identify a PA in the RDEIS, but has identified a PA in this FEIS.

Other-272

The Wild and Scenic Rivers Act (16 USC 1278 *et seq.*) designates qualifying free-flowing river segments as wild, scenic, or recreational. The Act establishes requirements applicable to water resource projects affecting wild, scenic, or recreational rivers within the National Wild and Scenic Rivers System, as well as rivers designated on the National Rivers Inventory. Under the Act, a Federal agency may not assist the construction of a water resources project that would have a direct and adverse effect on the free-flowing, scenic, and natural values of a Federally designated wild or scenic river. If the project would affect the free-flowing characteristics of a designated river or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area, such activities should be undertaken in a manner that would minimize adverse impacts and should be developed in consultation with the National Park Service (NPS). There are two reaches of the Missouri River that have been designated as National Recreational Rivers under the Wild and Scenic Rivers Act. One, the Fort Randall Reach, is 36 miles of river from Fort Randall Dam (River Mile 880) to the Lewis and Clark Lake delta (River Mile 844). The other is the Gavins Point Reach, a 58-mile stretch of river between Gavins Point Dam (River Mile 810) and Ponca (River Mile 752).

Chapter 8 of the FEIS addresses recreation benefits under the PA. The PA will not affect either of the designated river reaches because the more stringent drought conservation measures and unbalancing of the upper three lakes included in the PA primarily affect the upper three lakes and river reaches between and immediately below those lakes.

In consolidated Department of Interior comments received in response to the RDEIS, the NPS, who

jointly manages the Recreational River segments with the Corps, recognized the Corps' and NPS' responsibilities relative to the National Recreational River reaches, and indicated their support for lower summer flows that more closely mimic the natural hydrograph of the Missouri River. Lower summer system releases have not been included in the PA. Based on the lack of impact to the designated river reaches, the Corps has concluded that the PA does not affect the reasons for which these river reaches were designated.

Other-273

The PA would not significantly affect riverfront improvements in Omaha, Nebraska and Council Bluffs, Iowa.

Other-274

Executive Order 13211 on Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution or Use applies to the promulgation of new Federal regulations and does not apply to the Master Manual Review and Update.

Other-275

The Corps is required under the Federal ESA to ensure that its actions do not jeopardize the continued existence of threatened and endangered species including the interior least tern, piping plover, and pallid sturgeon.

Other-276

No new Federal dams are currently proposed for construction on the Missouri River.

Other-277

Tribal water rights are addressed in Appendix A to the FEIS. The Corps recognizes the Tribes' claims to water from the Missouri Rivers for the purpose defined in the establishment of the Reservations. The Corps understands that Tribal claims to water are defined by Federal law, including the "Winters Doctrine" applied by the Supreme Court in Winters v. United States, 207, U.S.564, 1908. A discussion of Tribal water rights in found in Appendix A to the RDEIS and FEIS.

Other-288

Your request for Government-to-Government consultation with EPA regarding water quality has been forwarded to that agency. Appendix B to the RDEIS and FEIS addresses water quality impacts associated with changes in the operation of the Mainstem Reservoir System. The Corps would welcome the opportunity to discuss water quality issues related to operation of the system in our Government-to-Government consultation with the Fort Peck Tribes.

Other-294

The Corps recognizes that while the USFWS' role is more narrowly focused on their responsibility to administer the ESA, the Corps' responsibilities are much broader. The Corps believes that the PA meets the contemporary needs of the Missouri River basin, serves Congressionally authorized project purposes, complies with environmental laws including the ESA, and fulfills the Corps' responsibilities to Federally recognized Tribes.

Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-299

Tribal participation in the development and implementation of MRRIP, guided by an overall adaptive management strategy, is essential. The Corps is committed to expanding its efforts to consult with the Tribes and believes that the participation by the Tribes in MRRIP, and their role in MRRIC, should be defined in consultation with the Tribes.

Other-300

Your comment is noted. Availability of public road access to the lake on the west side of the river was limited at the time recreation facilities were built. Further, there was some resistance by Tribal members to development on Corps lands in the Reservation who were concerned about hunting and fishing access by non-Tribal members.

Other-301

Taking of Tribal lands for construction of the Mainstem Reservoir System is addressed in the Tribal Appendix (Appendix A) of the RDEIS and FEIS.

Other-302

A 30-day comment period will follow publication of the FEIS. No workshops or hearings are scheduled during the comment period. Following the FEIS, the Corps will prepare a ROD the identifies the selected plan, revise the Master Manual, develop an Annual Operating Plan that conforms to the revised Master Manual, and, finally, implement the selected plan.

Other-303

Examination of individual and cumulative bank stabilization activities is not within the scope of the Study.

Other-304

The Corps does not intend to prepare a Supplemental EIS at this time.

