

Environmental Assessment of the Buffalo Creek Dam Removal

Draft

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Union Slough National Wildlife Refuge
1710 360th Street
Titonka, Iowa 50480
(515) 928-2523

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1. Purpose and Need

1.1 Purpose

The purpose of this Draft Environmental Assessment is to disclose, explain and evaluate the environmental effects of three management options regarding the future of the Buffalo Creek Dam located on Union Slough National Wildlife Refuge (NWR), Kossuth County, Iowa. (Figure 1)

1.2 Need

The existing Buffalo Creek Dam, located on the south end of Union Slough NWR, is causing two serious management issues. First, the dam is causing flooding on neighboring ground that we do not have any legal authority to flood. Second, the dam interferes with water management on the Refuge's main pools. Specifically, the southern two pools cannot be dewatered when the gates are shut on the Buffalo Creek Dam water control structure. The dam needs to be altered or removed to eliminate unauthorized flooding on any neighboring ground and to allow better water management on the main Refuge pools.

1.3 Decisions That Need To Be Made

The Service's Regional Director will select one of the alternatives analyzed in detail and will determine, based on the facts and recommendations contained herein, whether this Environmental Assessment (EA) is adequate to support a Finding of No Significant Impact (FONSI) decision, or whether an Environmental Impact Statement (EIS) will need to be prepared.

1.4 Background

The Buffalo Creek Dam was constructed by the Iowa Conservation Commission (known today as the Iowa Department of Natural Resources) in 1960 to provide an impoundment for use as a waterfowl hunting area. The Buffalo Creek Dam was constructed on ground owned by the state and located directly south of Union Slough NWR. Prior to dam construction, the Iowa Conservation Commission (ICC) acquired three flood easements on adjacent lands that would be impacted by the project. These three flood easements were acquired in 1958. They did not cover all the affected private ground. They were valid for 25 years and expired in 1983. In 1986, the U.S. Fish and Wildlife Service (FWS) acquired the land

containing the Buffalo Creek Dam from the ICC as part of a land exchange. The dam has been managed as part of Union Slough NWR (Refuge) since that time.

The dam and spillway were rehabilitated in 1987 and again in 1995 to address damage caused by high water overtopping the structure on numerous occasions. As a result of these projects, the spillway has been raised 2.5 feet above the original level. The spillway was raised to address declining water depths caused by the large silt load that has been deposited in the impoundment since 1960. Raising the spillway has aggravated the problem of flooding private property.

Since acquiring the Buffalo Creek Dam, the FWS has made several attempts to acquire needed flood easements. These attempts have not been successful. The FWS has purchased fee title interest in two of the three tracts that were covered by the ICC flood easements. From August 2002 to July 2006, refuge staff made a concerted effort to find a water level that satisfied boat duck hunters and yet did not negatively affect any private land. Because of the combination of the dam's inability to pass enough water during times of high flow and the flashy nature of the Buffalo Creek watershed, this proved to be an impossible task at times. Since July of 2006, the water control structure on the Buffalo Creek Dam has been wide open. That is, the radial gates are fully open and the stop logs have been completely removed. The structure is passing as much water as is possible, yet flooding of private land continues during times of high water flow.

Additionally, Buffalo Creek Dam has caused problems in managing the southern two pools of Union Slough. When water is impounded by the dam at a level sufficient for duck hunters to use boats, moving any water out of the south two pools of Union Slough becomes virtually impossible. This has been a problem since the day the Buffalo Creek Dam was built.

2. Alternatives, Including the Proposed Action

2.1 Alternatives not Considered for Detailed Analysis

In addition to the alternatives carried forward for detailed analysis (Section 2.2), two other alternatives were considered and are briefly discussed here.

2.1.1 Excavation and Reshaping of Pool Area

The option of excavation and reshaping the area to allow for a decrease in pool elevation while still maintaining a water depth similar to what has been historically flooded in the area, along with a new dam and water control structure was considered. Although this option would allow for proper water management of Refuge pools and would eliminate unauthorized flooding on neighboring ground, it was rejected as being cost prohibitive. In addition to the high cost, this alternative would be a short

term fix, as it is likely that silt would be a severe problem in long term maintenance of this alternative.

