

APPENDIX 1

Devil's Lake, North Dakota

Final Integrated Planning Report and Environmental Impact Statement

Section 404(b)(1) Evaluation

SECTION 404(b)(1) EVALUATION
DEVILS LAKE OUTLET TO THE SHEYENNE RIVER
RAMSEY COUNTY, NORTH DAKOTA

I. PROJECT DESCRIPTION

A. Background – The Corps of Engineers (COE) has prepared a Final Integrated Planning Report and Environmental Impact Statement (IPR/EIS) to present the results of its studies to address flooding problems associated with the rising levels of Devils Lake in North Dakota, and possible consequences of implementing various alternatives. The Devils Lake study area encompasses approximately 3,800 square miles of the Devils Lake drainage basin, and almost 900 miles of the Sheyenne River and the Red River of the North, extending into Canada. Structural and nonstructural alternatives to reduce urban, infrastructure and agricultural flood damage were developed, including upper basin storage and various infrastructure protection measures. A number of structural outlet alternatives were considered. Design of a selected outlet plan concurrent with the preparation of the Environmental Impact Statement is consistent with appropriation language contained in the 1997 Emergency Supplemental Appropriations Act for Recovery from Natural Disasters, and for Overseas Peacekeeping Efforts, Including Those in Bosnia (Public Law 105-18) and subsequent laws, including the Emergency Supplemental Act of 2000 (Public Law 106-246). COE efforts have been for purposes of a plan being designed and ready to implement should decision makers decide to proceed with construction of an outlet. This evaluation has been prepared in the event that decision makers determine that an outlet should be constructed.

B. Location - The project area affected by outlet construction is located in Ramsey County, North Dakota. Fill activities would extend from the west shore of Devils Lake, south to the Sheyenne River. The alignment and general location of the outlet features, including the closure structures on Channel A, are shown on Figures 5-1 and 5-2 of the main report. Mitigation features to address effects associated with the operation of the outlet would be implemented along selected reaches of the Sheyenne River (Figures 6-6 and 6-7 of the main report).

C. General Description – This evaluation addresses the effects that would result from the placement of fill in waters of the United States in conjunction with the construction of an outlet from Devils Lake to the Sheyenne River and the construction of mitigation features on selected reaches of the Sheyenne River to address operational effects. The effects associated with the operation of the outlet are discussed in detail in the IPR/EIS. Detailed design and site information are not available at this time for the mitigation measures. Therefore, this evaluation assumes that all of the amounts and types of fill would be placed in waters of the United States.

The outlet consists of the following basic features: An approximately 6.1-mile long open channel from Pelican Lake to a pump station on the north side of Minnewaukan, an approximately 8 mile long pressure pipeline to a small flow control reservoir near the divide between Devils Lake and the Sheyenne River, and an approximately 8 mile long gravity pipe from the control reservoir to

an corrugated metal outflow structure at the Sheyenne River. In addition, a channel would be constructed from Dry Lake to the chain of lakes and some modification of the outlet structure on the North end of Channel A will be required. The fill activities associated with the construction of the outlet would consist of the following: Random earth fill from the open channel that would be excavated in land currently under water; a concrete culvert with concrete wing walls and rock fill and sand fill bedding at each end where the open channel crosses Highway 281; random earth fill for temporary cofferdams that would be used for installation of the culvert; concrete fill for filling existing culverts that cross Highways 281 and 19; sections of the pressure and gravity pipelines and backfill for the pipelines where they cross wetlands; corrugated steel pipe and riprap with sand fill bedding for a flow expansion structure at the outfall into the Sheyenne River; random fill from the excavation of the channel from Dry Lake where it crosses a wetland; random earth fill for cofferdams for dewatering the control structure at Channel A; concrete fill for modification of the control structure on Channel A; random earth fill for cofferdams for dewatering control structures in the chain of lakes; concrete fill or culverts for modification of the control structures in the chain of lakes.