Other-305

The Corps' ongoing Government-to-Government consultation is discussed in the Tribal Appendix (Appendix A) to this FEIS. The Corps is currently in consultation with nine basin Tribes including the Mandan, Hidatsa, and Arikara Tribes. The Corps continues to offer Government-to-Government consultation to all basin Tribes.

Other-306

The Government-to-Government consultation process is described in Section A-12.5 of the Tribal Appendix (Appendix A) to the RDEIS and FEIS. Consultation with basin Tribes for this Study will continue to the ROD. There are several Tribal issues that are beyond the scope of this Study, but are nonetheless important issues that need to be addressed between the Tribes and the Corps. These issues are and will continue to be the subject of ongoing and future Government-to-Government consultation between the Corps and the Tribes.

The Corps has sought input from the Tribes regarding the consultation process for the Study many times, but has received little response from the Tribes.

Other-307

During drought periods, the upper three lakes would continue to fluctuate under any alternative the Corps has evaluated.

Other-308

Replacement of the bridge into New Town is not within the scope of this Study. The Tribe may wish to pursue technical assistance from the Corps to replace the bridge through the Section 22 Planning Assistance to States program authorized in the Water Resources Development Act of 1974 and subsequently amended. The Omaha District may be contacted in this regard. Adjusting releases during bridge construction may be considered by the Corps, conditions permitting.

Other-309

NAGPRA (25 USC 3001) addresses the discovery, identification, treatment, and repatriation of American Indian and Native Hawaiian human remains and cultural items (associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony). This Act also establishes fines and penalties for the sale, use, and transport of American Indian Cultural items. Consistent with procedures set forth in applicable Federal laws, regulations, and policies, the Corps will proactively work to preserve and protect natural and cultural resources, and establish NAGPRA protocols and procedures.

Other-310

By their correspondence of February 25, 2002, EPA provided the Corps a rating for each of the six alternatives presented in the RDEIS, in accordance with their responsibilities under Section 309 of the Clean Air Act. The EPA also provided the Corps

detailed comments on the RDEIS and addressed Tribal issues.

Other-311

The commenter is referred to Chapter 9 of the FEIS for a discussion of compliance with applicable Tribal and cultural resources statutes.

Other-312

The Corps is unaware of any earlier commitments to build a hospital. This issue is beyond the scope of this Study, but should be raised in other existing and continuing Government–to-Government consultations with the Corps.

Other-314

The Archeological Resources Protection Act (ARPA) (16 USC 470aa-470ll) provides for the protection of archeological sites located on public and American Indian lands; establishes permit requirements for the excavation or removal of cultural properties from public or American Indian lands; and establishes civil and criminal penalties for the unauthorized appropriation, alteration, exchange, or other handling of cultural properties.

Cultural resources will continue to be affected under the PA or any plan the Corps has evaluated. Appropriate monitoring/surveillance methods and awareness programs are an integral component of NHPA Section 106 compliance. This issue will be addressed by theTribal and Corps Cultural Resources Task Force in the Programmatic Agreement(s) currently under development by the Tribes and the Corps.

Currently, the Corps does not have enforcement authorities under ARPA, but issues citations under the authority of 16 USC 460 d as described in 36 CFR 312, et seq. The Corps issues permits for archeological surveys and exploration on project lands. The Corps' responsibilites under ARPA will not be affected by the PA.

Other-315

The Corps believes it has adequately fulfilled the requirements of NEPA relative to full disclosure of impacts and Tribal and public participation and comment. The Northwestern Division is extremely proud our efforts to gain Tribal and public review and comment, and of the continued Tribal and public participation in this lengthy study process.

Other-316

The Corps has concluded that the information included in the DEIS and RDEIS was sufficient to provide for meaningful public comment as required under NEPA. Furher, as provided for under NEPA, a 30-day comment period will follow release of this FEIS to allow for Tribal and public comment. There are currently no plans to hold additional workshops or public hearings. The basis of the Corps decision will be described in the ROD.

Other-317

Chapter 1 of the RDEIS and FEIS describe the Study process under NEPA. The process to date follows the policy goals of NEPA.

Other-318

The CWCP is considered the no action alternative in the Study NEPA process. The analysis of the CWCP presented in the Chapter 7 of the RDEIS is at a level of detail that is commensurate with the other alternatives selected for detailed analysis in that Chapter.

Other-319

Literally hundreds of alternatives have been considered in the Study, including alternatives that are outside of the Corps' authorities. In Chapter 4 of the 1994 DEIS, the Corps addressed over 700 alternatives. The Corps believes that the analyses in the RDEIS and FEIS allows for comparison of alternatives and discusses environmental consequences in sufficient detail. NEPA requires that mitigation for impacts to environmental resources be discussed in the NEPA document. Section 7.20 of the RDEIS and Section 8.5 of the FEIS discuss mitigation of environmental impacts.