2.1.2 Purchase All Necessary Flood Easements

The option to purchase all necessary flood easements to an elevation that would cover any flooding of off Refuge lands was considered. This option would eliminate all unauthorized flooding of private property, but it would not allow proper management of Refuge pools. This option was rejected as several affected private landowners have told Refuge staff that they are not interested in selling flood easements to the Refuge.

2.2 Alternatives Carried Forward for Detailed Analysis

2.2.1 Alternative A (Proposed Action) – Remove Dam

The proposed action includes removing the Buffalo Creek Dam and restoring the creek channel and floodplain to a more natural condition. The entire dam, including the earthen fill, water control structure, sheet piling emergency spillway and riprap would be removed and hauled off site. The site would return to its historic condition of a small river and associated floodplain containing numerous oxbows and other backwater areas.

The removal of the Buffalo Creek Dam would greatly improve the water management capability of the southern two pools on Union Slough NWR. Dam removal would also eliminate all unauthorized flooding of neighboring lands.

2.2.2 Alternative B (No Action)

The “no action” alternative includes keeping the Buffalo Creek Dam in place as is. This alternative would require the maintenance of a dam and water control structure that cannot be used. The dam and water control structure in their current condition cause the unauthorized flooding of neighboring lands when water is impounded at virtually any level above bank full in Buffalo Creek. The present dam and water control structure also hold back water in Buffalo Creek to a level that prevents dewatering the southern two refuge pools.

2.2.3 Alternative C – Modify Dam

This alternative would modify the existing dam to allow water management of refuge pools and to prevent unauthorized flooding of

neighboring lands. The dam would have to be modified to move more water at a lower elevation to prevent flooding any neighboring lands and to allow water management activities in the southern two refuge pools.

Modification to the dam would include lowering the elevation and increasing the length of the sheet piling emergency spillway. Large amounts of silt that have accumulated in front of the spillway would have to be removed. The top elevation of the earthen dike would also have to be lowered. In addition, a new water control structure would have to be designed and installed. These modifications would allow water to be impounded at a level that would not flood neighboring lands and would also allow water management to occur on the two southern pools of Union Slough. The impoundment created with this alternative would be at a much lower elevation and a therefore much smaller surface area (approximately 20 acres) than has been historically impounded.

3. Affected Environment

3.1 Physical Characteristics

Buffalo Creek runs southwesterly from north central Winnebago County, Iowa into Kossuth County, Iowa where it enters Union Slough NWR. The Buffalo Creek Dam occurs just over a half mile upstream from where the creek empties into the East Fork of the Des Moines River (Figure 2). The upper reaches of Buffalo Creek have been channelized and straightened, while that portion downstream from the town of Titonka to the mouth tends to be a more naturally meandered stream.

Soils in the project area are generally poorly drained, moderately permeable and found on bottom lands. Most of these soils formed in silty or loamy alluvium under a native vegetation of water tolerant grasses. Hydric units including Calco, Coland, Colo and Zook are found within this mapping series.

The Buffalo Creek Dam consists of an earthen dam with a sheet piling spillway and a water control structure that has two radial gates and three stop log bays. Buffalo Creek Dam was built to impound an approximately 150 acre impoundment. The area has been a popular spot to hunt ducks. Since this area includes a boat ramp, it has been particularly popular with people using boats to hunt ducks. In the local vicinity, there are few public areas open to hunting that also include easy boat access.

3.2 Biological Environment

3.2.1 Habitat/Vegetation

Upstream of Union Slough NWR, Buffalo Creek provides a narrow strip of wildlife habitat in a sea of intensive agriculture. Row crops, namely corn and soybeans, make up most of the surrounding landscape. The frequently flooded areas along the creek are in permanent, heavily grazed pasture. Buffalo Creek acts as the main outlet for tile that drains thousands of acres of surrounding crop ground. This additional water load and nearby intensive row crop agriculture have created ideal conditions to load Buffalo Creek with silt.

The impoundment created by the Buffalo Creek Dam on Union Slough NWR is dominated by smartweed (*Polygonum sp.*) and other moist soil plants on the lower end near the dam. The upper end of the impoundment is dominated by reed canary grass (*Phalaris arundinacea*) and green ash (*Fraxinus pennsylvanica*).