Several mitigation features are proposed on the Sheyenne River to address effects associated with the operation of an outlet. These include providing bank protection at 23 sites along the Sheyenne River identified as having high potential for severe bank slumping, erosion protection at 53 identified cultural resource sites on the Sheyenne River, the placement of riprap below 10 low-head dams to address safety concerns by eliminating the roller effects, and the construction of several high flow cutoff channels to protect/maintain selected meander reaches on the Sheyenne River. Detailed discussion of the proposed activities and their locations are presented in Chapter 5 and Chapter 6 of the IPR/EIS.

D. Authority and Purpose – The Energy and Water Development Appropriations (EDWA) Acts for Fiscal Year 2001 (Public Law 106-377) in conjunction with previous EDWA appropriations acts (Public Law 105-62, 105-245, and 106-60), authorized the Secretary of the Army, acting through the Chief of Engineers, to utilize \$10 million in Construction General funds to initiate construction of an emergency outlet from Devils Lake, North Dakota to the Sheyenne River subject to several requirements. The conclusions addressing the requirements before construction may proceed are presented in the Integrated Planning Report and EIS. The purpose of an outlet is to reduce the flood damages related to the rising lake levels in the flood-prone areas around Devils Lake and to reduce the potential for a natural overflow event.

E. General Description of Dredged and Fill Material

1. General Characteristics and Source of Material – Final determinations for the source of material have not been made. Investigations are still being conducted to identify areas that would provide suitable material. Material for outlet channel berms may be obtained from excavation activities associated with construction of the delivery channel, from existing or new upland borrow areas, or from temporary disposal areas associated with other construction activities in the area.

Clean rock riprap would be obtained from any of several facilities in the vicinity of the project

area. It is likely that much of the material provided would be fieldstone. These facilities have provided suitable, clean material for the construction activities in and around Devils Lake, North Dakota.

2. Quantity of Fill Material - The quantities of various fill materials to be used for outlet construction are as follows: random fill – 574,000 cubic yards, rock fill – 1,000 cubic yards, pipe – 4,000 linear feet. Quantities of fill materials to be used for erosion protection (76 sites total): bedding – 105,000 cubic yards, rock fill – 210,000 cubic yards. Quantities of fill for meander cutoffs: random fill – 20,000 cubic yards, bedding – 15,000 cubic yards, rock fill – 30,000 cubic yards, concrete or corrugated pipe – 6,200 linear feet. Quantities of fill for material for riprap around and below 10 dams: bedding – 5,000 cubic yards, rock fill – 10,000 cubic yards.

F. Description of Proposed Discharge site

1. Location – For outlet construction, material would be placed primarily along Highway 281, north of Minnewaukan, along the outlet alignment on the western shoreline of Devils Lake, along selected reaches of Highway 19 as it crosses Devils Lake, in unavoidable wetland areas along the outlet alignment, at selected locations along Peterson Coulee and in the Sheyenne River at the discharge point of the outlet. Construction of the closure structure for Channel A would involve the placement of material at the head of Channel A.

Features on the Sheyenne River would be located at various areas throughout the 463-mile stretch of river. Locations of the proposed features for advanced bank stabilization measures and high-flow cutoff channels are shown on Figures 6-6 and 6-7 of the main report. Federal law prohibits identification of the location of known cultural resources sites. However, the general locations of the sites are shown on Figure 6.7 of the main report.

2. Size - Devils Lake currently encompasses an area that is 145,000 acres in size. Individual wetlands along the outlet alignment that would be affected by fill activities would range from 5-20 acres in size. The Sheyenne River is approximately 50 feet across at the point where the stilling basin would be constructed for the outlet discharge point. The total area directly affected by the fill activities would be about 150 acres, of which up to 135 acres would be in Devils Lake along Highway 281 or Highway 19.