Other-320

The scale and magnitude of the Study were considered in the development of the scope of the Study. In order to keep the Study within a workable and executable timeframe, regional social and economic impacts were not considered for all resources.

Other-321

In its January 2002 Report entitled "The Missouri River: Exploring the Prospects for Recovery", the

National Academies of Science proposed Federal legislation that would provide funding to the Tribes and stakeholders to participate in an adaptive management strategy to restore the Missouri River ecosystem. Although such legislation has not been authorized to date , the Corps has proposed MRRIP guided by an overall adaptive management strategy. MRRIP includes development of MRRIC with diverse stakeholder participation to provide recommendations to the Federal agencies regarding recovery measures.

Other-322

Reasonably foreseeable water projects are discussed in Section 7.18 of the FEIS.

Other-323

Impacts to coastal Louisiana wetlands were not within the scope of the Study. Intuitively, impacts to these wetlands would likely be the same under any of the alternatives analyzed.

Other-324

While the Tribal unemployment figures presented in the RDEIS and FEIS are not the most current, they do reflect trends, which is adequate for this analysis.

Other-325

Identification of socioeconomic impacts to specific Tribes is not within the scope of this study.

Other-326

The Corps continues to offer Government-to-Government consultation to all basin Tribes which would assist with Tribal understanding of issues. Further, the Corps has honored every request from the Tribes for orientation conferences, workshops, and hearings.

Other-327

The Corps prepared a Tribal Appendix (Appendix A) to the RDEIS and the FEIS to recognize the special status of the Tribes as dependent sovereign nations and identify and discuss the Corps' unique responsibilities to the Tribes. The Tribal Appendix also provides a centralized location for Tribal information and impacts, a record of Government-to-Government consultation, and a compendium of all Tribal comments to date.

Other-328

All Tribal input received was considered when the Corps selected a PA. Fulfillment of our responsibilities to Federally recognized Tribes was a primary criteria for selection of the PA.

Other-329

A discussion of the Corps' cmpliance with the NHPA, ARPA, and NAGPRA can be found in Chapter 9 of the FEIS.

Other-330

Loss of acreages due to construction on the Pick-Sloan Project is discussed in the Tribal Appendix (Appendix A to the RDEIS and FEIS). While the construction of dams significantly negatively affected the mainstem Tribes, the baseline for this Study assumes that the dams are in place and being operated under the CWCP.

Other-331

Impacts to Tribal intakes are addressed in Section 7. 9 of the RDEIS and FEIS. They are also addressed in Chapter 8 of the FEIS and the Tribal Appendix (Appendix A) to the RDEIS and FEIS.

Other-332

The Corps has made no attempt to quantify Tribal water rights in the RDEIS or FEIS.

Other-333

The Resolution of the Tribal Council of the Standing Rock Sioux Tribe is recognized.

Other-334

This letter was responded to by the Corps' Omaha District letter of April 1, 2002.

Other-335

The recommendations of the MRBA are only one source of information that was used in the development of the PA. Input from Mississippi River States and the public along the Mississippi

River also was considered in the selection of the PA. Chapter 8 of the FEIS (Section 8.3) addresses impacts to Mississippi River resources resulting from the PA.

Other-336

The Corps recognizes that the Corps' responsibilities for revision of the Master Manual are much broader than the responsibilities of the USFWS. The USFWS' review under the ESA is limited to the biology of species protected under the ESA and the USFWS does not consider economic or social considerations in that review. The Corps' review under NEPA is broader and includes analysis of economic uses and key resources. Chapter 7 of the RDEIS and FEIS includes an analysis of impacts to economic uses and environmental resources that would result from alternatives that include the flow recommendations of the USFWS' November 2000 RPA. The RDEIS and FEIS also examine the impacts of the flow recommendations included in the RPA on attributes the USFWS and the Corps have agreed are needed for the species including analyses of the flow recommendations included in the RPA on floodplain connectivity, shallow water habitat, and spawning cue. The Corps' PA does not include the flow recommendation included in the November 2000 RPA. Following publication of the RDEIS, the Corps and the USFWS reinitiated consultation under Section 7 of the ESA. On November 3, 2003 the Corps provided the USFWS a BA that identified the Corps' proposed action for operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The Corps' proposed action includes the operational changes identified in the PA. On December 16, 2003, the USFWS provided the Corps an amendment to its November 2000 BiOp on the Operation of the Missouri River Mainstem Reservoir System, Missouri River Bank Stabilization and Navigation Project, and Kansas River Reservoir System. The amended BiOp and comments received in response to this FEIS will be considered in the Corps' decision regarding a selected plan, which will be announced in the Corps' ROD following the FEIS comment period.

Other-337

The "contemporary needs of the basin" and all comments received from the Tribes and the public were considered in the formulation of the PA.

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