3.2.2 Listed, Proposed, and Candidate Species

The project site is within the range of two federally listed threatened plant species (western prairie fringed orchid – *Platanthera praeclara* and prairie bush clover – *Lespedeza leptostachya*). Prairie bush clover is an upland prairie plant and would not be found in the floodplain. Western prairie fringed orchid could be found in the floodplain. However, the project site does not contain any prairie remnants, has a history of farming on part of the area, and has a serious problem with invasive plants such as reed canary grass and green ash. Therefore, there is no suitable habitat present for these species at the project site.

3.2.3 Other Wildlife Species

Common mammal species in the vicinity of the Buffalo Creek Dam include white-tailed deer, raccoon, fox squirrel, coyote and numerous small rodents. Common bird species include wood duck, mallard, hooded merganser, belted kingfisher, tree swallow, great blue heron and red-winged blackbird.

3.3 Land use

The Buffalo Creek Dam is located on the south end of Union Slough NWR. This portion of the Refuge is dominated by floodplain woodland and the impoundment

area created by the dam. The vast majority of the land surrounding the Refuge is dominated by intensive agriculture.

3.4 Cultural Resources

In consultation with the U.S Fish and Wildlife Service's Region 3 Regional Historic Preservation Officer, the Buffalo Creek Dam does not qualify as eligible for placement on the National Register of Historic Places. The structure is not old enough, nor does it contain any distinguishing characteristics that would make it eligible. In addition, all of the work that would be done in any of the three alternatives discussed in this environmental assessment would only involve previously disturbed ground. Therefore, no prehistoric resources would be affected.

3.5 Local Socio-economic Conditions

The Buffalo Creek Dam is located in Kossuth County, Iowa. According to the U.S. Census Bureau, the 2000 population for the County was 17,163. Algona is the largest city in the County with a 2000 population of 5,741. Row crop farming and related industries such as ethanol and bio-diesel production make up much of the County's economic base.

4. Environmental Consequences

4.1 Effects Common to All

4.1.1 Listed, Proposed, and Candidate Species

No negative responses are anticipated for federally listed species as none are found on the project site.

4.1.2 Cultural Resources

The project site contains no historic structures. No prehistoric resources will be affected as all ground disturbing work would only occur in previously disturbed areas.

4.1.3 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Federal Register 7629 (1994), directs federal agencies to incorporate environmental justice in their decision making process. Federal agencies

are directed to identify and address as appropriate, any disproportionately high and adverse environmental effects of their programs, policies, and activities on minority or low income populations.

No environmental justice issues exist for any of the action alternatives. The action alternatives would all take place on Refuge lands. Surrounding properties are almost exclusively agricultural lands. None of the alternatives would produce environmental pollution. No minority or low-income populations would be displaced or negatively affected in any other way by the proposed action or any of the other alternatives.

4.2 Alternative A (Proposed Action) – Remove Dam

4.2.1 Legal Impacts

Dam removal would eliminate all unauthorized flooding of neighboring lands.

4.2.2 Habitat and Biological Impacts - Cumulative

Removal of the dam would eliminate the impoundment and return the project site to a river and associated floodplain. A one time cost will be incurred to remove the dam. As there would be no structures to maintain, there would not be any future maintenance costs.

Dam removal will greatly improve water management capabilities for the southern two Refuge pools. This will improve the ability to control rough fish, which in turn will improve the water clarity and vegetation in these pools. Trust resources, including waterfowl and other migratory water birds, will benefit from the increased quality of the habitat. Downstream flooding will not be affected as the dam does not function as a flood control or flood storage structure.

4.2.3 Waterfowl Hunting Impacts

Dam removal will eliminate the impoundment that has been used by waterfowl hunters. During times of high water flow, the area will continue to provide waterfowl hunting opportunities that are accessible by the existing boat ramp. The river channel, associated oxbows and other depressional areas in the floodplain will provide some waterfowl hunting opportunities during times of normal or low water flow. Although boat access will be more difficult at these times, it will still be possible by one of the following two methods: 1) Dragging a boat to the channel, oxbow or depressional area, or 2) Using the boat ramp on the East Fork of the DesMoines River located on the county area just south of Union

Slough NWR, and then traveling upstream to the Refuge. In addition, waterfowl hunting opportunities will continue to be available to hunters on foot.