The length of the Sheyenne River from the insertion point of the proposed outlet to the confluence with the Red River is 463 miles. The proposed advanced bank stabilization measures would affect about 18,500 feet (3.5 miles) of riverbank. The placement of riprap to protect known cultural resource sites would affect an additional 34,000 feet (6.4 miles) of riverbank. With an average bank height of 8 feet, approximately 15 acres of riparian habitat would be directly affected by these activities.

The 10 low-head dams on Sheyenne River have an average length of 100 feet and an average height of 5 feet. Current designs assume a 1V:4H slope, with a total of .5 acres of riverine habitat potentially affected with this feature. The area affected at any given site would be dependent on the final selected design for each site. It is possible that a design slope of up to

1V:20H could be selected for implementation at some sites to facilitate fish passage. If this design were selected for implementation at all of the dams, a total of 2.5 acres of riverine habitat would be directly affected.

Control structures for the high flow cutoff channels would require the placement of fill on a total of 2.5 acres of riparian/riverine habitat. Approximately 30 acres of riverine floodplain would be affected with the construction of the cutoff channels.

3. Types of Habitat – Habitat affected by the fill activities is a mix of lacustrine, shallow and deep wetland, and riverine. Fill activities in Devils Lake would occur primarily in open water areas. Wetlands affected along the outlet alignment are of mix of seasonally flooded and semi permanent wetlands, ranging from 1 to 5 feet in depth, most of which are fairly well vegetated. At the outlet discharge point, the Sheyenne River averages about 3 feet in depth. The riverbanks are about 15 feet high, with the vegetation being primarily grasses/forbs with scattered brush or trees. A variety of habitat types would be affected with the implementation of the other features along the 463 miles of the Sheyenne River. Erosion protection measures are proposed in areas primarily characterized as eroding cutbanks, with average water depths ranging from 1- 3 feet in most areas, to as deep as 7 feet in some areas.

4. Timing and Duration – If Congressionally mandated requirements are satisfied and funding is available, construction of an outlet could be initiated in the fall of 2004. If construction is initiated in the fall of 2004, it is likely that fill activities would not be initiated until the summer of 2005. Based on this schedule, construction could be completed by the fall of 2007. Funding restrictions may require that the construction be delayed and/or conducted over more than the proposed 3 construction seasons. Therefore, major construction activities could continue as late as 2010.

G. Description of Fill and Dredged Material Placement Methods - Material would be moved and placed mechanically. Some of the fill activities along Highway 19 and Highway 281 may take place with heavy equipment working off a barge.

II. Factual Determinations

A. Physical Substrate Determinations

1. Substrate Elevation and Slope – Due to the geographic extent of the outlet features, the fill activities would occur in a variety of conditions. Placement of fill in Devils Lake could be in depths ranging from 2-20 feet. Most of the fill activities in Devils Lake (135 acres) would be associated with the construction of the inlet channel to the pump station. Construction activities associated with the Channel A closure structure would take place in an area characteristic of a constructed channel. Wetlands in the area tend to be relatively shallow and flat. The inlet channel would generally be a flat channel with 1 vertical on 3 horizontal sideslopes. Excavated material would be sidecast creating slightly shallower areas. Overall, the fill activities would have no appreciable change on the substrate elevation or slope in Devils Lake. The buried pipeline from the pump station to the Sheyenne River would have no long-term effect on the

bottom elevation or slope of affected wetlands. The areas long the pipeline alignment would be backfilled to existing elevation and slope to the extent practicable.

Fill activities on the Sheyenne River would occur in a variety of conditions. Erosion protection measures would be conducted primarily along banks that are currently actively eroding or in danger of slumping. In many instances bank slopes have 1V:2H sideslopes or steeper, with average summer water depths ranging from 1-3 feet to as deep as 7 feet. River bottom elevation below most of the dams are essentially the same as the dam apron elevation, although some scour holes up to 5 feet deep may be present below some of the dams. River bottom elevation and slope varies at the meander cutoff sites.