4.3.1 Legal Impacts

4.3 Alternative B (No Action)

Unauthorized flooding of neighboring lands would continue under this alternative.

4.3.2 Habitat and Biological Impacts – Cumulative

The no action alternative would leave the Buffalo Creek Dam in place. The water control structure could not be used because of potential unauthorized flooding of neighboring lands. Even with both radial gates fully open and all stop logs removed, the dam continues to cause problems on neighboring lands during high water flow times. The dam will continue to have maintenance costs even though it can not be used for water management because of the flooding issues.

Water management capabilities in the southern two Refuge pools will continue to be extremely limited with the no action alternative. The inability to draw these pools down in a timely fashion will continue to limit our control of rough fish, associated poor water clarity and the resulting negative impacts on both submergent and emergent plant growth. The habitat in these two Refuge pools, and therefore the waterfowl and other migratory water birds that depend on this habitat, will continue to suffer. Downstream flooding will not be affected as the dam does not function as a flood control or flood storage structure.

4.3.3 Waterfowl Hunting Impacts

The no action alternative will leave the Buffalo Creek Dam in place, but the water control structure would not be used to manage water levels. The radial gates will remain fully open and all stop log bays will remain empty because of the potential to cause unauthorized flooding of neighboring lands. This will create a situation where a temporary impoundment may be created during high water flow times. Since the water control structure can not move enough water, even when fully open, to prevent backup during high water flows, waterfowl hunters would have an area to hunt by boat until the flood waters recede.

The river channel, associated oxbows and other depressional areas in the floodplain will provide some waterfowl hunting opportunities during times

of normal or low water flow. Although boat access will be more difficult at these times, it will still be possible by dragging a boat to the channel, oxbow or depression area. In addition, waterfowl hunting opportunities will continue to be available to hunters on foot.

4.4 Alternative C – Modify Dam

4.4.1 Legal Impacts

Modification of the dam will eliminate all unauthorized flooding of neighboring lands.

4.4.2 Habitat and Biological Impacts – Cumulative

This alternative will modify the dam to allow the creation of an impoundment that does not cause unauthorized flooding of neighboring lands. The only time the impoundment would exceed 20 acres in size would be during flood conditions. Modification of the dam would involve a substantial monetary investment to rebuild the earthen dam and redesign and construct a new water control structure and spillway. There would also be long term maintenance costs associated with this alternative.

Modification of the dam will improve water management capabilities of the southern two Refuge pools. This will improve the ability to deal with rough fish, which in turn will improve the water clarity and vegetation in these pools. Trust resources, including waterfowl and other migratory water birds, will benefit from the increased quality of the habitat. Downstream flooding will not be affected as the dam does not function as a flood control or flood storage structure.

4.4.3 Waterfowl Hunting Impacts

Under this alternative, the dam, water control structure and spillway will be modified to eliminate any unauthorized flooding of neighboring lands. The resulting impoundment created will be a maximum size of only about 20 acres during normal or low water flow times. This small impoundment would be available for waterfowl hunting. The river channel, associated oxbows and other depression areas in the floodplain will provide additional waterfowl hunting opportunities during times of normal or low water flow. Although boat access will be limited, it will still be possible by dragging a boat to the channel, oxbow or depression area. During times of high water flow, the area will continue to provide waterfowl hunting opportunities that are accessible by the existing boat ramp. In addition, waterfowl hunting opportunities will continue to be available to hunters on foot.