2. Substrate Changes – Sediment in most of the fill areas is primarily fine silts and clays. Glacial till is also present in many areas. No extensive long-term changes to lake or wetland substrates would occur with the proposed activities. Along the Sheyenne River, substrate characteristics vary depending on the predominate soil types. In the upper basin down to Lisbon, surficial materials are primarily glacial till and outwash. Between Lisbon and Kindred coarse sands are prevalent in the upper reach, which gradually become finer material in the lower reach. From Kindred to the confluence with the Red River the substrate is primarily deep clays. Portions of the river bottom would be converted to rock fill with the placement of erosion protection measures and the placement of riprap below dams. Control structures for the highflow diversion channels would convert a small portion of the river site to an area more characteristic of an embankment.

3. Dredged/Fill Movement – The fill material would be placed directly into the lake along the shoreline, or in a wetland setting. Some minor erosion may occur until the sideslopes become vegetated or stabilized with riprap. Along the Sheyenne River, fill material would be sufficiently large enough, or protected with riprap so as to preclude downstream movement of the placed material

4. Actions Taken to Minimize Impacts – Best management practices would be used during construction to minimize erosion on constructed berms or cofferdams. Work on the Sheyenne River would be done during low flow periods so as to limit downstream sedimentation. Use of a buried pipeline would minimize effects on the substrates of wetlands along the outlet alignment.

B. Water Circulation and Fluctuations

1. General Water Chemistry – The proposed fill activities would have minor effects on the water chemistry of Devils Lake or wetlands along the alignment. The semi-sequestration of Pelican Lake from West Bay would make the water in the Pelican Lake portion of Devils Lake less saline than would normally be expected. These conditions would be temporary as flows from Big Coulee diminish over the season. The fill activities on the Sheyenne River would have no effect on the water chemistry of the river.

2. Current Patterns and Circulation - The proposed fill activities would have no major direct effect on the current patterns and circulation in Devils Lake. Some minor changes in circulation

patterns would occur with the closure of the culverts under Highway 19. Modifications of the control structure for Channel A would prevent water from going down Channel A, except during very high flow events, usually in the spring.

Erosion protection measures on the Sheyenne River would have no effects on current patterns or circulation. Placement of riprap below the dams would eliminate the roller effects associated with high flow conditions.

The highflow cutoff channels are designed to maintain/protect important aquatic habitat types during the periods of extended high flow that would be associated with operation of the outlet. As currently designed, the control structures would allow flows of up to 50 cfs to flow down the existing meander. Flows between 50 cfs and 350 cfs would be diverted down the diversion channel. Flows exceeding 350 cfs would overtop the structure. Circulation patterns associated with spring flood flows would essentially be unaffected.

3. Sedimentation Patterns – Modification to the control structure for Channel A would likely affect sedimentation patterns in portions of Big Coulee. Increased flows and sediment loads would alter currently established patterns. There would likely be little effect on sedimentation patterns in Devils Lake.

Fill activities on the Sheyenne River may have localized affects on sedimentation patterns, but would have essentially no effect system wide.

C. Suspended Particulate/Turbidity Determinations

1. Suspended Particulates and Turbidity - The placement of the fill during outlet construction and during construction of the various features on the Sheyenne River would result in short-term, localized increases in turbidity levels. A return to ambient conditions would occur shortly after fill placement. A localized short-term increase in suspended particulate or turbidity levels may also occur due to any dredging needed to construct the intake for the outlet.

2. Effects on Physical and Chemical Properties of the Water Column

a. Light Penetration - The proposed fill activities may have short-term adverse impacts during construction due to turbidity plumes.

b. Dissolved Oxygen - The proposed fill activities would have no effect on dissolved oxygen levels in Devils Lake.

c. Toxic Metals and Organics - No increase in contaminants in the aquatic environment would result from the proposed fill activities.

d. Aesthetics - Temporary increases in suspended sediment levels would have temporary negative impacts on aesthetics in the project area, but this will likely be observed by few people.

3. Actions Taken To Minimize Impacts - Impacts would be minimized by requiring that best management practices to limit the extent of turbidity plumes, such as silt curtains, will be followed during construction.

D. Contaminant Distribution Determinations – The fill material would be uncontaminated random and coarse fill and should not introduce contaminants into the aquatic ecosystem. Borrow areas in the area are rural in nature, relatively undisturbed, and do not have a history of contamination.

E. Aquatic Ecosystem and Organisms Determinations

1. Effects on Plankton - The proposed action would have no appreciable effect on plankton.
2. Effects on Benthos – The proposed fill activities may result in the loss of some benthic organisms. Disturbed areas should quickly be recolonized.
3. Effects on Fish - The proposed fill activities would have no long-term adverse effect on fisheries resources in the area. Erosion protection features and the meander cutoff features are proposed to alleviate the habitat affects of prolonged high flows associated with outlet operation, and thus should have a positive effects on fish.
4. Effects on Wildlife - The proposed fill activities would have result in the loss of some aquatic and terrestrial habitat. Some wetlands along the outlet alignment would be reduced in size or converted to an open channel. There would be no significant effect on wildlife populations or habitat availability in the project area.
5. Effects on Aquatic Food Web – The proposed fill activities would have no long-term adverse effects on the aquatic food web. Erosion and meander cutoff features are designed to lessen the effects of prolonged high flows associated with outlet operation.
6. Effects on Special Aquatic Sites – There are a total of 3289 acres of USFWS easement acres along or adjacent to the outlet alignment, of which 69 acres are wetlands; 60 acres in the reach from Pelican Lake to the proposed pump station, and 19 acres in the reach from the pump station to the Sheyenne River. There would be no appreciable immediate affects on those wetland acres currently inundated in the upper reach. The construction of an open channel may result in altered wetland characteristics at some locations once the lake recedes. These effects would likely be temporary as the channel could be plugged to restore pre-inundation conditions. Some fill activities would occur on USFWS refuge lands located in the chain of lakes. A refuge compatibility statement would be required prior to initiating construction of these project features. Installation of a buried pipeline across wetlands in the lower reach would result in minor, short-term disturbance effects.

Operation of an outlet would result in prolonged high flows throughout 7 months of the year. The resulting change in flow regime would affect the distribution and availability of important aquatic habitat, such as riffle-pool habitat, on the Sheyenne River. The fill activities proposed for the Sheyenne River would alleviate the effects of this change in the flow regime by reducing erosion from critical areas and maintaining important habitat types in selected reaches.

7. Threatened and Endangered Species - No State listed or federally listed threatened or endangered species would be adversely affected by the proposed actions.

8. Actions Taken To Minimize Impacts – The outlet alignment was selected to avoid, to the extent practicable, existing wetlands between Devils Lake and the Sheyenne River. A buried pipeline from the pump station to the Sheyenne River was designed to avoid long-term effects on wetlands along the alignment. Proposed erosion protection features and the highflow cutoffs at selected reaches are proposed to alleviate aquatic ecosystem effects associated with outlet operation.

F. Proposed Disposal Site Determinations

1. Mixing Zone – The proposed fill activities would have no appreciable effect on the mixing zone in Devils Lake, Big Coulee or the Sheyenne River.

2. Compliance with Applicable Water Quality Standards – Fill material would consist of clean material from approved sources. State water quality standards would not be violated due to the fill activities.

3. Potential Effects on Human Use Characteristics - The proposed fill activities would have no adverse effects on municipal or private water supplies; recreational or commercial fisheries; navigation, or aesthetics, parks, national historic monuments or similar preserves. Placement of riprap below existing dams on the Sheyenne River would address safely concerns related prolonged high flows and the resulting roller effects at these sites.