4.5 Summary of Environmental Consequences by Alternative

Attribute	Alternative A Remove Dam	Alternative B No Action	Alternative C Modify Dam
Legal Impacts	Eliminates Unauthorized Flooding	Unauthorized Flooding Continues	Eliminates Unauthorized Flooding
Refuge Pool Water Management Impacts	Greatly Improves Water Management Capabilities	Water Management Capabilities Remain Very Poor	Improved Water Management Capabilities
Cost Impacts	One Time Cost To Remove Dam	Ongoing Dam Maintenance Costs	Redesign Of Dam, Water Control Structure And Spillway Costs – Plus Ongoing Maintenance Costs
Waterfowl Hunting Impacts	-No Impoundment -Limited Boat Access	-Temporary Impoundment -Limited Boat Access	-Small Impoundment (about 20 acres) -Limited Boat Access
Impacts On Downstream Flooding	No Impacts	No Impacts	No Impacts
Cultural Resource Impacts	No Impacts	No Impacts	No Impacts
Listed, Proposed And Candidate Species Impacts	No Impacts	No Impacts	No Impacts
Environmental Justice Impacts	No Impacts	No Impacts	No Impacts

5. List of Preparers

Thomas J Skilling, Biologist – Union Slough National Wildlife Refuge, 1710 360th Street, Titonka, IA 50480. Phone number 515-928-2523. E-mail address tom_skilling@fws.gov.

6. Consultation and Coordination

John Dobrovolny, U.S. Fish and Wildlife Service – Regional Office, Minneapolis, Minnesota

U.S. Fish and Wildlife Service – Rock Island, IL Ecological Services Field Office

Neil Johnson, U.S. Corps of Engineers – Rock Island District

7. Public Review and Comment

Pending

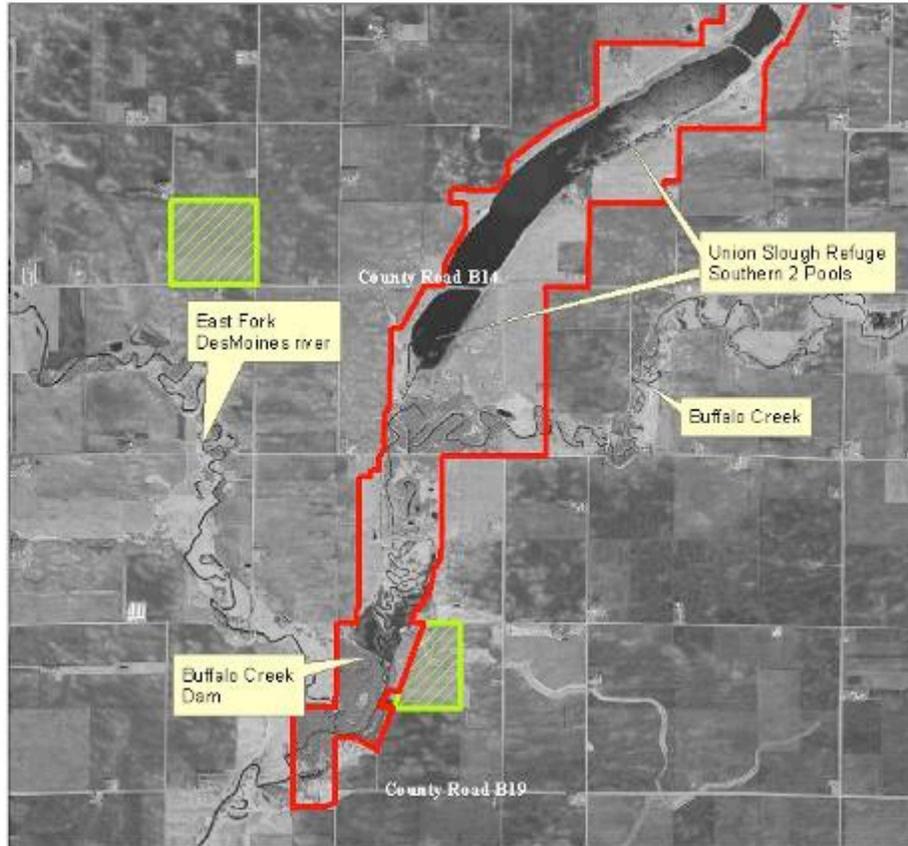
8. Appendix

Figure 1. Buffalo Creek Dam Location Map



Figure 2. Map of the Southern Half of Union Slough NWR

Relational Map of Buffalo Creek Dam and Union Slough's Two Southern Pools



Legend

-  Union Slough NWR Boundary
-  Waterfowl Production Area Boundaries