G. Cumulative Effects on the Aquatic Ecosystem– Fill activities are being pursued by other Federal, State and Local agencies in and around Devils Lake in response to rising lake levels. Due to the size of Devils Lake, and the limited fill activities associated with the construction of an outlet, implementation of the proposed action would have no significant cumulative effect on the aquatic ecosystem.

H. Secondary Effects on the Aquatic Ecosystems – There would be no appreciable secondary effects on aquatic ecosystems associated with the placement of the proposed fill. Secondary effects of the proposed fill activities are associated with the operation of the outlet. The Corps believes that environmental effects associated with outlet operation should be and are fully discussed in the EIS. The proper interpretation of 40 C.F.R. 230.11(h)(1) is that the Section 404(b)(1) Guidelines do not require operational impacts of the outlet plan to be considered as part of the 404(b)(1) analysis itself. 40 C.F.R. 230.11(h)(1) provides, in part, that “Information about secondary effects on aquatic ecosystems *shall be considered prior to the time final section 404 action is taken by the permitting authorities*”. (emphasis added) The EIS considers operational impacts, and this consideration is prior to the time final section 404 action will be taken. 40 C.F.R. 230.11(h) contains the only references to evaluation of secondary impacts in the guidelines and it imposes no requirement to evaluate those effects as part of the 404(b)(1) analysis, but specifically provides that such analysis may be done (at any time) “prior to the time final section 404 action is taken”. Therefore, the EIS, as written, is fully compliant with the

requirement to consider secondary effects on aquatic ecosystems of the outlet discharge. The Corps and Army decision-makers for the outlet proposal will fully consider the information on secondary environmental effects of outlet operation before taking action under CWA Section 404 to authorize any discharges of dredged or fill material associated with proposed construction of the outlet.

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

Operation of an outlet could result in significant effects to aquatic and terrestrial resources in Devils Lake, the Sheyenne River and the Red River of the North. The effects associated with the operation of an outlet from Devils Lake are discussed in Chapter 6 the IPR/EIS, which are hereby incorporated by reference into this 404(b)(1) evaluation. Mitigation features are proposed to alleviate effects on the aquatic ecosystem associated with the operation of an outlet and include: erosion protection at 23 sites on the Sheyenne River, construction of high flow cutoff channel at in selected areas to protect/maintain important habitat during prolonged high flows, and the acquisition of about 6,000 acres of riparian habitat. These mitigation features are discussed in detail in Chapter 5 and Chapter 6 of the IPR/EIS, which are hereby incorporated by reference into this 404(b)(1) evaluation.

III. FINDINGS OF COMPLIANCE WITH RESTRICTIONS ON DISCHARGE

The proposed fill activity would comply with Section 404(b)(1) guidelines of the Clean Water Act. No significant adaptations of the Section 404(b)(1) guidelines were made for this evaluation. Other alternatives considered to alleviate damages associated with rising lake levels at Devils Lake included upper basin storage, continued infrastructure protection, and alternate alignments for the outlet. Other outlet alignments were not selected because they were more environmentally damaging, more costly, or both. A discussion of the effects associated with the operation of the project and the features proposed to alleviate effects on the Sheyenne River is presented in the Integrated Planning Report and EIS.

The proposed fill activity would be in compliance with all State of North Dakota water quality

standards, Section 307 of the Clean Water Act and the Endangered Species Act of 1973, as amended. The proposed fill activities would not have a significant adverse impact on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, wildlife, and special aquatic sites. The activities would have no significant adverse effect on the life stages of aquatic organisms or other wildlife. No significant adverse effects on aquatic ecosystem diversity, productivity and stability, or on recreational, aesthetic, and economic values would occur.

Steps taken to minimize potential adverse effects on the aquatic ecosystem include timing of disposal activities, use of best management practices during construction and the use of a buried pipeline along selected reaches of the outlet.

On the basis of this evaluation, the proposed action is determined to be compliant with the requirements of the Clean Water Act 404(b) guidelines for discharge or placement of dredged or fill material.